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THE REFLEXIVE NAVIGATOR

THEORY AND DIRECTIONS IN MARITIME ARCHAEOLOGY

By

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ABSTRACT

SCHOOL OF HUMANITIES
FACULTY OF LAW, ARTS AND SOCIAL SCIENCES
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Doctor of Philosophy

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This research deals with the development of scientific methodology within maritime archaeology, how knowledge is constructed and the different theoretical complexions represented in a wide range of countries, researchers, and how they look at the archaeological maritime heritage. The processes of interpretation and the very different ways this and similar concepts are conceived by the maritime archaeologists are at the core of this work: How does the archaeologist interpret or explain the maritime aspects of culture? Therefore, rather than a history of maritime archaeology, this is a critical history of its ideas and changes.

Also, this research pictures the place this field has within other studies of culture and human nature, aiming for a definition of maritime anthropology as a general corpus of knowledge to be directly related to the maritime aspects of culture and with particular attention to archaeology. A number of epistemological models and tools are applied

Also, the development of maritime archaeology in Latin America is starting to draw attention within other research communities. Therefore, it is taken as a metaphor for the development of the field as its emergent development in Latin America is running parallel to its theoretical development in the region and worldwide.

This study is also a platform to find the tools for a better construction of maritime archaeology in Latin America, due to the links this research has with its development in different countries. Following this line of constructing maritime archaeology in Latin America, under the codes and methodologies of best practice, a case study was set to incorporate sound theoretical elements directly into field driven research. The scenario is the Atlantic coast of Uruguay; a country where real maritime archaeology faces more than its natural challenges, as it needs as well to deal with the antagonistic reality of intense treasure hunting.

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ABBREVIATIONS USED

AIMA – Australian Institute for Maritime Archaeology

CAD – Computer Assisted Drawing

CAS – Complex Adaptive Systems

CMA – Centre for Maritime Archaeology (University of Southampton)

DSM – Direct Survey Method

GIS – Geographic Information System

IFA – Institute of Field Archaeologists

IJNA- International Journal of Nautical Archaeology

INA – Institute of Nautical Archaeology (Texas A&M University)

INAPL – National Institute for Anthropology and Latin American Thinking (Argentina)

JMA - Journal of Maritime Archaeology

NAS – Nautical Archaeology Society

NISA - Netherlands Institute for Ship and Underwater Archaeology

NPS – National Park Service (USA)

PEG - Polyethylene Glycol

ROB - National Service for Archaeological Heritage

SCRU– Submerged Cultural Resources Unit (NPS - USA)

SHA– Society for Historical Archaeology

SMR- Sites Monument Record

SRC – Submerged Resources Center (NPS - USA)

UCL – University College London

UMAP- Uruguayan Maritime Archaeology Programme

UNESCO- United Nations Educational, Scientific and Cultural Organization.

What dissatisfaction there is with the new status quo of archaeology has been reflected mainly in attempts at refinement, either in the ability to recover or interpret data, or in the specific models used, without questioning the epistemology of archaeology.

George Gumerman / David Phillips
Archaeology Beyond Anthropology

And when the look is just a telescope
to travel within labyrinths
where data is a religion,
I still believe in the question
'what's behind the mirror?'
where the audacity of reflection
is produced

Luis Eduardo Aute
La inocencia

My detractors, who are not less stupid than numerous, say 'no' and call me an impostor. I do not give them the reason, but it is not impossible that I am ingenuous. I know 'there is' a way.

Jorge Luis Borges
La Rosa de Paracelso

PREFACE

This text is written in order to explore the ideas of a large proportion of the maritime archaeological community regarding how we approach and construct knowledge. By doing so it is my desire that the product will be able to cover, at least partially, a gap that I have always found disturbing: the gap between the "how" and the "why" in our motivation, the gap between what "we do" in maritime archaeological sites, "how we understand" what we find there and "why we are doing it and for whom". That is, in other words, the gap between practice and theory in maritime archaeology.

In this analysis of the development of the field, Latin America will be taken as a metaphor for maritime archaeology in the rest of the world. Elsewhere we have a forty-year process that has occurred at different rates, with different degrees of success and in different places. Now similar things are happening in Latin America in a more compressed timeframe and, with the benefit of knowing what has happened elsewhere, the process is more transparent. Therefore analyzing what has happened elsewhere and what is happening in Latin America is a reflexive process in understanding both maritime archaeology as well as general theory.

As this text brings together and discusses not only my points of view, but the ideas of many of our colleagues, a major concern has been the attempt to be fair to them and read their insights according to their own context. But being fair does not mean being soft or uncritical. To write this work I had the privilege of speaking with several of the most influential colleagues on the field. It has been an exceptionally rich professional experience, and

extremely enjoyable on its human side. I read many of these professionals with deep interest and learned so much from their works for long years. I owed them the highest respect long before our meetings. Living the experience of exchanging ideas with them was as strong and awe-inspiring as if I was going to do such a similar research in literature, and had the opportunity to interview Lope, Calvino, Milton, Cortázar, Sor Juana, Sigüenza, Garibay, Lampedusa, Mutis, Joyce, Hikmet, Salarrué, Basho, Kayam, and many others of the same calibre.

So, I hope that in those cases where my disagreement with their ideas is evident, it will be understood this is due to strictly professional differences, and that my respect for their achievements and work is not affected by the right to dissent from some of their opinions. I truly believe that as important as it is to carefully read and listen, it is important to execute our innate right to differ. I undertook this research precisely because of the admiration of their work and through eagerness to understand in more detail why they did what they did and why they executed it in the way they did.

As I am writing this research in Europe and not in my continent, I need to make a clarification. Many times I will use the word America and in some instances I will be speaking about 'Amerística'. During my years in Europe I have heard day by day that this word is used here to refer just to one country. America is not a country, but a continent. Many of the millions of inhabitants of the other 42 countries in America (including the Caribbean) find that lack of respect and elementary knowledge significantly disturbing. Many people do not understand it. But I know dear readers that you will.

This will be a voyage through moving waters, heavy seas of ideas, and many colleagues proposing daring concepts. I welcome you onboard.

INTRODUCTION

CHARTING THE INTELLECTUAL ADVENTURE OF MARITIME ARCHAEOLOGY

In a port, a girl called Chloe is wandering along the dockside. She watches as fabulous quantities of bronze ingots, amphoras, stirrup jars and bales of cloth are loaded onto a ship. She is a young woman and out of place. The captain, passing nearby, is about to tell her to go, that she has no business being there but, arrested by her beauty, he forbears. Chloe moves a littler closer, and between men and cargo she is able to see the beautiful blue glass, a glint of gold, scarabs and elephant tusks as they are carefully passed on board. That evening the ship sets sail. Some days later, the captain is moved only by the smooth currents passing over the sea bed. With the advent of death his eyes, desperate in his final hour, now wear a peaceful expression.

Centuries passed. Caesars come and go. Wars are won and lost. Monarchies pass. All those who were alive are now dead. All that was new is now old.

Aided by curious devices which give them the grace of living for an hour or two beneath the sea, people with strange accents submerge themselves into Chloe's waters. Of the captain nothing remains, of his glance nothing remains, of his effort nothing remains. But the bronze stays. The glass stays. Then, the zeal and desires of the man re-emerge whilst his old ship is excavated by people from other times.

These men and women call themselves maritime and nautical archaeologists. How do they use their craft to reach the life of the captain? How do they interpret Chloe's times? Why are they doing it? For whom? What is in their minds that makes them believe they can know something from the ship remains?

As an archaeologist, I am always worried about human nature and conduct. In the same sense, as science is a fascinating area of human enterprise, I have always been interested in how science is done and evaluated, both by scientists and from the general public. Theory, in any science, is related to the problems to be solved, to the puzzles (in Kuhn's terms) that a research community is interested in solving at a particular time. Archaeological theory should not be perceived in a different way, as it is linked to the questions we are wishing to answer via the practical work. In an equivalent way, looking to the kind of problems archaeology is interested in will indicate where archaeological theory is heading.

What are the science demarcation criteria that are used in maritime archaeology? Do we inherit knowledge throughout a research tradition? Do we accumulate information and pretend to know via inductive premises? Do we confront ideas searching for their possible refutation? Is maritime archaeology a mature discipline? Are we, as a research community, moving towards the comprehension of cultural processes or are we scrabbling for finds and data? Is one of the last options necessary better than the other one? Can we do both at the same time? Are we prepared for such a kind of knowledge construction?

In the last century, scientific research has been moving so fast and with such versatility that sometimes it has been faster than theoretical and methodological considerations. In the field of maritime archaeology it seems that sometimes it has happened in that way, but as a general

approach there is a feeling that this intensive last four decades of hard work of development have lacked the same degree of theoretical analysis compared with other social sciences.

Part of my interest in this subject is to illustrate the richness and variety of focuses and ideas that have been conducted and that have characterised an important part of maritime archaeological research. Nevertheless, rarely has it been discussed in depth relating to its science philosophy, epistemological reasoning and particular understanding of the scientific method. The use of those three concepts is far from comfortable and easily available in archaeological daily discourse. In order to have an analytical approach, two different paths must be followed. The first, regarding different varieties of concepts from projects of the past. The second, about the present time, being the living projects and ideas that are current and influencing today's research. This second aspect will be fundamental to the analysis as part, not only of an idea's graveyard but also of a changing and permeable world of reasoning.

A theory is a map we construct to move within reality. We use cartographic maps to represent where we are, in what context, and from which distances to this or that other feature. We use theory in a similar way, so we can plot our ideas about how the world is, and we move in the world of research with our maps in hand, deciding where to go and how to arrive, what zones to avoid and trying to make a safe and efficient journey.

This case is similar, as I am interested in understanding what is under the sea of thought of maritime archaeologists. But I am in uncharted territories. If I study the maps I have to hand, they have just a few features, drawn with uncertain lines. The rest of the map has the legend "*Ic sunt Leones*" and has fierce marine dragons depicted all around, sinking ships.

In order to augment this map, it is necessary to study the problems of knowledge construction, in other words, epistemology. With it, this text will visit the genesis of knowledge in maritime archaeology, which as an evolving and still today emergent field is a changing matter, like mercury in motion. Actually, it would very difficult to speak today about one maritime archaeology, for there are many.

The voyage of maritime archaeology has crossed different environments, landscapes and weathers. It has crossed from Bronze Age ships, to WWII battles; from the prehistoric settlements of coastal adaptation to great and modern ports; from Viking shipbuilding to Iberian exploration voyages; from the Mediterranean to the Patagonia. But it has also passed through cognitive maritime landscapes, through discoveries changing the ideas of ancient commerce; it has been a scenario where the ship was transformed from being a mere receptacle of objects to becoming a symbolic icon, a carrier of meanings and not only of artefacts. Starting with a strenuous interest in the adaptation of field techniques, now we live in another era, where in different places interest is drifting to theoretical concerns. It is no longer just about retrieving some data, but about what we will do with it, and why we select to retrieve it.

We have excellent articles and books that discuss how we are supposed to gather data under water. They speak us about how to do triangulations, suggest when to make a direct measurement, how to use an airlift, how to safely raise the material culture buried beneath the seabed, which are the advantages of these or those geophysical techniques. Those books also demonstrate the richness of the maritime spirit of Humankind in the past by presenting great quantities of marvellous discoveries made so far. They are our encyclopaedias and our manuals for practicing maritime archaeology with our hands and apparatus. Together they comprise an

ample perspective on archaeological techniques to be applied either under water or in intertidal environments, or wherever we can find evidence of maritime societies.

In the now distant year of 1966, George Bass wrote that a book on archaeology underwater should be primarily concerned with techniques (Bass 1970:17). Nevertheless, this research is far more interested in the epistemological problem of how we can establish some kind of knowledge and ideas of the past rather than problems and details of the techniques to be used to retrieve data. But, it needs to be understood that the interests discussed in this volume were hardly going to be attainable today without the pioneering efforts and sustained dedication of people of his calibre.

In that sense, this study is also a platform to find the tools for a better construction of maritime archaeology in Latin America, due to the links this research has with its development in different countries. Following this line of constructing maritime archaeology in Latin America, under the codes and methodologies of best practice, a research project was developed to incorporate sound theoretical elements directly into field driven research. The scenario is the Atlantic coast of Uruguay; a country where real maritime archaeology faces more than its natural challenges, as it has also to deal with the antagonistic reality of intensive treasure hunting.

Analytical chart

The following summary of the key points discussed in each chapter is offered as an analytical chart, a route map for the reader.

In this thesis I look at how maritime archaeology has developed in terms of the kind of knowledge this field is interested in, and what maritime

archaeologists believe is the most appropriate way to reach it. The volume discusses 'what' is under study through maritime archaeology. In other words, it is a study of the impact and development of theory within maritime archaeology. In order to reach this goal, the research focused both on influent projects and researchers of the past and the present. Due to the scarcity of published materials explicitly discussing theory in maritime archaeology, alongside the published works my source material has been the words of many relevant practitioners who generously agreed to participate in this research. In the course of our meetings they shared their ideas in a series of discussions we had about their theoretical perspectives within the field.

I, Theoretical Tools

Two main research instruments were used in this thesis; one is related to techniques of qualitative research and the other to elements by which theoretical positions can be studied in archaeology. Discussing the ways in which maritime archaeologists see how knowledge is constructed was the centre of several meetings with relevant practitioners of around the globe. To meet the requirements of a systematic approach, an ethnographic strategy was selected in which a qualitative perspective was adopted. Detailed semi-structured interviews were followed by a process of methodological triangulation. In this way it was possible to have a common thematic ground to be discussed, and a unifying format to be followed.

How knowledge is produced and structured within maritime archaeology is at the core of this research. The concepts of 'substantive theory' and 'theoretical position', as discussed by Mexican archaeologist Manuel Gándara (1992a, 1992b and 1993), are presented as an alternative to analyze the developments and directions of theory in maritime archaeology. How to explain what our work is, and what has been

considered as our object of research needs to be capital in understanding how knowledge is constructed.

How we design theoretical tools which specifically target the distinctive elements of maritime societies is a question that starts to be addressed in this chapter but is one that runs through the rest of the volume. Most of contemporary archaeology is problem-oriented; this leads to a series of considerations about the inadequacy of embracing an environmentally-oriented characterization of the field, such as the term 'underwater archaeology'. The portrayal of the field as environmentally dependant is too narrow a reading, particularly in view of how contemporary practice is demonstrating the ample possibilities of studying the maritime aspects of culture in past societies.

II, The (re)Construction of a Field

Chapter II provides an overview of the core ideas surrounding what maritime archaeology studies and how these ideas have been modified through the decades. Transforming perceptions in the field include the historical periods that have been considered for study through the last fifty years. Changes have also appeared in relation to the different kind of sites which have attracted attention. Main focal points of research have been defined by scholars such as Muckelroy (1978) and McGrail (1987) in the 1970s and 1980s, including nautical and waterfront archaeology, and inland waterways. However, new and wider perspectives have appeared since then. These new viewpoints include elements that were explicitly left out before, such as coastal communities or land sites associated with maritime activities and, in general, the landscape on which such activities occur.

The expansion of the field has recently reached broader issues such as

seafaring openly understood as a social practice and the implications that this practice might have not only in technology, but in social factors not even located in the waterfront (Adams 2003). As a result, we study today at least three different communities, being these onboard, coastal and even inland societies related to maritime activities. This has led to the recent attempts to integrate maritime archaeology in a more complete way with research focused inland. As a result, the discussion of having a research tradition in maritime archaeology or not is outlined.

III, Discussing Archaeological Interests and Strategies

Included within the concept of theoretical position is the notion of 'cognitive objective'. It refers to the different varieties of knowledge that can be pursued through archaeological research. These refer to 'description', 'explanation', 'comprehension or interpretation', and 'gloss'. Following a characterization of each of these concepts, it is discussed how maritime archaeologists have made use of them, either explicit or implicitly. A number of examples accompany the argument.

How maritime archaeology stands in terms of elaboration and use of 'low', 'middle', and 'high' level theories is discussed. This follows the ideas of Australian archaeologists Veth and McCarthy (2001) and British archaeologist Keith Muckelroy (1978), alongside with how these ideas have been characterized by theoreticians in the wider discipline, such as Bruce Trigger (1989) and Leo Klejn (1977). This argument leads to the concept of 'observational theories', as described by Lakatos (1998) and Gándara (1987), and how its use can positively contribute to a clearer way of typifying what we 'observe' through the archaeological data, what the data is expected to show. The discussion then follows how observational theories and 'low, middle and high' level theories can be integrated to reach previously designated cognitive objectives. Projects studying wreck

distribution, such as the one run by NPS-SRC in Dry Tortugas, Florida, are used as examples of concrete research that see those sites as part of greater social phenomena. Discussion pictures the opposing concepts of partial and total excavation, stating the potential utility of defining the minimum analytical unit in the archaeology of shipwrecks, so as to reach a particular cognitive objective. Finally, this chapter incorporates a proposed model which aims to assist in following the sequence of knowledge construction through problem-oriented maritime archaeological research, although it is not restricted to other archaeological areas.

IV, Discussing Knowledge

Maritime archaeology could be characterized as 'thematic archaeology' if it was interested only in addressing a specific approach to the human past. However, the expanding and wide ranging variety of research interests which are currently driving this field could challenge that thematic label. Some of the different subjects on which the area is currently focusing on are discussed: how ships have been and are perceived by archaeologists, from being a container of objects to being conceived as archaeological source material in themselves. The ways in which the wreck database has been evaluated are held up for discussion. The usefulness or inadequacy of the idea of a ship as a 'time capsule' is reviewed.

The wreck database is also analyzed in terms of its archaeological power to underpin regional studies and large scale processes. The application of concepts as 'historical archaeology of capitalism' is discussed. Discussion states both the advantages to be gained if conducted alongside maritime archaeology, and the ontological risks of applying a limited Northern/Western viewpoint, as is generally the case in today's practice. Which part of a society is under study when maritime research is conducted is subject to argument, such as shipboard communities, also

questioning if onboard societies are closed or open. The subject of scope in approaches to various aspects of society at large scale and different levels of interpretation is revisited in light of the topic of this chapter. The excavation of Dutch East India Company shipwrecks by Jerzy Gawronski (1990, 1991 and 1997) is used as an example.

V, Justifying Knowledge

Maritime archaeology, is socially influenced, just as any other research field. The weight this social influence plays is inextricably related to the role of values within archaeological practice. That is, with the axiology of archaeological research. Important questions related to this topic are '*why* do we *do* research?', 'for *what*?', and 'for *whom*?' These inquiries are discussed within the context of maritime archaeology in different countries. Professional ethics need to be determinant in places where law is permissive or unclear as to what the goals of an excavation should be and what should be the final destination or archaeological materials. This is particularly important in the case of shipwrecks sites containing cargo that could be commercialized due to its potentially monetary value. The profession is divided as to what is the ethical way to confront this conflict. A small group has decided to work alongside the treasure hunting industry. A much larger proportion of the discipline considers this an unacceptable practice. Because of working with unique contexts and ultimately with materials which are not our property, this discussion is central to our profession.

VI, Maritime Anthropology

How archaeology relates to anthropology has been a long debate which remains present in contemporary practice. Many points of view largely depend on the regional character and dominant research traditions to

which those who sustain such views come from. Maritime archaeology has claimed an interest in topics such as 'boat ethnography', and 'shipwreck anthropology'. It is then important to study how does this particular field relates to the wider discipline of anthropology. Although not so widely known, there is a research area completely devoted to maritime anthropology. Its research interests and theoretical drivers are discussed. In spite of the obvious shared interests, there has been a significant academic distance between maritime archaeology and maritime anthropology. While maritime anthropology has concentrated most of its efforts in the study of fisheries and coastal societies, maritime archaeology has done for the most part it in shipbuilding and onboard societies. None of these social phenomena is independent nor happens in a vacuum. Therefore a more integrated perspective from the two research areas is desirable. Examples of research bridging these academic interests are presented.

The study of the maritime space as an integral part of societal reality has been integrated with energy in recent developments of theory and practice within maritime archaeology. In discussing regional approaches and the maritime landscape different routes are explored: the 'maritime cultural landscape' (Westerdahl 1992 and 1997), the 'regional maritime context' (Herrera 2001a), and the '*maritorium*' (Chapanoff pers., comm., 2002). Each of these concepts was conceived in a different country, but they share similar interests and solutions to the problem of integrating physical and cognitive landscapes in a maritime context. These approaches are concerned not only with the offshore human activities, but also with how the space out at sea, at the waterfront and even on inland waterways and on land are all part of the same phenomena. Therefore the three perspectives advocate an integrative and wider view of the use and conception of physical spaces in maritime societies.

Closely related to the maritime space is the current interest in coastal maritime adaptations. Partially neglected by maritime archaeology in the past, this area is nowadays the subject of an intense and interesting emphasis. This perspective is putting an invigorating accent on subjects such as archaeological research on coastal prehistoric societies and on harbours, ports, shipyards and other coastal supporting facilities. As all these subjects are important in the present effort to understand the dynamics of moving across the seascape, they are becoming important in the building of a more integrative maritime archaeology.

VII, The Ship as Symbol

The changing ways of approaching maritime culture through archaeology have recently arrived at another fascinating and perhaps controversial way to look at ships. In an interesting exercise some archaeologists have begun to discuss the symbolic side of the ship and boat. In order to contextualize this standpoint, an overview of symbolic anthropology and its interpretative concerns is presented. The discussion about whether symbols can be approached by an external observer has been central to the debate, as well as the challenges of detecting its existence and interpreting its meanings. How archaeology relates with the study of symbols is an uneasy subject which deals with the mix of utilitarian and symbolic attributes within material culture.

Maritime archaeology has long showed an interest in perceiving the 'ship as a machine'. However, there is a lot of scholarly value to be gained in pursuing the options of also seeing the 'ship as a symbol', 'as a carrier of meaning' and as a 'vehicle of perception'. Examples and possibilities coming from Scandinavia and different countries in America are presented.

VIII, THEORY AND PRACTICE: THE URUGUAYAN CHALLENGE

Theory is sometimes misconceived as being disconnected from practical field-driven investigation. The final chapter is the result of research in which the theoretical muscle was exercised as much as the practical one. Various elements of what is discussed in this volume are taken to the Uruguayan Atlantic coast in an effort to assist in the development of maritime archaeology in this country. At the same time, the project attempted to assist in the generation of heritage management policies according to ethical international standards of best practice.

The overall thesis has not been a passive reflection on knowledge construction, but an open discussion of it. Similarly, the project is interested in exploration seafaring, guided under an 'archaeology of us' perspective. This means that not only European topics of research are taken into account. It mainly refers to how seafaring exploration undertaken by Europeans interplayed with local populations and later colonial settlements. Thus, the work focuses in a study of archaeology, history and cultural understanding of the American space and its inhabitants. Previously discussed concepts such as 'maritorium' are taken into consideration. Remote sensing surveys as part or a regional approach to the seascape were undertaken. Detection and recording of maritime sites both offshore and in inland waterways were conducted. The overall theoretical viewpoint for the Uruguayan project has been that of 'complexity theory' which is described in terms of its application to navigation.

Author's working definition and personal perspectives

In reference to what maritime archaeology is, my own view is that the field needs to be defined by the subject matter of research, and not by the physical resting place of archaeological materials. In this sense, maritime archaeology is the scientific research of past maritime aspects of culture through the physical remains left by human societies, as well as of the change of maritime cultural practices over time. This goes alongside with the study of the associated relations between maritime subcultures, such as onboard societies, and the overall human activities related to living in a maritime context. Maritime archaeology does not only focus on the study of concrete material culture, but also on the mutual influence of human activity and the landscape in which this happens, how both can be changed by each other, and how a maritime environment influences and might be part of traditions, myths and symbols.

The discussion of how adequate the word 'maritime' is cannot be left aside. Maritime comes from the Latin word *mare*, meaning the sea, but maritime archaeology does not only study human activities that happen 'on the sea', nor solely archaeological sites which happen to be on the seabed. This field of research devotes its attention also to activities and sites in the waterfront, in marshlands, in bogs, and in inland waterways, such as rivers or lakes, and even in land when appropriate. The unifying factor for such a variety of sites and activities is not because of being at the sea. I suggest we should not impose a limitation to the term "maritime", believing that anything not directly related to the sea contradicts the research orientation. The most productive way to see it is to read "maritime" as *the maritime aspects of culture*, rather than as remains which happen to be strictly *in a marine environment.*

This also means that the archaeological sites to be investigated are by no

circumstances limited to those of boat or shipwreck archaeology. This range of interests is related to the structures of a marine society and the industries associated with maritime activities and cognitive spectra, regardless of being underwater, in marshlands or on land. 'Land' should not be solely understood as the waterfront land, as we can have archaeological sites deeply related to a maritime culture at considerable distance to the shore. Take for example one of the numerous Scandinavian sites which are not a boat, but a set of stones with the shape of a boat (Capelle 1995). The stones are a representation, a symbol of something that has meanings and connotations. Such sites can be miles away from the shore. Certainly, the study of these sites is maritime archaeology as well, not because they are submerged or by the sea but because their study is related to the maritime aspects of past cultures. Similarly, the study of iconographic representations of maritime elements in rock carvings, such as boats or marine creatures, or serving as decoration in various artefacts or as miniatures, is also part of the research scope of maritime archaeology.

The diversity of activities under study clearly derives in the variety of sites associated to those maritime activities. This range of interests includes migrations, adaptation to climates changes, including variations in the coastline configuration; fishing and fishing societies; seamanship and performance of ships and boats together with its purpose of use, shipbuilding, navigational technology and techniques; local and regional commerce, trade routes, changes in geographic and symbolic perceptions of space; construction of coastal supporting facilities and the industries associated to maritime activities.

A wide range of shipping activities has left its mark in the archaeological record. Sites and materials related to those activities might include ships in their entirety or parts of them used as offerings or as graves on land,

such as the boat-mound tradition, the boat-cremation graves or the boat-graves in Northern Europe (Varenius 1995). Obviously included are shipwrecks and the evidence of all activities particularly related to the conception, design, construction, use and disposal of ships (Adams 2003). We need to take into account the evidence of maritime casualties, even if those did not end in a shipwreck. Also to be included are the structures and activities on land which facilitate the existence of a navigation system. This would mean shipbuilding sites, landing places, harbours, ports, guiding lights and other coastal orientation features.

Also of prime interest are regional and social aspects of maritime sites in terms of studying social change pictured through technology traditions. The research subject matter can lead us to well informed perspectives on the complex societal structures which made the ship and navigation decisive elements of exploration, colonization and of the appearance and consolidation of ancient and modern states. This also encompasses less technologically-driven approaches through which we might analyse the social meaning of wrecking, or the meaning of a social maritime landscape and the symbolic aspects of the ship, or perspectives concerning intercultural exchanges, behaviour in maritime risk situations, and even human responses to fear and how they are reflected in site patterning etc.

In reference to the time frame within the scope of research, maritime archaeology has no temporal restriction. A set of sites left by a prehistoric culture migrating and adapting to a maritime environment in the Patagonia is similarly valid and interesting as a warship lost in battle in 1939. Of course this does not mean that a single archaeologist can master all topics, site types and historical periods, just as it would be impossible for an individual to dominate all the required skills and procedures needed on fieldwork. A serious degree of topic specialization is required, but how useful it would be if that specialized focus did not loose the wider goal of

our craft: to study people, cultures and processes; in other words, to study the maritime spirit of humankind.

All these theoretical perspectives can be greatly benefited by a holistic and integrative approach to culture and to the human condition. Instead of praising the sectarian idea of a 'field' of research as a rigid environmental structure I believe more is to be gained by an encompassing research viewpoint. It is necessary to be aware of not constructing too narrow a view which could obscure the full situational matrix of the processes we study. Such an approach could assist in the challenge of constructing a multidimensional knowledge while conducting studies focused on the maritime cultures.

A discursive approach

In order to pursue my arguments, I am writing in a reflexive and elusive style. I have chosen this way of presentation because a rigid or a chronological account of the intellectual baggage of maritime archaeology would force the information to fit into a structure that I believe the field does not have. Maritime archaeology is a changing and enriching area, and its theoretical interests have interplayed at different moments of its development and at dissimilar rates in various countries. These differences are even evident in the influence exerted by different academic traditions within particular nations. A strict chronological or geographical structure would have inevitably left gaps between topics. It would also have lost the strength of the connections among ideas and theoretical orientations which have linked professionals from distant places and times. The same problem could have appeared if the structure tried to historically replicate how major theoretical approaches in archaeology have influenced its maritime branch.

In the absence of enough published materials related to how maritime archaeologists organise and analyse the data to transform them into knowledge, and in the absence of an open peers' dialogue on theory, my strategy was to confront a number or researchers with the same ideas and questions. Sometimes, when knowing two archaeologists would have different answers, I confronted both positions in our discussions. I tried to obtain a product that would reproduce that exchange of ideas reflected in the presentation structure. As has been noticed by Peter Medawar (1964), scientific publications appear to be solid and decisive in terms of applying the scientific method, omitting the more creative sides of research, leaving the impression that imagination and passion have had no role in the process of research. The experience gained through the present study taught me that when discussing theory, passion and the power of research informed by creativity inevitably arise, even when speaking in the most formal scientific jargon. Thus, in acknowledging the role creativity plays in research, the selected structure and style of presentation also attempts to avoid loosing that important aspect of how maritime archaeology is practiced.

As it is my desire that the present work will add to the necessary theoretical discussion within maritime archaeology, I found it appropriate to follow a discursive style, trying to involve the reflexive voices of the participants in a collective dialogue. The selection of such a style for the discourse does not mean that the work was less scholarly driven. To the contrary, I believe a more realistic balance of how the profession is currently developing can be pursued by exposing both the coherent methodological paths followed within the profession alongside with the inherent role subjectivity might play in the research processes and for the personalities involved. The main elements which grapple with the theoretical path of maritime archaeology are perceived to deal with how

values, ontology, epistemology and methodology are interspersed in the real work of the field's practitioners. In analysing how those elements are conceived in maritime archaeology the present study was driven with as much gravity as the author was able to muster.

A final word in this preliminary section must be added in regard of a couple of the epigraphs which open the volume. Both are derived from personal experiences within archaeology. Luis Eduardo Aute's quotation relates to the title of this research and why I choose the subject. On many occasions I discussed with other archaeologists about the importance of the data and proper retrieving of it, but also about the value of creative ways to read it. Many times I found a barrier, an impediment to seeing further than the crude site plans and material descriptions. At other more fortunate times I have enjoyed listening to intelligent and innovative ways to face archaeological practice. The field of maritime archaeology is nowadays an area of silent but audacious and reflexive researchers who are working on creative ways to look at the data. The present work was conceived as a way to reach that other side of the maritime mirror, the side of audacious reflexion.

The other epigraph which needs an explanation is the one from Jorge Luis Borges. The quotation comes from a short story on which Paracelso is not believed of being capable of re-appearing a rose after it has been burned. He does it, but only when he is alone, as he does not need the others' belief. The passage relates to how the central premise of this work, that we need greater theoretical reflection in maritime archaeology, was received by some of my fellow archaeologists in a project I used to work for in my country. As paracelso, I was told 'no' once, twice and many other times. That 'no' referred to the value of theory building and to the effort of balancing field work and theoretical premises in the same scales. I knew then there was a way. The present volume, collecting and discussing the

theoretical developments of maritime archaeology across the globe and many decades, is my confirmation of the existence of that way. Still, I will never deny I might be ingenious.

CHAPTER I

THEORETICAL TOOLS

Methodological procedures

Qualitative research in social sciences

In order to study the core ideas related to knowledge construction in maritime archaeology, its development, interests, routes and conflicts, a qualitative approach to research was selected. A key interest in the work is to emphasize the vision and perspective of prominent practitioners of maritime archaeology, characterized here as 'social actors', as members of an evolving community. This also implies contextual differences, according to the diverse theoretical environments of the countries where this kind of archaeology is practised. Taken from that perspective, the community can be the subject of study through a set of methodological procedures common to the social sciences, with techniques particularly shared by sociology, cultural anthropology and ethnology. In a way, this research uses an ethnographic approach to a particular area of maritime archaeology as it studies its achievements, conflicts, codes of ethics, and interests regarding theory building and knowledge construction, all through the voices and writing of many of its key practitioners.

It is frequent in social sciences to have two different approaches to research methods, either quantitative or qualitative. The first one gives priority to distribution analysis, repetition, generalization or prediction of

social facts. The second group is focussed on the social actor's 'vision' and in the contextual analysis in which this is developed, focusing on the meaning of social relations (Vela 2001:63). More than being two methodological alternatives, they can also relate to the orientation of the underlying research questions. In this case this will depend on the character of these questions, e.g. whether they are more positivistic or more hermeneutic.

A tool of direct access to social reality is the qualitative interview, a practice which is widely accepted as a way to access to human subjectivity. Within the social sciences, the qualitative interview is accepted as a created situation with the specific goal of making an individual express essential elements of his or her own past and/or present references, as well as his or her future intentions. The qualitative interview is also a technique oriented to defining problems and to elaborate theoretical explanations of the social processes in themselves (Vela 2001:64). In this case, the processes of knowledge construction and theoretical reflection in maritime archaeology.

In sociology, the qualitative research tradition has been largely informed by two approaches accepting in both cases that the particular kind of generated descriptions are not 'preliminary to explanations but are, in themselves adequate scientific explanations' (Silverman 1985:95). In sociology, the qualitative interview is seen as an essential technique in the generation of systematic knowledge of the social world. It is particularly useful to find and understand personal interactions whose intentions and symbols can be hidden. On the other hand, in anthropology, this kind of interview has allowed the systematic recording of implicit or subconscious processes within communities', therefore exploring explanations which may not even be evident for those within the said groups (Vela *op cit*).

Consequently, in a critical study of the theoretical concerns of the research community formed by international maritime archaeologists, this methodological approach was selected as the most suitable and convenient route. It is penetrating, it is based in a sound research tradition, it allows the possibility of being tested and contrasted via the use of methodological triangulation (see below) and it is a tool of discerning topics not openly or explicitly discussed, as is the case with archaeological theory in this area of the discipline.

The prime route of ethnographic research is the interview; therefore a methodology was selected in order to retrieve as much important data as possible in a series of interviews of maritime archaeologists. This core of information, along with the regular modes of academic discussion, in the form of published archaeological reports and books, is used to chart the place of theory and epistemology within maritime archaeology.

Techniques of the qualitative interview and analysis

There are several varieties of qualitative ethnographic interviews, depending on the range of freedom and depth the researcher is aiming at: informal, unstructured (with a clear plan but with minimum control over the interviewed responses and normally applied when there are repetitive meetings with each of the characters, and not based in a set of identical questions), structured (of rigid, defined and direct nature, where the interviewer follows a fixed number of questions with limited answering categories and codes and no new questions can be added to the preconceived list), and semistructured. There are also forms of qualitative interview which do not need to be discussed here, like the therapeutic interview, much used in psychology; the in-depth interview or work with

focus groups (Bernard 2002; O'Reilly 2005; Merton & Kendall 1946; Vela 2001; Silverman 1985).

The technique selected for this study is that of semistructured interviews. These are scheduled, normally open ended, and require a guide or general script which covers a list of topics that can be augmented during the course of the meeting by new questions related to the answers received. They are particularly suitable in projects where the researcher is dealing with elite members of a community, and they help to demonstrate to the interviewed that the researcher is in full control of its study aims, which leads to deeper answers, and also leaves the freedom to follow new leads to both parts of the interview. This allows the exploring of ideas with the participants but without deviating from the core questions (Bernard 2002:203-5; O'Reilly 2005:116).

The interviews were done following an array of small techniques well known in anthropological interviews (Bernard 207-217), like *probing* (stimulate the informant to produce more information), *silent probing* (based only with assertive or questioning facial gestures) *long question probing* (inducing a response with a longer question which guides to more complete answers), and avoiding *leading probes* as much as possible (leading an informant to a possible answer).

Also, a great deal of care was taken in order to establish a good rapport with each of the interviewed. It was attempted, as much as possible, to avoid making them feel they were being judged. They were made aware of the aims of the research, why they were selected, and were given the opportunity to ask any questions. Every interview was recorded with the explicit permission of the interviewees. At certain moments, when reaching particularly delicate topics, the interviewees were asked if those opinions could be used and published.

All the interviews were prepared prior to the meetings, according to the trajectory and publications of each of the scholars. This proved to be of great use as it helped to picture the main achievements and possible conflicts of each colleague. Therefore, it helped to discover the depth to which his or her answers deal with the theoretical milieu of the discipline. Although all the interviewees answered to the same set of main questions, it was usual to add some for that particular meeting, reflecting their personal research interests particularly where these were not common to the profession in general. For example, questions related to ethnography, and particularly methods and theory in ethno-archaeology, were directed only to those who have been immersed in the field of maritime ethnography.

The most important element in the selection of the archaeologists to be interviewed was, rather than having a large number of them, the high potential of these characters for producing information with which it could be possible to picture and understand the development of the theoretical debate and knowledge construction within our community.

The main restriction for reaching the selected archaeologists has been related to travelling budget, as the colleagues to be interviewed are from a large number of nations. Nevertheless, a very opportunistic strategy was developed to be able to visit these scholars. Some interviews were conducted during field seasons to which I was invited to assist and collaborate, other were done during teaching visits, some travelling was were self funded (taken from the subsistence part of my PhD grant), and in one occasion (Texas A&M University) the home institution of the researchers extended an invitation to conduct this study among its staff, covering the travelling expenses. As a result, interviews have been conducted with key colleagues from England, the Netherlands, France, Portugal, Egypt, Turkey, Uruguay, Argentina, Chile, and USA.

The questionnaire was designed following the topics discussed in Manuel Gándara's model for theoretical position analysis in archaeology (Gándara 1992a, 1992b and 1993). In that way, the data retrieved during the interviews is used to understand how our community works in relation to these topics of theory building and knowledge construction. Therefore, the main questions deal with issues designed to establish: what research problems should be considered as important; what kind of knowledge should be produced as a result of the research; the kind of research design that leads a particular project; "what" it is under study; if it is subject of causal laws or not; which are the demarcation and evaluation criteria; etcetera.

Analysis via methodological triangulation

A basic element of ethnographic research is triangulation, as it is at the core of the search for validity of a given study. It is based on testing one source of information against another, in order to strip away alternative explanations. On it, the researcher compares information sources to test the quality of the information in order to 'understand more completely the part an actor plays in the social drama, and ultimately to put the whole situation into perspective' (Fetterman 1998:93). The term *triangulation* comes from an analogy derived from surveying and navigation (Hammersley 1995:231). To find one's position on a map one needs to relate bearings to at least to two different features that can be plotted. Only one bearing will situate the surveyor at an unknown point somewhere on an infinite line. By crossing two bearings, the position is fixed at the point of intersection, therefore allowing the surveyor to relate his or her position on the map.

In this research, in which the main goal is to draw a mental map, a theoretical map of maritime archaeology, the 'bearings' are derived from detailed review of theoretically related publications within the scope of this area, and from the interview data. As well, other important triangulations are exercised via the constant interchange of ideas derived from this research with a group of academics of different but complementary backgrounds. This group is composed mainly by Dr. Jonathan Adams, director of the Centre for Maritime Archaeology at the University of Southampton and supervisor of the present research; Dr. Manuel Gándara, a key figure in Latin American archaeological theory and original author of the model for theoretical position analysis which is used through the study; and Ingris Peláez, Mexican archaeologist and theoretician with a sound experience in qualitative interviews in anthropological environments. And of course, from my own theoretical point of view attempting to create a dialogic discourse between all the characters involved in the study.

To summarize, the methodological steps within this research are:

1. Recollection: Deep and detailed qualitative interviews, based on a semi-structured technique, with a guide; and detailed review and discussion of published material related to the main topic.
2. Analysis: Analytic strategy of methodological triangulation.
3. Interpretation: Individual interpretation from the interviewees' perspectives; interpretation of the detected similarities of the researchers as a group; and subgroups interpretation of those different characteristics identified.
4. Reflexivity: integration of the interpretation of the interviewees' narratives; and the researcher's interpretation from his own theoretical perspective.

Few archaeological questions and many questions on archaeology

What is the critical role of maritime archaeologists towards the need to construct an archaeological theory, the inference justifications, or the adoption of a so-called explicitly scientific methodology? Does the history of our activity provide evidence that, as a community, we care for any of these aims?

Maybe we have not been interested in expressing our own perspectives about it. But then, perhaps we have been stepping on other archaeologists' shoulders. That, of course, would be absolutely legitimate. But I am not quite sure if this is the case. To what extent we have been doing it, and from whose theoretical shoulders we have been looking at maritime archaeological phenomena? Another answer would be just that we have not been very interested in these issues and theory is less than a minor preoccupation amongst us. At a first glance the evidence points towards the latter.

For aims of clarity and because of its consistency, the term "theoretical position", as discussed by Manuel Gándara (Gándara 1980 and 1993), will be thoroughly used to picture how the current practice of the sub-discipline is related to its value, epistemology, ontology, and methodology. The concept of theoretical position can be summarized as the selected working options that a certain scientific community adopts regarding the characteristics of the units that their theories are concerned with; the way in which they define the problems of knowledge and the relationship between consciousness and reality; the way in which they conceive the nature and the goals of scientific practice; the procedures for hypotheses and theory evaluation, the "truth criteria", and the observation and instrumentation protocol, the group of practical procedures for data

collection and handling; as well as the proposed substantive theories for solving problems recognized as known and relevant (Gándara 1980:61).

The situation in maritime archaeology (as it is for all archaeology) is that there are a great number of combinations of perspectives and it is not possible to identify any common position normally adopted by the majority of maritime archaeologists. It is precisely because of this reality that looking to this richness (or chaos) of perspectives is so interesting.

It has been suggested that, for many people, maritime archaeology is still closer to antiquarianism than to an archaeological use of material culture to understand societies, process and human behaviour (Herrera 2001a:267; Flatman 2003:143). That view might be expected among those who are unfamiliar with the many sound works in maritime archaeology, both from the past and from the present. This same perspective has also influenced the general public, easily seduced by the cliché-ridden presentation of science (like Discovery Channel or the National Geographic). Maritime archaeologists cannot be directly blamed for any of the said situations. However, to what extent are we indirectly responsible for this kind of perception, due to poor professional practice or to a lack of interest other than, in reality, antiquarianism under a scientific guise?

Bass' detailed critique of the sociology surrounding the practice of this specialty (Bass 1983) is a good reference. He not only pointed out some of the main issues the field was confronting in the early 1980s, but gave evidence that his approach as a historical particularist was richer than would normally be expect from this perspective.

It is more than hard to find explicit references or statements about how we are dealing with the different options of engaging a particular cognitive objective, a particular kind of knowledge goal. In other words, it is not

clear whether the researchers are seeking for descriptions, explanations, comprehensions, etc. This topic will be thoroughly debated in chapter III.

I am not fond of the historical particularist approach, but I find more use and honesty in a clear statement by a historical particularist saying that he is only looking for a description in order to build a database that might be useful for others in the future, than archaeologists saying they are looking for an explanation when the only evidence their projects and publications offer are plain descriptions lacking any basic theoretical framework or preconceived question. Is pretending to be an "explicit scientific archaeologist" but attempting it without questions and with unclear cognitive objectives, an easy way to become a dilettante, an armchair archaeologist?

It has been repeatedly said that gathering data without theoretical conceptions is still determined by a theoretical viewpoint. The fact is that this lack of theoretical insights while gathering data has theoretical consequences, although not theoretical standpoints. From a Kuhnian perspective this situation will be undoubtedly characterized as a pre-scientific stage.

It could initially be considered that maritime archaeology should not be taken as an option for particular theoretical constructions in archaeology, as this could raise a conceptual wall dividing it from the rest of the discipline. In other words, that this could create the false impression that by constructing its own theoretical frameworks, maritime archaeology could be considered as something different to general archaeology. Furthermore, this could suggest that general principles of many theories already commonly applied in archaeology do not fit its maritime branch and this one needs its own perspectives.

However, the aim of theoretical constructions and applications should be different to that standpoint. If archaeology is interested in human behaviour, actions and processes, and maritime archaeology studies those phenomena in societies with maritime competence, two not mutually exclusive scenarios appear. On the one hand, we are in the presence of universal elements of the human condition. On the other, we are also dealing with specific forms of conduct present only in the particular spectrum of maritime activities.

The expression of those phenomena can reflect general principles of human behaviour, such as ways to confront danger, fear, exploration, subsistence, duty, etcetera, but they depend on the distinctive context of maritime affairs. Here then, one scenario is how we apply those general principles to maritime societies. Another is how we design theoretical constructions which specifically target the distinctive contexts of maritime societies (see for example Rönnby 2007).

The ontological drivers of maritime archaeology are fundamentally the same as for archaeology in general. Even if we develop explicitly theoretical perspectives for investigating maritime aspects of the human condition, those cannot therefore be contradictory with non maritime aspects of the human past either. Consequently, maritime archaeology should not be shy in trying to develop its own theoretical perspectives. At the same time, when applying theoretical constructions designed without maritime scenarios in mind, we just need to be critical of how those applications will or will not conform to the circumstances of dealing with human pasts associated with marine environments.

Maritime Archaeology should not be indifferent to theoretical movements and should also make itself responsible for failures regarding its lack of critical rigour in knowledge construction when it happens. In this sense, I

agree with a perspective Marvin Harris was taking while considering the development of anthropology; as each piece of research should not be judged only by the goals it has reached, but also by those it has failed to achieve (Harris 1999: 5).

In order to understand why we are doing research in certain ways, and determine if it is the most convenient way to reach knowledge or not, we need to generate a historical critique on how we have been working for the last 30 or 40 years. Without this we cannot see if the ladder is missing the rungs necessary to climb higher or if we are just hanging in the same place.

Traditional archaeology has been working for decades with terms such as *phase*, *period,* or *locality*. Many of these concepts, although challenged by the New Archaeology are still in common use. Are we saying something about how we should think regarding these terms in relation to small temporal societies with highly mobile capacities? Say the crew of a sailing ship? This at least should bring in a huge amount of other related questions. We should not take for granted that maritime societies can be adequately described by the same terms we use for inland groups.

Maritime societies have their very peculiar characteristics and if we are going to study them using theoretical perspectives that were never developed with the maritime in mind, we may encounter problems. We should open a debate about the usefulness of those terms to adequately describe or explain the operational meanings of those societies. We should at least not use the same terminology without due reflection. We may use some terms in the same way, but this should only be done after we establish that they convey our intended meanings. This is not a minor issue, and should not be left to the vagaries of an erratic semantic. It has cognitive and ontological implications.

Take for a moment a working definition developed and widely used by archaeologists, such as "locality", defined by Willey and Phillips (1958: 18) as "a geographical space small enough to permit the working assumption of complete cultural homogeneity at any given time". Well..., 16th century exploration seafaring seems to be far away from that definition.

Here we can invoke Larry Murphy's double approach to the study of submerged cultural resources in a region, one from a cultural perspective, the other one geographic (Murphy 1998). It is very easy to find an example that incorporates both: any Iberian colonial region between the 16th to 18th centuries. This gives us as a first working area, just as an example, that of the American coast from Florida to the Patagonia. A more constrained example now, a piece of seabed in the Gulf of Mexico, in the Bay of Campeche. Maritime, commercial and transportation activities, as well as fishing and provisioning of the garrisons in the region's keys, have left a massive group of maritime related archaeological remains there (Herrera 2001:294). Both on land, isles and in the sea bed we have there a collection of sites which represents not only Mexican or New Spain's cultural heritage, but from many other nations sailing in that area. There, we have this "small" space "enough to permit the working assumption of complete cultural homogeneity at any given time". The only conflict is that it has just the size of any sailing waters inside the limits of the Spanish empire, from XVI century onwards.

I am not as optimistic as Joe Flatman when he says that "theory *is* used in maritime archaeology: any refutation of this fact is implicitly theoretical in itself" (Flatman 2003:143). My view is rather that theory is *somewhat* used in maritime archaeology. It is used by some, it is denied by several, and it is undervalued by most. That is why in more than 40 years we are still able to count the books regarding the relation between maritime archaeology and theory with the fingers of one hand. These list would

comprise: Muckelroy's *Maritime Archaeology* (1978), Gould's (ed) *Shipwreck Anthropology* (1983), Gould's *Archaeology and the Social History of Ships* (2000), Adams' *Ships Innovation and Social Change* (2003), Babits and Van Tilburg's (eds) *Maritime Archaeology* (1988). But, If we are hyper critical, the Babits and Van Tilburg's contribution, though a very useful compilation of some important articles, is only reprinting previously known works. If we adopt this perspective, we could be tempted to say that books projected as original contributions are only the first four, although there are a few contenders in other languages, e.g. Rönnby 1995.

I do agree with Flatman that my refutation implies theory, explicitly. In the same publication, he makes an accurate portrait of some of the main issues obstructing the theoretical development of the sub-discipline: "The 'problem' is subsequently a subjective one, in many ways explained by the unique historical and demographic circumstances of maritime archaeology (often avocational in character and focused more on the methodological advances necessary to allow successful fieldwork [sic] underwater than on theoretical critique), by people involved within maritime archaeology (often working outside academia and its long-running theoretical debates, or else relatively junior position), and by the numbers of individuals concerned (still tiny in comparison to land archaeology)" (Flatman *op cit*:143-4).

Due to its own historical development, depending in a sensitive manner on the development and mainly on the adaptation of field techniques to the underwater environment, lots of discussions have focused on the technological aspects of the practice, leaving aside the theoretical requirements involved. Some radical field work supporter could argue, as I have heard on more than one occasion, that it is important to have the data retrieved, and that theory can wait for the moment of lab analysis, as it is not needed during the work on the sites. Or, as I was told by a well known archaeologist when I was working in Mexico, that the theoretical

theoretical debate and development. Can we take all the discussions on site formation processes and bring them directly into a set of shipwreck sites? No, we cannot, unless they are carefully adapted to the marine environment and to the particular types of sites we work on; two conditions that together create a very different array of processes. Of course many advances have been made in this area (Muckelroy 1978; Murphy 1989; Murphy and Johnson 1993a; Oxley 1984 and 1990; Ferrari and Adams, 1990; Quinn *et al*, 1997), although it could not be said it is a solved issue. Can we take directly the concept of abandonment and its peculiarities in the process of passing from a systemic to an archaeological context? No, we cannot use it directly as conducts and times are rather different to those operating in the mainland, we need to organize our own perspectives in maritime societies. The concept still works, of course, but it is necessary to analyze how these processes operate within the type of events we normally look at, being for maritime casualties or for submerged or intertidal landscapes. Can we use the terms and structure of the so called site pattern archaeology and apply them directly? Yes, we could, but first it is necessary to create the conditions to comprehend the existence of maritime regional contexts and of the reasons for nautical accidents within that regional wholeness (as we will see later in chapter VI). Can we take elements of the New Archaeology programme like viewing culture as a system, accepting a relationship between artefacts and the cultural subsystems they come from? Or the distinctions regarding technomic, socio-technic and ideo-technic artifacts? Yes, we can, but first we need to identify which elements of our particular assemblages correspond to the proper function in the particular part of a system we are researching. Not because of working with submerged or tidal contexts, but because we are dealing with very complex mixing and interdependence between a mother culture and the unique peculiarities of the onboard society, and to be able to identify, should we wish to, which elements of our archaeological assemblages corresponds to those categories, we need to clarify first how

those subsystems should operate in a seafaring community.

As well, trying to make a direct use of a symbolic approach to the relationships between material culture and society in terms of the maritime world can indeed work, but there was a need for a deep and clear introspection of how this relation is sustained. The efforts related to the concept of ship as symbol (Kobyliński 1995; Lincoln 1995; Westerdahl 1995; Adams 2003), taking into consideration not only the ship as a piece of material culture, but also incorporating the variety of aspects possible to tackle, has been worthwhile and indeed productive, as we see later in chapter VII. But this came after an exercise of serious and profound theoretical consideration.

Similar theoretical problems and many more need to be carefully analyzed by the particular circumstance of studying the waterfront and seafaring culturally. Many have been reviewed; others are just in the process, as we will discuss both of these cases in detail in later chapters. But we should not deny the particular theoretical necessities of our labour. Indeed we do practice archaeology as professionally as anyone, but it is not "just" archaeology.

In that light, the concept of underwater archaeology adds nothing to any attempt to understand, explicate or comprehend human nature. It tells nothing about relations between the social and ideological spectrums we can approach by properly analyzing an archaeological assemblage and its context. To continue accepting a non-critical use of the term will only perpetrate a tradition that better suits the love of the catwalk than directing archaeology to any synthesis of the maritime aspects of culture.

Anyway, it is necessary to review the justification so far used for the term "underwater archaeology", which is more than anything a matter of

protecting the archaeological resources. "Underwater" is an umbrella term for a number of site types that could be under various potential threats. On the other hand, the use of a concept with so many limitations in the long term is still problematic because not even our colleagues understand what we are doing. So, how can any national institution related to heritage protection effectively protect the sites if they cannot understand what we are doing?

While the term carries meaning for people within our field who use it, it can never have currency within archaeology to define practice, because it remains a descriptive term rather than a theoretical one. It is a term built upon many disadvantages.

We could also see it in the same way as Argentine Damián Vainstub, as he makes the critique that he does not like even to assign a term for the work, as any adopted name could settle for limiting biases. Therefore he firmly states it is neither underwater nor maritime, because "if it is maritime then do I have nothing to do in a river? And on the other hand, if underwater, if you have a dockyard 300 meters from the coast, then do you have nothing to do with it?" (Vainstub pers com, 2003) But in the way in which we use it today, the term maritime archaeology does include rivers because they are interconnected with the sea and are part of the integrated and surrounding aggregate of conditions we can describe as maritime in an environmental, cultural and cognitive way. And it does as well include coastal sites of great varieties, such as prehistoric settlements, and ports and harbours from any period, as we will see in detail in forthcoming chapters. Those functional distinctions and objections against the term *maritime* are less important than the theoretical demurs to the term *underwater archaeology*.

The good thing of recent outcomes in terminology, is that the power of terms like *maritorium, regional maritime contexts* and *maritime cultural landscapes* (discussed in chapter VI) can help to address these conflicts as well, because it is then possible to take this riverine archaeology within the same path, and not only as part of a maritime landscape (which is already an advantage), but also of a cognitive landscape. This is one of the reasons for which I believe that the word *maritorium* also finishes very elegantly any theoretical clash between the words landscape and seascape, as it stands for the unification of an environment within a cultural and cognitive stand point.

Integrating interior waters to the scope of maritime archaeology is not insubstantial if the orientation of research goes in the same direction. Take for example Lucy Blue's works in Lake Mariotis, as much as she can acknowledge her interest in rivers and lakes, it comes back to the interested in the broader landscape and broader interpretations. In that sense the maritime encompasses the most and is the least imprecise of the definitions (Blue pers. comm., 2007). If the society living by the lake had a similar subsistence to a society in a river or sea and ideological links to the water front it should be tagged as maritime, e.g. Bulverket on Gotland (Rönnby 1995). It can be argued that before actually investigating such sites it is not possible to say the link was similar, but the investigative approach must anticipate that.

Another example can be similarly clarifying. In the project "Process and Origins of the Maritime Settlements of the Patagonic Channels: Chiloé and the Septentrional Core" directed by Carlos Ocampo in the Chiloé archipelago, Chilean Patagonia, the interest was focused, among many objectives, in detecting and understanding the adaptation processes of some of the earliest settlements in South America to the landscape, together with technologies and subsistence strategies. The project was also

interested in understanding if the process happened as a transition from terrestrial to maritime hunters after a period of adaptation to the coastal environment, or if it happened via groups already adapted to maritime ways within a period of acclimatization to those conditions. Because of sea level changes, between Late Pleistocene / Early Holocene and today, a significant number of sites are expected to be inundated (Ocampo 2002). Therefore, the Project was clearly maritime and it was driven from this perspective. But according to the idea of 'underwater archaeology' it should have had several contradictions, because we were carrying out research within the same maritime societies, but several sites were on land, so were they going to be a matter only for land archaeologists, and the submerged sites an exclusive concern of the "underwater" ones? Of course this sounds ridiculous. Even the most radical underwater archaeologist would (or should) attempt to address both spectrums of the problem, but then he or she would be doing maritime archaeology, as he or she would be focusing on a cultural problem, not on the environment in which the remains lie today.

CHAPTER II

THE (RE)CONSTRUCTION OF A FIELD

The founding ideas

This work aims to provide a rigorous analysis of the various approaches and reflexive resources that could be described as the assemblage that is maritime archaeology, i.e., its methodological common property and its theoretical character. This is not a history of underwater excavations, this is a history of ideas in maritime archaeology, the milestones it has passed and the position(s) it has got to nowadays.

Therefore, it is related with the connections, links and conflicts among several aspects of archaeological theory, epistemology (understanding it as the branch of philosophy which studies the character, scope and justification of knowledge), methodology, and the values implied in research. This volume expects to depict a coherent image of the development and use of archaeology when it studies maritime societies.

Hence, I found it both necessary and interesting to attempt to see how the sub-discipline deals with working options regarding epistemology, ontology and methodology. Inconsistencies will appear and conflicts and contradictions will arise. Therefore, it is also necessary to examine maritime archaeology by trying to understand the mechanism of its internal structures regarding how knowledge is perceived and constructed. The inconsistencies and confusions might be from two different origins,

either the lack of a real link between theory and practice, or misinterpretations in the use of any of them.

It could be said that any given project will have some sort of methodology. We need to understand here that we are speaking about archaeological and reasoning methodologies. Consequently, for example, a project serving aims that are antiquarian in nature, rather than less object-oriented research goals, is considered to have an absence of methodological insight in the context of modern archaeology. Nevertheless, such kinds of projects are real and comprise part of what the community is or has been doing, and as such need to be subjected to scrutiny.

I am not just interested in the fact that at first sight there is a lack of theoretical awareness among us. I am even more interested in the meaning of this reality. Why has it been like that? I am interested in the general approach to broad spectrum questions in epistemology and how they are assimilated into our field. These last are of course key issues not for maritime archaeology alone. They are relevant to all archaeological theory, and are deeply rooted in the tradition of humanist thinking. Those debates would have transcendent influence in the subsequent development of general anthropology. They also have been part of the intense theoretical debate in archaeology over the last four decades. It is very interesting to find out what we are thinking about, and if we are expressing it in some explicit way. 'But', the reader is already wondering, 'has not this been done before?' In some ways yes, but I would argue that it has been done in a rather piecemeal way. Even though maritime archaeology has developed particularly fast in the last ten years I would point to the enormous disparity in the ways in which it is conceptualised and practised in different regions. Certainly all archaeology is characterised by regional difference, an example being the difference in theoretical colour between American and European countries, but the difference across the spectrum

of *maritime archaeologies* is still far wider. My premise is that this is because we as a community have yet to expend as much energy on theory as we have on our field techniques. The starting point for this dissertation (see preface) is that I, as a maritime archaeologist engaged in building the discipline in a Latin American context, have found it difficult to simply adopt what maritime archaeology is or is becoming elsewhere. To use a computer analogy, I find the product is at a 'beta' stage of development. The programme has enormous potential but still crashes occasionally, ethically, theoretically and so professionally. This volume is therefore a contribution to 'recoding' maritime archaeology, in the process creating a manifesto for Latin American maritime archaeology.

It is true that history of science and philosophy of science are different matters. However, they are so deeply related that it would be a fundamental mistake to try to understand or practice one without at least a minimum knowledge of the other. It is the same for understanding development and reasoning in archaeology. It is necessary to state the need for using elements of philosophy of science, mainly those of epistemology, to understand how maritime archaeology elaborates its questions and seeks its answers. In doing so, we need to visit its main actors and what they have been achieving.

The development of any given research field mirrors ways to appreciate reality by the time the study is underway. As epistemology explores the character, scope and rationalization of knowledge, it is fair to say that it also has an important role in contouring our archaeological reality. In addition, as the central interest of ontology is how the reality under study is, we need to understand which the research reality of maritime archaeology is. If we transform this into a question, this would be: 'what is there to know about the maritime past of humanity and about the past of maritime aspects of culture?'

Who, what, where, why, when?: A sketch of maritime / nautical archaeology

I am not attempting to write a history of maritime archaeology. That would be a very different project. Nor will I follow an imperative chronological presentation, as ideas do not come and go necessarily in a clear and straight timeline. There are a number, though limited, of works that offer some light about the history and development of the discipline from various angles (Goggin 1960; du Plat Taylor 1965; Bass 1966 and 1988; Wilkes 1971; Cleator 1973; Basch 1972; Greenhill 1976 and 1995; Throckmorton, 1969 and 1973; Bascom 1976; Muckelroy 1978 and 1980; Lenihan 1983; Blot 1986; Gould 2000; Adams 2003; Flatman 2003), or even from a regional perspective, such as the volumes dedicated to Britain (Marsden 1997), Australia (Henderson 1986; Staniforth & Hyde 2001), and Scotland (Martin 1998). What is really interesting for the aims of this particular research is not what those pieces of work said about "when", "where", "who" and "what". What is tempting are the different intellectual contexts in which those works were written. Some of them are masterpieces of their time; some others are a catalogue of good intentions and recommendations. Others are practical manuals describing how to undertake some aspect of field work. They are the summary of needs, aims and concerns at a given moment of the development of our research interests. What was a fertile area for one author is futile to others.

Subject-matters and academic quality in those works are highly variable. Some rely more on a descriptive historical account of projects and good pictures rather than archaeological detail (Blot 1996); others give an account of the historical grounding of naval construction needed to ignite the interest in maritime archaeology (Basch 1972); while others like Cleator (1973) make the history of diving one of the centres of attention.

That at the start the preoccupation for some authors was centred more than anything in accessing the environment is pictured in the foreword of the book *Underwater Archaeology, A nascent Discipline*, edited by UNESCO in 1973; as the anonymous writer(s) of the foreword stated:

> It is of foremost importance to enable research workers to make the necessary adjustment to the physical and climatic conditions of the aquatic environment, so that they may work in deep water and devote themselves in perfect safety to the requirements of their research.
> Accordingly, the first goal in underwater archaeology is to ensure proper training for highly skilled personnel. (UNESCO 1973:17)

With time, that initial stress in the prime objectives of the work has drifted from the practicalities of diving to the necessities of archaeological reasoning. The initial enthusiasm of being able to send archaeologists to the bottom of the sea, rivers and lakes was later transferred to creating a group of interesting and varied research problems. Cleator's work is a good example of how priorities change over time. Nowadays, we should expect that a book on maritime archaeology explaining diving with that detail would be a rarity, an odd rarity. But maybe I am overplaying this optimism, because in their book *Maritime Archaeology: A Reader of Substantive and Theoretical Contributions*, Babits and Van Tilburg (1998) reproduced a chapter of the US Navy diving manual, in a volume that says it is beyond a 'how to do it manual'. Not only that, in spite of the title, their volume also reproduces three articles on nil visibility diving! It seems that for Cleator, archaeological methods and theory were the rarity, but have we changed so much since then? Some published evidence categorically says we have not.

The technical aspects of the field are deeply rooted in the general advances

in other areas, and they go almost hand in hand with these elements, such as the development of the SCUBA, Bass' use of underwater telephones and stereo photogrammetry (Bass 1966), the use of magnetometry for locating sites (Arnold 1981) and its subsequent more sophisticated use for archaeology (Murphy and Saltus 1990, Herrera 2001), etcetera. The advances in the techniques that have been adopted, used and improved are not under discussion here. The question is whether while using them, those scholars were attempting to solve a research question, if they were pointing towards the solution of some social problem from the past, if they were solely concentrated in building databases, or if they were following an uncritical working routine.

On the other hand, the development of maritime archaeology has coincided with an extremely fertile and vivid environment for debating archaeological theory. The time in which real archaeologists started to go underwater coincides with Binford's "New Perspectives in Archaeology" (Binford & Binford 1968), Clarke's "Loss of Innocence" (Clarke 1973), etcetera. It was a time where discussions regarding philosophy of science were introduced into archaeology. An extremely significant fact was the adoption in archaeology of the model of scientific explanation generated by Hempel and Oppenheim (1948) and later developed by Hempel (1965); introduced in archaeology just at the time when neo-positivism was in decline. The great theoretical debates that followed in the next decades, drawing the mental maps with which most influential archaeology has been exercised since, happened when new ways and adapted procedures of excavation underwater were developed, as well as the use of geophysics and electronics for archaeology in marine environments. A key piece of the present research is to see how these two exciting contexts in archaeology worked together, which were the results of stressing the "methodological reasoning" in general archaeology in a time where "methodological practicality" was the initial goal for the maritime counterpart.

Not 'more' than archaeology but not 'just' archaeology

Although maritime archaeology did not appear as a separate sub-discipline, independent of pre-existing theoretical paradigms, its development could not be characterized as methodical (Fontenoy 1998:48, orig.1994). There are a number of definitions for naval, maritime, marine, submarine, underwater and nautical archaeology, and also for archaeology underwater, and other composed terms, like shipwreck archaeology and shipwreck anthropology. For now, let us start with an account of these definitions and the scopes they try to cover.

John M. Goggin (1960:350) defined underwater archaeology as "the recovery and interpretation of human remains and cultural materials of the past from underwater by *archaeologists*". He stressed the importance of the one carrying out such work being a trained archaeologist, and not amateur or professional divers, as by that time the understanding of the need for proper archaeological work underwater was not fully appreciated. He also underscored the fact that underwater sites are somewhat different to those on land, and characterized them as: refuse sites; submerged sites of former human occupation; shrines or places of offerings and interments; and shipwrecks. Nevertheless, as others were going to do later, his perspective and distinctions were based more on environmental conditions than in human behaviour and the meanings associated to the material. Frédérick Dumas also advanced his own classification of sites and what he understood as 'submarine archaeology' by defining it as the "study of ancient wrecks, ports, submerged towns and other offshore sites marked by scattered pottery and anchors" (Dumas 1962:1).

The claim of archaeology under water being just archaeology was underscored by George Bass (1966) at a time when the justification for

such work was badly needed and the respect from our colleagues on land was still a long way off. Therefore, in such a context it was necessary to establish the relationship of work carried out underwater to the wider archaeological discipline. Nevertheless, years passed and new and seductive research interests have been addressed. Maritime archaeology, as much as being part of the whole craft of archaeology, has particular elements encouraging the idea that it is not "just" archaeology. These elements are related to the problems of cultural and social research and not to the environment where we find the sites. There is no need to keep that initial determination to justify the work carried on beneath the water. That early surrounding context for the sub-discipline has changed. Today we can see it as more holistic field of research, an area for intellectual enterprises walking more freely in the world of ideas about maritime cultures than constrained by diving and technical challenges. Although there is still some remaining hostility to confront (particularly in some Latin American countries), but the panorama is not discouraging at all.

Proof of the depth of some of the lax characterizations of the field is a distinction between 'archaeology of ships' and 'marine archaeology', elaborated by Peter Throckmorton as early as 1971. He stated that the first one starts with the Bronze Age and ends with the schooners (Throckmorton 1973:494). When Throckmorton was asked by D. J. Lyon, from the Greenwich National Maritime Museum, if the ship archaeologist's task would end with the great period of sailing ships, he then gave a little more of his insights about the issue stating that "ship archaeology means learning about sailing ships and how to sail them, and therefore it ends with the iron ship at the end of the nineteenth century. After that time the subject should be referred as to the history of technology and not archaeology. There is very little possibility of learning anything from later ships about the long nautical traditions of the past" (*op cit*:519).

We can wonder what Throckmorton would think today, if he was still alive, about the projects done on wrecks such as the *Monitor*, the *Hunley*, or the *Arizona*. Indeed those researches will not throw light on constructive traditions of the Classic Mediterranean vessels, but they can and do generate a lot of information about their own time at any level of construction and performance and which is in some ways relevant for any given period. And moreover, the great deal of information to be gained from such sites relating to human maritime enterprises, warfare, behaviour in risk situations and the social implications of the crews regarding their own historical context, all need to be taken into account. Anyhow, he was interested in 'ships and how to sail them'. That is, the subject and how to use it. Some years were still needed to find a more general concern about explicit interests in culture, behaviour and people.

Another early piece of writing putting forward a description of the craft came from Lucien Basch (1972) in the opening article of the very first issue of the *International Journal of Nautical Archaeology and Underwater Exploration*. In that seminal volume he addressed the term 'naval archaeology' as the study of ancient wrecks, underscoring three facets of it: a) being different to the popularized image of amphora hunter divers; b) the verity of naval archaeology being the domain of professionals, although not always specialists; and c) that naval and underwater archaeologies are not synonymous. He stated that naval pre-dates underwater "to the most singular degree: since ancient ships have been reconstructed from literary evidence many years before the recovery of a single wreck from the seabed" (*op cit*: 1). His distinction was grounded basically in the different possibilities of excavation of ancient ships that were not conducted underwater, but just in *wet* conditions, such as those from Lake Nemi and Pantano Longarini; or in land contexts, like those of Marseilles and Portus, as much as ancient ships have been preserved on land as well in Egypt. And many sites have been discovered on land since Basch's article that

could add to his point.

Although at a certain level Throckmorton and Basch were close in their interest regarding ancient ships, the first one concentrated in shipbuilding and the second on its possibilities to elaborate reconstructions, Basch's approach was deeper. His interests went beyond the limitations of the ship as an artefact. He gave importance to elements of what we understand today as encompassed by the broader concept of maritime archaeology, such as the history of technology, the history of harbours, the exploration of former land sites now submerged, the study of ancient anchors, the history of international trade, and even the history of art. Basch was also interested in the use of various forms of documentary sources and their contributions to naval archaeology, primarily iconography and written sources. It is interesting that these sources have not been fully seized on as relevant options even today, as it is common to see them used for supporting inferences rather that to contrast and search alternative and complementary answers to specific problems. Particularly in the case of archival documentation its use has been largely devoted to wreck searches and to wreck identification. A rare exception was the Amsterdam project in which this sort of dual investigation was part of the research design (Gawronski 1986, Adams 2002).

However, Basch might have overvalued the use of these sources, not in the sense of its significance to archaeology, but as devoting the character of "archaeology" to works solely dependant on their use. That was the case of the French Ambassador to the Serene Republic, Lazarus de Baïf, who in 1536 published *Annotationes in L. II de captives et postliminio reverses, in quibus tractatur de re navali*, a treatise on Greek and Roman ships which Basch considered as the first book on naval archaeology (Basch *op cit*:2-3). De Baïf based his works in texts of classical authors and iconography he could have had access to in Venice.

Therefore, as much as Basch was anticipating a broader view of the subject, he was being too lenient in accepting the existence of a naval archaeology treatise in a work of archaeological interest, but with no archaeological insights or methods in a time when archaeology did not yet exist. Nevertheless, let us not diminish his wide-ranging perspectives as he was well in advance in a time when the general emphasis was more constrained to ancient ship architecture.

It is indisputable that one of the major contributors to the creation of a theoretical framework in maritime archaeology was the late Keith Muckelroy. With him, it is necessary to remain speaking in the present even though his death occurred almost thirty years ago, given the influence his ideas still have today. Muckelroy's definition of maritime archaeology as 'the scientific study of the material remains of man and his activities at sea' (Muckelroy 1978:4), is in concept and application much broader than what this sentence states by itself. On the track of Mortimer Wheeler's statement about the craft of the archaeologist, who digs up not things, but people (Wheeler 1954:13), Muckelroy emphasized the fact that our work is about the study of humans, and not of ships, cargoes or fittings. His approach incorporated broad aspects of maritime culture, like social, economic, political and religious angles, 'and not only technical matters' (Muckelroy *ibid*). It is regarding the study of technology where he came with a second strong definition, in this case for *nautical archaeology*, conceived as:

> the specialized study of maritime technology —in other words, ships, boats and other craft, together with the ancillary equipment necessary to operate them. It is thus a speciality within maritime archaeology, in just the same way as the study of town houses can be regarded as a specialty within urban archaeology. (*ibid*)

Muckelroy emphasized an idea not discussed by his predecessors (and still underestimated or ignored by some, even today): the importance of understanding archaeological research as a problem-oriented trade. He also showed an interesting difference with some of the previous researches who pointed out statements on the meaning of maritime archaeology: the fact that he did not enclose the definition within a particular time limit. Nonetheless, as it will be discussed in the following chapter, he constructed limits within the scope of value of historical archaeology and maritime archaeology.

It is also necessary to consider his perspective regarding coastal communities and their archaeological remains, an area that he argued was not central to the sub-discipline. For him, "concern with coastal communities which derive their livelihoods predominantly from the sea is excluded here since, being primarily terrestrial settlements, they will be more closely related to surrounding communities in their material culture, and will display their maritime connections only marginally" (*op cit*:6). However, in the light of current theory and practice this particular viewpoint is no longer considered accurate, as it will be seen by several examples through the following chapters.

For Seán McGrail there are two focal points for maritime archaeology: the boat and the waterfront. The first one is the study of the building and operation of water transport; a facet that for him could have been recent in the late eighties, the only aspect of "what has been variously called nautical, marine or naval archaeology" (McGrail 1998, orig., 1987:1). But this technological perspective in isolation from other relevant features, like the "study of their use, their geomorphological, climatic and economic environments, and without some consideration of the land-based facilities they require, can easily become overspecialized" (*ibid*). He then situates maritime archaeology in relation to the nautical one:

> Maritime Archaeology is more wide-ranging than Nautical archaeology, but it contains a more natural grouping of topics, internally cohesive and well differentiated at its interface with other research areas, yet sufficient overlap of interest to ensure some creative conflict and interchange. It may be defined in general terms as the study of man's use of all types of waterways – lakes, rivers and seas (*ibid*).

McGrail's second focal point for maritime archaeology is waterfronts. Earlier (1984b:11) McGrail, stated his concern about the possible limitations of the term 'maritime' which strictly speaking would be adequate only if the study was restricted to the sea and seafaring. However, as he points out, the embracing of matters related to inland waterways could give a better internal cohesion and a sufficient differentiation at the margins, in order to develop an "homogenous aspect or theme of Man's life: his interaction with, and use of the waterways of the world" (*op cit*:12). Accepting the limitations of terminology to describe all the activities to be researched, he endorses to 'maritime archaeology' as being the "least inadequate description" (*ibid*).

Maybe one of the few weak points of McGrail's early perspective is that this vision is too oriented to the history of water transport, and does not put enough attention to the many other subjects associated with it, and with its consequences. Those issues he left aside are of prime archaeological, historical and anthropological interest and complete options for maritime archaeological studies, such as religion, power relationships both at institutional and at individual level, health and disease, war, death, burials and mourning, etcetera. Examples of these and many other themes associated to water transport and the waterfront will be visited and analyzed later in this volume.

To a certain extent, it seems his position was more focused in the study of water transport, understanding the boat as an artefact worthy of deep interest for archaeology, but giving little attention to the rest of material culture associated to navigation that did not constitute any of the processes of the boat as an artefact (construction, use, re-use, discard, loss, etcetera). That view might be of prime utility for prehistoric remains, where material associated with the boat is scarce, or for later sites with similar conditions of paucity of other archaeological assemblages. However, it might be limited for sites where the boat-artefact is accompanied by a large set of other objects with no direct relation to the vessels' construction and use. Nevertheless, he draws attention to broaden the research to navigation, seamanship, building sites, landing places and the rest of his scheme for maritime archaeology, such as cargo, equipment, operation and performance.

The research interests of McGrail and the traditional senior old guard of nautical archaeology were, although self limited (in the sense of their focus on boat technology rather than the boats as social elements), a major step forward within the context of archaeology at that time. This generation was composed of people such as Greenhill in Britain, Cederlund in Sweden, Christensen in Norway, Crumlin-Pedersen in Denmark, and Bass in the USA. In a period when the boat was conspicuously absent in mainstream archaeology, they started to promote the boat and ship to the top of the intellectual field of their time, attempting to inject maritime questions into historic and archaeological agendas. So it could be argued that they were leaving aside the associated social elements not because of a lack of interest in them, but because in the research context of their day there were many foundations to be laid before these could be addressed.

This debate has had its discussions also in Latin America, where most of

us prefer the use of the term 'maritime' to encompass wide anthropological problem oriented archaeological research regarding maritime societies (Herrera 2001a; Chapanoff pers. comm., 2002; Carabias pers. comm., 2002; Cordero pers. comm., 2002; Buffa pers. comm., 2003; Argüeso pers. comm., 2003, Elkin pers. comm., 2003). However, the word 'underwater' has traditionally been used in more institutional situations mainly in Mexico and Argentina. But there are also concerns about the possible self-limitation of the definitions. We can recall Argentine Damián Vainstub, who we have cited before, in terms of his objections to the maritime term because strictly speaking it does not cover rivers or dockyards. In such a case, a 'McGrailian' approach to the waterfront could resolve these conflicts. Furthermore, such a limitation has been minimized, as current maritime archaeology includes the elements Vainstub felt to be lacking. Several examples of contemporary research will demonstrate it in later chapters.

The fulfilment is even more complete following McGrail's later more inclusive description, as he has reoriented the emphasis of his definition. He incorporated in his conception of maritime archaeology not only the study of the waterfront, but of the 'nature and past behaviour of Man in his use of those especial environments associated with lakes, rivers and sea' (McGrail 1989:10); including "the study of landing places and harbours, as well as the study of the building, use, and performance of rafts, boats and ships" (McGrail 2001:1) and also "anchors and fishing gear, overseas colonizations and trade routes; trade and cargo handling; changes in past climates, sea levels and coast lines; and navigational techniques" (McGrail 1995:329). Therefore, we could speak about a first and a second McGrail. The first one was interested in laying the foundations of systematic study of boats and water front, and the second expanded his scope of interest to more general questions related to maritime culture as a wider perspective. He does accept this change of

perspective, acknowledging those two phases in his viewpoints (McGrail pers. comm., 2007).

In Sweden 'marine archaeology' is the favourite term. Even if quite obviously the work they do is what it is called maritime in other places, and it is related as well to rivers, lakes, and coastal settlements, that are not necessarily underwater. It also technically includes elements that are not marine. So there are cultural preferences to the terms we build up. The semiotic aspect of any word carries a message, and the word becomes a sort of label in itself and becomes a symbol. And this symbolism can be quite powerful in terms of sociology of science, such as the use of words like 'positivist', 'inductive', 'traditional', or the term 'new archaeology'. All of these concepts are often used more broadly than their concrete meaning and can be used in rather confusing and inappropriate ways. That is also why it is so important to clarify the content of the words we use to describe our trade. Paraphrasing Argentine writer Julio Cortázar, use the words but be careful, beware and do not drop them.

An attempt of a mediating perspective was offered by Graeme Henderson in his *Maritime Archaeology in Australia* (1986:5), where he stated his interest in any archaeological site underwater, whether or not maritime, and all maritime archaeological sites, whether or not underwater. But this perspective does not solve the conflict at all, it only tries to escape from it. Also, such an approach is not focused in any research problem or group of them, let alone theoretical problems.

The paradox in here is that maybe it is not that important to establish a fixed and rigid terminology to face our research, but the careful development of means by which we can research the cultural differences through time and the motivations impelling them. However, if the scope for research is not clear it will be difficult to build the most constructive paths

for any research. It is important to avoid petrifying classifications that would lead us to unsatisfactory research categories; but we should not allow ourselves to avoid the need of clearly specifying the scope of our research. In doing so we would be hoisting a surrendering flag for clarity. I suggest we should not impose a limitation to the term "maritime" believing that anything not directly related to the sea is a conflict. The best way to see it is to read "maritime" as *the maritime aspects of culture*, rather than as remains which happen to be *in a marine environment.*

Maritime archaeology claims to have or at least to desire an interdisciplinary (Throckmorton 1973:515, Lenihan 1983:64) or multidisciplinary approach to research (McGrail 1984:16). It is difficult to be multidisciplinary if the questions and aims are not clear. Also we need to note that multidiscipline, interdiscipline and the more radical transdiscipline approaches are not the same and they respond to different ways of creating questions and of course rather different ways to answer them. Therefore, to state that maritime archaeology operates under any of these possibilities entails methodological differences and implications, from research design to field work, to analysis.

A clear and helpful description was given by the editors of the so popularly called "NAS Guide", as for them archaeology underwater covers both the interest in ships and waterfront as well as submerged settlement sites and other areas of underwater environment. They also made reference to the fact that the scientific standards should be no less stringent than those applied in archaeology on land, and those working underwater should be familiar to the other areas of archaeological research (Dean *et al* 1992:20). Nevertheless their work, being a comprehensive account for techniques, is limited to being a practical manual, underscoring many important matters of the field work. Therefore archaeology underwater is related to the practicalities of archaeological field techniques and must be applied in a

coherent and strict way, but it is not related to the subject of study or to the questions. It is related to how to retrieve data, but not to how we will use it to answer those questions and the nature of them, or to why we choose to retrieve that particular conglomerate of data. It is a technique.

A contextual aspect must be clarified here regarding the said restrictions of the NAS Guide. It is a publication at least partly directed to its membership, not only to the professional archaeologist but to those known as amateurs or avocationals. There are members of this community who have gained 10 or 20 years of experience of fieldwork, participating as volunteers in archaeological projects; some have earned wide respect within their fellow practitioners by acquiring high skilled levels in the craft. Others sometimes exhibit high levels of knowledge, but largely in specific areas of maritime archaeology, driven either by their private interests or through relevant links implicit in their usual occupations or studentship (like architects, engineers, mariners, etcetera), with archaeology only as a marginal part of their daily lives. There are also more sporadic audiences, who prefer to have an intermittent and less intense participation in fieldwork beneath the waters. And because of the wish of the NAS membership to be involved, the book is partly an ethically sound "how to" manual. Much of the chapters related to excavation and intrusive techniques are written in very cautionary terms, directing attention to the conflicts and responsibilities of disturbing an archaeological context, advising not to disturb the materials unless all other options are exhausted. Even the conservation chapter is equally cautionary, trying to keep the members of the Society from carrying it out themselves, in terms of laying out the methodology of archaeology in an ethically safe way. That is a reason why the book does not deal with more theoretical or theoretical-methodological matters as a full manual of the complete aspects of maritime archaeology should do.

Jonathan Adams (2003) thrust forward another angle for research related to interpretations of technology in its social context encompassing ship construction, design, conception, use and disposal. If shipbuilding and seafaring constitute a social practice, then the related material culture is an indispensable means for the analysis and interpretation of societies that have used maritime transport and have been engaged to maritime activity in general (*ibid*). Also, he is interested in the social factors that might not been even located in the waterfront. This is a main divergence between him and Muckelroy in the sense that Adams actively incorporates just what Muckelroy explicitly left out. Those things Muckelroy regarded as limitations are now legitimate challenges that include cognitive aspects of people's past behaviour, identifying the motives that made them act in certain ways, and which can be addressed by different archaeological perspectives that have appeared since his definition, such as cognitive and interpretive archaeology, among many. Adams' most recent approach also addresses related objects on the shore and coastal communities, aspects openly ruled out from Muckelroy's definition. Nevertheless:

> I think maritime archaeology in general, has gradually assimilated concerns that Muckelroy would, 30 years ago, have argued were outside of what he defined maritime archaeology as. But I think if Keith was still with us he would be investigating those aspects too, as somebody who was interested in all aspects of the maritime past (Adams pers. comm., 2005).

Adams, then, is not only pushing for a step forward in the scope of the discipline, he is also bringing up a profound methodological difference with a number of members of the previous generation. Basch, McGrail, Dumas, were content with using the discipline for a "study". The explicit use of the term "interpretation" should not be taken as a fortuitous fact. It is marking a difference in the election of the cognitive objectives to be pursued; as this

will determine the class of knowledge product that will be shaped.

However, as we will see in the following chapters, the fact of producing a definition does not mean this definition will necessarily guide the work of a researcher in the practical world, and thus, the latter can assemble a very different knowledge product. The use of the terminology about interpretation, study, or explanation, has been as lax and loose as many of the uses for maritime, underwater, nautical, etc. When Goggin was speaking in 1960 about the recovery and interpretation of materials, it is very doubtful whether he was searching for anything more than simple inference or untested interpretations. This is part of the semantic and theoretical transformations of the field. What the archaeologists from the 1960s and 1970s were recalling as interpretation was generally going to be very different to what the term would come to mean to many archaeologists from the 1980s onwards.

Going back to the characterization of the field, I have suggested (Herrera 2001a:10) that maritime archaeology can be a tool for cultural comprehension and development, within anthropological disciplines. This perspective accepts Muckelroy's interest in the study of survival evidence of all aspects of seafaring: ships and their equipment; cargo and passengers taken onboard and of the economic system in which they were operating; officers and crew, specific utensils and personal belongings that reflect the specialization of their crafts and way of life. But, above all, this viewpoint is interested in the navigators' culture and its different expressions, as well as their influence in the mother culture from which they come and vice versa. This also means that the range of archaeological sites to be investigated is by no circumstances limited to those of boat or shipwreck archaeology. This range of interests is related to the structures of a marine society and the industries associated to maritime activities and cognitive spectra, regardless of being underwater, in marshlands or on

land. 'Land' should not be solely understood as the waterfront land, as we can have settlements deeply related to maritime culture and subsistence even miles away from the shore.

Some of my concerns are to understand the navigator as an individual and to reduce the gap between the many aspects of a complex society and the particular society (or subculture) which is constituted by its navigators, and the relationships between them. A distinction might be needed here. In a large and widespread society, such as an empire with naval power, we have the occurrence of this subculture. As an example, a coastal society is necessarily maritime, but an empire such as the Spanish during the 'Golden Century' implies at least three major levels in which that society relates to maritime aspects of culture:

1) Onboard societies,
2) Coastal societies,
3) Inland societies which obtain benefits from the crown's maritime relations and power, without the necessity of directly participating in any maritime activity (but indeed sharing cognitive elements of a maritime dependent empire).

We need to also consider the dual way in which it possible to view the array of nautical sites in a region. As Larry Murphy has suggested (1998), one would be within a cultural framework and another based on geographic extension. The first one addresses a maritime culture in particular, whose remains can be dispersed in all the regions where this culture has sailed. The second one deals with all the maritime cultures that have been active in a particular study area. With the work carried out in the Bay of Campeche, Mexico (Herrera 2001a), my effort was directed to integrate both perspectives, with particular emphasis concerning Hispanic culture in that area. Military, fishing, transport and commercial activities,

as well as those to supply the garrisons in the keys, have left significant (and until recently unknown) archaeological remains in the area with an incredible high potential for research. Such a case represents, being part of Mexican maritime heritage, a large collection of materials and sites representing activities, action and behaviour in which several nations are represented over five centuries.

Continuing with the characterization, in *Archaeology and the Social History of Ships* (2000), Richard Gould uses both terms, 'underwater' and 'maritime', in an apparently indistinct way, as he makes no clarification of either expression. However, in most of his discourse he is speaking about the "underwater" side of the discipline and it seems that when he writes "maritime" it is more for reasons of elegant writing, avoiding repeating the word "underwater" too many times, than any academic distinction. For him "the challenge of underwater archaeology today is the application of scientific methods to the archaeological record in an effort to construct a picture of the human past that is not distorted by intervening natural processes and human activities" (*op cit*:2). This approach has various sharp edges to be discussed.

Gould is very close to falling into a common trap, as he states that "underwater archaeology", as much as its land counterpart, "relies heavily upon scientific methods of dating as well as upon controlled laboratory methods for studying ancient diet, technology and ecology" (Gould *op cit*:7). Note that this improvement in technology is fortunate (and indeed needed), but the risk is that this 'reliability' might mean that there is a relationship of dependency between the sub-discipline and the technique. If so, this would perpetuate the idea of putting the emphasis of scientific validation in the technological aspects of the work, and not in the processes and progress of reasoned theoretical interpretations.

This has at least two different readings. We do need the ability to put our data in order, to use dating methods. We do need to be able to identify different types of animals from an excavation's archaeological bones, so we need these means of ordering and recognizing the data. We then go on to build those into explanations, but not through a relationship of dependence. In other words, the concept of making archaeology dependent on 'scientific methods' is very close to a verificacionist approach (Lakatos, 1970), where the rationality is favoured via linear accumulation of information, and the knowledge demarcation criteria relies on "proof" acquired by observation. In such cases observations are made via technical resources. Even if the researcher can have more detailed observations or can utilize analyses that were not available ten years ago, the emphasis is still in observation and retrieval of crude data via technology. This situation might leave the research results closer to mere descriptions. This working routine would still not construct a path to analyze the information in order to explain a problem. It could, however, lay the foundations for a substantial study if the data are linked to a proposal or problem. In other words, technique and theory benefit each other, but should not be confused.

He does state his concern about the scarcity of social-scientific hypotheses (Gould *op cit*:2), but there is no guidance on which of his ideas provide a clear strategy for validation criteria for the construction and testing of those hypotheses. Gould formulates a combination of research characters he believes are the best possible result for 'underwater archaeology' as a 'historical science'.

This problem is not just particular to Gould, it is related to all the practitioners of the discipline. It will always be necessary to clearly state how and why we are carrying out research to "scientific standards". To say we do science and not to make explicit the truth criteria to be employed

can be a risk. In a poorly driven research this could be transformed to a mere "faith" statement. And that is not the only reason; well conducted research will be given more credit if it provides open access to its framework, identifying when knowledge has been reached and why. And it will even deserve more credit if it shows its weak sides and possible failures, which is considered as a normal procedure in science, but unfortunately is very rarely followed.

There are several options to choose from a philosophy of science perspective. For Karl Popper (1991, orig. 1934), for example, this criterion should be the possibility of falsifying a hypothesis or theory, by knowing the logical and empirical conditions that would lead to its falsification. For Thomas Kuhn (1992, orig. 1962), this criterion is based in the existence of a paradigm capable of supporting a tradition of normal science, and it should possess general theoretical assumptions, laws and application methodologies supported by a given scientific community. Kuhn's perspective also implies the existence or the birth of a research tradition.

Integrating ships, integrating archaeologies

There are other terms used for particular aspects of maritime archaeology, such as Ole Crumlin-Pedersen's characterization of 'boat archaeology', considered as "the study of remains of ships and periods from which we have a scarcity of other sources to give detailed information on the building, handling and use of such vessels And in fact this is the case with most pre-20th century vessels from any part of the globe". (Crumlin-Pedersen, 1984:97). This definition is very close to McGrail in the sense of focusing in the boat as the prime artefact when we cannot access other sources of data. Another interesting variation is related to the dichotomy established at different times regarding the ship and its contents. This idea

was emphasized in the past by the prime interest in shipbuilding, or by the emphasis in the artefacts of late post-medieval wrecks, due to the inaccurate perception that the ship is not of particularly great interest because there are so many historical sources about its architecture.

It is important to acknowledge the need of visualizing the integration of ship assemblages and their different functions in a ship society; as well as the need to avoid elaborating isolated classifications of materials. A better option is to interpret them in relation of their uses on board. Colin Martin confronted these matters by understanding ships as integrated artefacts. Within this concept a ship "carries within it and replenishes at the port it visits all the materials, foodstuffs and artefacts needed for the survival, health and recreation of those on board, the executive and technical skills associated with its routine management and maintenance, and the particular activities or enterprises for which it was built" (Martin 1997:1). For example, while grouping the material culture of the 16th century Cattewater wreck, located in the Plymouth Sound, Mark Redknap organized them "from the ship and its working equipment to household effects, eating and drinking equipment, and stores" looking to "shed some light on the social and economic aspects of her shipboard culture and times" (Redknap 1997:73).

One of the composed terms that are generating more interest in recent times is that of maritime landscape archaeology, which deals with the relationships between people, sea, and landscape. This concept, along with the related terms of *maritorium* and regional maritime contexts, can be used as a tool for contextual analysis of individual sites, but also as a mean for integrating regional studies of coastal landscape. These subjects will be visited and discussed in detail in chapter VI.

There have been recent attempts to create "integrated archaeologies",

trying to bring to terms both the maritime and the in-land side of the discipline. A recent example was the series of *Land and Sea* conferences organised by the Centre for Maritime Archaeology at the University of Southampton. The aim was to create a forum for discussion and exchange of ideas between maritime and land archaeologists whose sites or cultures under study are somehow related to the waterfront, to marine traditions or to waterborne trade, among the many possible varieties. There was an earlier case, where a similar situation was foreseen in the VI International Congress of Submarine Archaeology, held by the Submarine Archaeological Research National Centre and Museum, in Cartagena, Spain, in 1982. Perhaps this was not as explicit an attempt as the Southampton one, but was equally valid as the 'submarine archaeologists' were working with their land counterparts and sharing ideas and results. They were also raising awareness about benefiting the preservation of shared archaeological and historical heritage (Nieto Prieto & Nolla 1985; Martín Bueno 1985). For Manuel Martín Bueno and his collaborators, archaeology related to the sea offers immediate possibilities to the land researcher; it being unimaginable to study a culture or historical phase linked to the sea through proximity or dependence without taking account of this relationship. Also, port facilities, wrecks, findings in old shipyards give information, sometimes with an unsuspected eloquence, of a part of our past (Bueno, *op cit*:34).

Two great absentees in a really analytical scope of an integrated maritime archaeology have been iconographic evidence and written documentation. Although some authors have shown clear interest in the study of ships and ship technology through the use of iconography (Ewe 1972; Flatman 2007; Heinsius 1956; Mol 1929; Unger 1991; Villain-Gandossi 1985 and 1995), its largest benefits within our field are still yet to come. In a similar way, while some authors have shown clear interest in the use of documentation (Basch 1972; McGrail 2001) and in depth handling of a great amount of

data, it seems its application in full is still to come in the general extent of the discipline. There are of course some cases of its use, such as Christian Ahlström's *Looking for Leads* (1997). After acknowledging that the simultaneous use of written and archaeological evidence of post-medieval times has not been a common practice in Baltic marine archaeology, Ahlström goes on presenting both with a very encouraging and well thought methodology searching for a constructive combination of both resources. Not only does he provide us with sound options in the procedure of its combination, he also exemplifies them with several vessels to which this approach was applied. In the Netherlands, an 'integrated historical-archaeological approach' was undertaken around the research of some Dutch East Indiamen and the VOC in general, attempting a better understanding not only of the individual wrecks, but of the system in which they operated (Gawronski *et al* 1992). This particular case will be thoroughly discussed, in chapter IV.

Part of my own work is strongly linked to similar integrative views (Herrera 2000, 2001a, 2001b, 2003 and forthcoming) in three different ways. One was related to the use of written documentation related to some of the vessels of the 1631 New Spain's fleet —lost in the Bay of Campeche, Gulf of Mexico—, aiming to find the flagship *Nuestra Señora del Juncal.* If this part of the work was designed just as a plain and direct search it probably would not be worth mentioning, as this has been done many times in the past. That work incorporated a painstaking analysis of the written documentation related to the loss of that fleet, and of contemporary cartography contrasted to both 17th century and nowadays geographical conceptions (in order to detect similarities and differences that needed to be compensated). That part of the work tried to identify and minimize the disparities in meaning that can occur between today's Spanish and that of 17th century (which can easily direct a survey towards an erroneous area if some elements of its semantic evolution are not well understood). To

assist in this, 17th literary sources were used to clarify passages of obscure significance, for example words or expressions that are no longer used in modern Spanish or where their meaning has changed. In this way it was possible to clarify those elusive concepts, contextualized in nautical situations.

The second component is referred to materials subject to be detected by magnetometric techniques. Its potential concentrations and quantities were analyzed looking to establish a survey rationale that would guarantee the detection of shipwreck sites not only from the 17th, but from the 16th century onwards. The goal was to establish a rationale that could detect their remains under the conditions of being discontinuous sites of scattered material, and do it in the most efficient possible way both in terms of time and navigation. Detecting continuous sites with great concentrations of remains is far easier. Obviously a lot of care was taken with anything related to possible ferrous concentrations such as anchors, cannon, or even the quantities of ferrous metals in the casks, knowing the characteristics of them and how many were loaded in some of the ships.

Clearly, this could look too technical for the matter under discussion now, but there was another use of the written documentation. In this third case the interest was related to understand the behaviour and actions of a crew as a whole, and of some individuals according to their roles, when in conditions of extreme stress, such as the risk of wrecking. This historical information was used to read the patterns of archaeological sites around some of the keys in the Bay of Campeche and, later, to individually interpret a number of the sites according to the careful analysis of archaeological evidence and written sources, both from historical archives and nautical-related literature. A similar approach was carried out regarding the loss and wreck of the *USS Somers*, which occurred off the port of Veracruz, in the Gulf of Mexico, during the Intervention War (1846-

48). The rationale that time again consisted of using archaeological evidence together with historical documentation from archives and newspapers, and with the works of Herman Melville, largely associated with the *Somers* case, though mostly mistakenly (Herrera 2001a).

Why, how and what for?

Perspectives from sociology and philosophy of science are of immense significance while analysing ourselves. According to the Kuhnian model of scientific transformations (Kuhn 1992, orig. 1962), researchers affiliated to the same paradigm are linked by a set of shared elements during their training. They also feel responsibility and satisfaction because of achieving certain goals, and must have communication between them such as shared forums and publications. The existence or not of paradigms, research programs, theoretical positions or any other term which can be understood as a framework of reasoning needs to be necessarily linked to how a given scientific community sees itself and if this community is walking towards the construction of a research tradition.

Are we close to a coherent intellectual tradition in this field?

Maybe more than a question, the subtitle of this section should be a goal. To know if we are constructing a coherent intellectual tradition we need to know first if we are constructing a tradition in any way. It has been reasonably stated that our field is still struggling to achieve the credibility accorded to land archaeology, and that even some of our colleagues still perceive our work as a less scholarly or as a less scientific discipline than their own (McGrail 1984:14; Gould 2000:1, Herrera 2001a).

Goggin (1960:350) noted that if someone on land makes a hole in an Indian mound they "modestly" become an "amateur archaeologist", but if he or she does it in the underwater world, then they will instantly be transformed into an "underwater archaeologist". It was normal to find in the 60s statements about the relation between diving and archaeology that I assume very few active maritime archaeologists would accept today, if any at all. In 1965 Frédérick Dumas understood as axiomatic that an excavation, whether on land or underwater, should be conducted by an archaeologist. However, he constrained us to the popular image of diving at that time, meaning it was something maybe too hard and too specialized: "since no archaeologist can be a professional diver [...] he will be at a disadvantage in marine conditions" (Dumas 1965:16). It is true that the marine archaeologist need to be a proficient and reliable diver, but the image of the diver as a rough and powerful daredevil athlete fortunately no longer exists. There is no impediment for the archaeologist to become a professional diver and there are many around. In projects such as the second phase of fieldwork on the *Mary Rose* site between 2002-5 only archaeologists with professional diving credentials were able to participate in the underwater operations.

The INA's excavations in Turkey are another good example. In the late 60s, at Yassiada, they worked at 40 metres depth on a wreck from the late 4th or early 5th century AD, in what it was tagged as the largest diving operation in the world at that time (Bass 2005b:17-19). The excavation of the 14th century BC shipwreck at Uluburun, also conducted by INA in the 1980s, was at depths between 41 to 61 meters (Pulak 2005), something only seriously capable divers could face. Nevertheless, as much as maritime archaeologists who become professional divers will have more practical elements and confidence to face underwater constraints, and might suggest cheaper or safer solutions to particular tasks, there is no obligation to become a professional diver, but to perform as a real

professional archaeologist. With so many sites to be researched along the coast it is also well accepted now that in many cases maritime archaeologists do not need to be able to dive, if their interests are linked to the cultures related to those sites.

In March 2006, by invitation of the Institute for Anthropological Research at the National Autonomous University of Mexico, I taught an intensive course called 'Introduction to Theory and Methods in Maritime Archaeology', which also included NAS Training modules. The first day, before the class started, there was a journalist gathering information to write an article about it (it was the first course on the subject in the University and the first one focusing explicitly on 'maritime archaeology' in the country). She interviewed some of the students. The only two of them which had some experience related to the field were an undergraduate and an architect. Both of them had participated in fieldwork with the underwater archaeology unit of the National Institute for Anthropology and History. When she asked which would be the main characteristic defining what a maritime archaeologist should be, they both answered immediately: 'the need to be a diver'. They did not say 'the most important point is to be a competent archaeologist', or 'the need to understand maritime aspects of culture', or 'this archaeologist should know how to conduct proper research'. No. 'The *need* to be a diver'. Those kinds of conceptions show more about the image of diving rather than enlightening any archaeological thinking. The marine environment brings other sources of misconceptions from both our colleagues and the general audiences.

To establish a tradition, the work generated by a community must have the recognition of its equals. A painful matter to be discussed is whether or not we have the recognition of other archaeologists towards our research. This has been not a minor issue in the last four decades of excellent, good, regular and irregular work done under the flag of maritime archaeology.

Even today, when we have well respected meetings (the yearly events of the 'NAS Conference', held in Portsmouth; the SHA Conference, itinerant but normally held in North America; the AIMA Conference in Australia) and means for publication around the globe (IJNA, AIMA's Bulletin, JMA, The INA Quarterly; universities and research units which regularly publish books and reports such as Texas A&M and NPS-SRC, as well as numerous commercial printing houses), there is still a bit of distrust appearing from time to time. There are places such as Uruguay and Panama, where maritime archaeology is fighting against treasure hunting and impostors disguised as archaeologists. There are still elements of what W. F. Grimes was commenting in the early 1960s:

> There is that about the term 'underwater archaeology' or its variants to strike uneasiness in the mind of the archaeologist who practises in the more normal element. He cannot but be aware of treasure that has come by chance from the sea in the past; and in more recent years rumours of expensively mounted expeditions with a frankly treasure-seeking purpose will have reached them (Grimes 1962:xi).

Some elements of this lack of confidence from the main field have already been raised, such as the estrangement between seamen and landsmen, the proportionally elevated costs of fieldwork, the assumption that relates maritime archaeology solely to underwater work and diving operations, the popular culture about the intrinsic economic value of colonial cargo, the argument stating that underwater excavations of sites of literate times do not offer any new light from what we already know via historical research, etcetera. There are some suggestions placed here and there to overcome these situations, like convincing our colleagues that there is much more to maritime archaeology than work underwater, and doing it by the breadth and depth of our research (McGrail 1984:15).

Certainly, the maritime archaeologists need to have a body of alternate knowledge to archaeology in order to perform their craft, such as elements of seamanship and navigation, shipbuilding techniques, different aspects of oceanography and marine geology, in some cases even geophysics, and different expertise in diving according to the varied contexts where the sites are. But the possession of those skills does not make us better archaeologists or better fitted for understanding or interpreting human activities form the past. We need that knowledge just as any archaeologist working with societies developed in the rain forest need to know about the geomorphological context of the area, the architecture of a given period, the different species that society was interacting with, how to be safe while running the field work, and even how to be comfortable while walking and working in the jungle, etcetera. While an archaeologist in the jungle learns where is the closest medical centre with anti-venom for local insects and snakes, the archaeologist working in a site at certain depths needs to know where the nearest decompression chamber is. Archaeology necessarily pays attention to the natural processes affecting artefacts deposits, like roots, crawling and burrowing animals and geomorphological factors. Maritime archaeologists are concerned about the same issues. What changes are the species and the context, such as the collection activities of the octopus, the alterations caused by boring organisms, and the dynamics of marine sedimentology. We all have to attend to the needs each site demands from us, so this is not necessarily an element for typecasting our craft.

Archaeology is largely identified with the quality of being systematic, and it is generally assumed that working in such a way should be a warranty of best practice. This should be taken with a pinch of salt, as it is also possible to systematize the mistake, and therefore reproduce it *ad infinitum*. McGrail (1984b), following Ole Crumlin-Pedersen's ideas, has stressed that the loss of information due to inadequate recording is a

problem common to the whole field of archaeology, but he pointed out a particular conflict related to boat finds recording:

> Adequate recording has been defined by Crumlin-Pedersen (1982-73) as the minimum information 'a competent model builder would need to build a model of the structure so that it is correct in all details'. Correctness of detail is essential for, as Crumlin-Pedersen also pointed out, the elements of a boat find when joined together define the form of the hull, the underwater shape of which largely determines performance – capability, speed, stability, etc. (McGrail *op cit*:21)

In a conference held in Bristol in 1971, thought to be the first ever conference in Britain about marine archaeology (Blackman 1973b), Peter Throckmorton firmly stated in the opening paper that marine archaeology had progressed to the point that scientific and scrupulous excavations were by then a familiar story, achieving the same technical standards of land excavations (Throckmorton 1973:493). And he also considered the first proper underwater archaeology excavation the one in Cape Gelidonya conducted by Bass and himself.

But, is this viewpoint really precise? Even in one of the projects recognized today as one of the best examples of controlled excavation, like the *Mary Rose*, there was no such a certainty at the time. They were still, in the mid to late 70s, making strenuous efforts to catch up with land methodology, several years after the moment Throckmorton was referring to (Adams 2003: 6). It could be legitimately claimed however, that the excavations Pennsylvania University was conducting at that time, and the way those sites were worked are the first that would have satisfied today's professional codes of conduct in comprising the entire archaeological trajectory from research aim to publication, (Adams, pers. comm.). So,

there is some justification to his statements, from a 'Mediterranean' perspective.

New directions and evolving ideas

Making an allowance for the early proper excavations produced underwater, one needs to consider the history of work related to the lake-dwellings in the Alps lakes, particularly in the case of Ulrich Rouff. In 1963 he started doing archaeological diving in prehistoric sites like Lake Zurich, although he did not feel confident enough to undertake a proper professional excavation until four years later (Ruoff 1972 and 1980b:150). He excavated underwater in a way in which he was literally transplanting land archaeology methods into very clear but freezing waters. He was excavating Neolithic and Bronze Age lake settlements which are characterized by deeply stratified deposits and by thousands of timbers upon which the dwellings where built. Although evidence of lacustrine settlements had been found before, the discovery of this kind of site is normally attributed to the very cold, dry, and long winter of 1853-4, which made Lake Zurich recede to its lowest recorded water level, exposing the archaeological materials of a prehistoric settlement at Ober Meilen (Menotti 2001:320). This started a 'lake-dwelling fever' that made possible the location of a large number of sites in the major lakes of the region; and partly because of these discoveries similar research started in other regions, such as the Irish and Scottish lake-dwellings and crannogs (Morrison, 1980a, 1980b and 1980c; Ruoff, 1980a), and even in Scandinavia. Although, the case of the Bulverket site in Sweden represents a late Viking Age massive wooden lake construction of the 12th century which was abandoned soon after its building (Rönnby 1995; Rönnby & Adams 2006).

It was initially thought those sites were lake-dwellings in the sense of being houses built over stakes and posts that rise over the water, an interpretation advanced mainly by the Swiss naturalist Ferdinand Keller in 1854. Later elucidations in the 1920s by Reinhardt, supported on his excavation at Lake Constance (where he constructed a wooden caisson to dry out the surface to dig), assumed them to be marshland houses only seasonally flooded. Posterior research in the 1940s pictured these sites no longer as 'lake-dwellings' but as 'lakeside-dwellings' constructed on top of totally dry ground. Oscar Paret, based on the stratigraphy of Hitzkirch-Seematt and Hochdorf-Baldegg (Neolithic and Early Bronze Age sites) provided evidence of lake fluctuations both before and after the villages were constructed, due to the presence of lake marl underneath and above the occupational layer, thus supporting the idea of totally dry settlements inundated only later. Nevertheless, with time and new excavation evidences, it was accepted that the three proposed models indeed existed (Menotti *op cit*).

During the second half of the twentieth century the approaches changed due to the application of new more sophisticated techniques like ^{14}C, dendrochronology, and analytical studies of pollen. New questions then arose that emphasized aspects of occupational patterns, chronology, subsistence and economy, reconstructing the changing landscape from Neolithic times onward, therefore producing a more detailed image of these prehistoric societies (Menotti *op cit*; Rouff 1980c and 1980d). With the advent of this new information and interests, the preoccupation of whether the sites where constructed directly on top of the water or by its side were abandoned in favour of more explicative concerns rather than solely descriptive ones.

This change in the direction of interests is similar to the change from boat archaeology to the more comprehensive aspects pursued today by

maritime archaeology. Because of these reorientations of research, regarding settlement patterns on prehistoric lacustrine environments, it can be said that the interest in the waterfront surpasses the scope stated by Muckelroy in his definition from 1978. The field is today concerned with understanding much more than only 'marginal' connections when studying the waterfront. Although not being of strict 'marine' character, the related social and environmental factors associated to these kinds of settlements imply a similar direct relation to the one existing between society and the seafront.

Ruoff's research program still continues, as part of an enduring interest in these societies. It could be said his work in the 1960s was as good as most of the work on land: very painstaking, methodical, with careful recording, stratigraphic sequences monitored, lots of sampling and dating, and published work. His articles are mostly in German, and maybe that is why they are not so widely known within the English-speaking archaeological audiences. Another interesting reference is the excavations initiated in 1948 by Rene Beaucaire in a second century BC Roman port at Fos-sur-Mer. Being a site partially inundated, Beaucaire undertook excavations both on land and underwater, diving himself (Fontenoy 1998).

Continuing with Throckmorton's statement of 1971 about proper excavation underwater being a 'familiar story' by then, it is probable that this was not true in the majority of cases. Another example can be the work of Robert Sténuit at the time. A former test and cave diver, he ran some uncompromisingly object orientated projects. It was antiquarianism under another name. In these kinds of 'investigations' it was normal to limit the analysis of the hull structure of the ship in order to reach the porcelain. In the attitude of the time the object was important because of its intrinsic beauty. From this perspective the ship was simply a repository of no archaeological importance. Though Sténuit's operations were

undoubtedly skilful and well organised (Sténuit 1982), the excavations themselves were crude in their selectivity, and self-limiting in using divers with little archaeological experience, indeed with no archaeologists among them. Although within the formative years of the discipline, even in the context of their time, these projects were disappointing by comparison to what Bass or Ruoff had achieved. Of course by the standards of archaeological practice as defined in professional codes of ethics today it would not be possible to classify this work as archaeology. That is the reason why Sténuit has been seen as a mere treasure hunter, though in view of his historical expertise and skill as a researcher, latter day antiquarian is probably more accurate. And there is still much antiquarianism disguised as archaeology, but its appearance is more subtle, perhaps making it harder to be immediately identified.

A list of the "firsts" in the sub-discipline, such as Throckmorton's claim, would be as uneven and uncomfortable as any in archaeology, but as there have been utterances about some of these "firsts" it might be useful to rescue some of them, as anyway they represent the self perception context of elements of our trade, and they signify what was valued at various stages of our development, particularly in this search for a tradition. Also, they can represent in a way what Thomas Kuhn considered as the *puzzles* a given research community decides are interesting to solve. Lucien Basch considered A. Jal to be the father of naval archaeology due to his very early *Archéologie Navale* of 1840 (Basch 1972:7). Surveying the literature, we could say that the systematic study of boats started in 1865, with the publication of Conrad Engelhart's work on the Nydam boat, as McGrail has recalled (1984), and archaeology underwater could be considered to start in the late 1960s with Bass and Throckmorton

While worrying because of the scarcity of scientific underwater excavation techniques, Dumas (1962) accepted as exceptions the cases of the Roman

wreck at Spargi in Italy, reported by Gianni Roghi, and the palaffites in Swiss lakes by W. Haag (the curious reader can follow Dumas' references to: Roghi, Gianni, 1959 'Note tecniche sul rilevamento e lo scavo della Nave Romana di Spargi', *Bollettino e Atti*, Centro Italiano Ricercatori Subacquei; Haag, W., 1958 *Informations Sous-Marines*, No. 6, p. 18-24; and Haag, W., 1960 CRIS, Revista de la Mar 2, No. 23, p. 27-8). Dumas recognized the work done in 1960 on a Bronze Age wreck at 'Gelidonou Burnu', in Turkey, as the first methodological excavation carried out. Although, he lamented (as well as Throckmorton) that the circumstances of the seabed were responsible for the impossibilities of establishing a technique suitable for 'the normal run of wrecks'. These conditions were a seabed of rock covered by sprinkling of sand, meaning that the cargo was unrecognizable and that the objects were 'welded together inside lumps of concretion' (Dumas 1962:2). Curiously, many maritime archaeologists from Caribbean-like waters would consider today these conditions as the most normal and average context to work in. These circumstances would be considered not only normal, but even as an advantage in some contexts of today's research. They can be a beneficial factor because the clumps will tend to either preserve archaeological material inside the corrosion products forming the clustering, or in some cases leave a negative cast of the object where it has been completely lost. A case worth remembering is the shipwreck site of Emmanuel Point Ship, in Florida, where Roger Smith and his team were able not only to identify the species of rats and mice on board but also to identify on them oral and osteological pathologies, and even cannibalism among the black rats onboard (Smith 1995:78-81). In that context it was also possible to find remains of cockroach eggs, wings and legs, and therefore identify the presence of *Periplaneta Americana*, a particular species of cockroach, which despite of its name, originates from tropical Africa and was long thought to have been introduced to America by slavery ships. By identifying it at this site, it was seen they arrived in the 16th century onboard European vessels (*op cit*:85).

In constructing a tradition we could say, as with all archaeology, that we borrow the core ideas of how to dismantle an archaeological site systematically from different sources, some of them coming from 19th century, some driven directly from geology and related disciplines. But in a sense, in the last 20 years the stress on methodology inside maritime archaeology has been more innovative and more creative in developing a body of postulates and premises. Both in terms of excavation procedures and in terms of adaptation of electronics, the field has been devoting an important amount of effort.

For example, we have wholesale procedures of controlled dismantling of archaeological deposits underwater using a wide array of tools that we probably will not find a counterpart for on a land site. The process of doing that with controlled suction devices like dredges and airlifts transformed the first clumsy attempts, that were more like "artifact mining". One of the driving forces on projects such as the *Mary Rose* was to refine the process of dismantling a deposit underwater with absolute maximum control. Those techniques might look simple but are the result of a process of trial and error, with the aim of refining excavation control and manoeuvrability advantages (Adams, 1982, 2002a). Those techniques were designed to produce the same consequences as their equivalents on land, i.e. to minimise destruction and maximise the recovery of information from the archaeological deposit, but they were attempted in so many new ways that they had a prominent effect in the years to come.

The aim with those techniques was to achieve the same goals as with the land ones, but in some new ways. For example, in the 1970s and 1980s, in Britain, the idea that you could do archaeology in an underwater environment was so recent and was a completely new enterprise. It was not even considered as feasible by many archaeologists. It was assumed

that it was not possible to do it with enough control, it was perceived more as an engineering task, a recovering exercise (*ibid*). This is why for a long time artefacts coming from the sea were put in museums on the basis of thinking of them as the result of a minor miracle, as it was so unlikely that anybody could get them. Museums were not bothered about the problems of those artefacts being excavated under control or according to some surveying standards. Therefore the *Mary Rose* experience was, as much as anything, about refining methodologies to increase the maritime archaeological practicalities (Adams, J., pers. comm., 2005). Each season saw improvements in the excavation and recording procedures, keeping the aim of uncovering and recovering archaeological features 'with as much control as one would expect on land' (Marsden 2003:44). A lot of the discussion was about how to record underwater, what accuracies tolerance could be achieved, and up to what stage would you call the survey accurate enough to be useful in terms of knowledge structures (Adams, *ibid*).

The actual process of getting to the site to conduct an intrusive investigation by dismantling the deposit is one aspect of our practice. But since those years the emphasis has moved away from excavation, partly through a better knowledge of the implications of conservation, which demands the most expensive elements of a whole project. Now the emphasis is about systems, such as magnetometry and acoustics. Some of them been highly developed in places like the National Oceanography Centre, Southampton. The last two generations of sub-bottom profilers, *Chirp II* and now *3-D Chirp* (Plets *et al* 2006) and the applications carried out on in the *Grace Dieu*, or the work using transponders and post-processing the digital data in new forms, are examples of developing techniques where industry and the armed forces are interested. Therefore, there is a reasonable amount of money to work with. The whole discipline that is driving the refinement of these technologies is archaeology.

Contrastingly, we cannot say that land archaeology is driving forward the latest developments of total stations for 'lasergrammetry' (light form modelling), for example. These technologies are primarily designed for industry, and archaeology is feeding its own resources with them, but is not itself a significant factor in their development. In maritime archaeology it is the other way around. (Adams 2005)

Another important aspect in the process of shaping maritime archaeological methodologies is the problem of stratigraphy. This one is easily recognized as an archaeological premise, along with highly relevant elements accepted as core components of the profession's practice. The possibility of understanding stratigraphic sequences in maritime archaeology has presented a conflict in two different fronts. The first one is related to the technical capabilities of identifying and recording stratigraphic sequences underwater. The second and more important one is to acknowledge the significance of stratigraphic sequences for understanding maritime related events of a relatively short time span, like a wreck.

Jeremy Green's perspectives about stratigraphy clearly illustrate both conflicts:

> In many cases on wreck sites there is no stratigraphy to speak of, but rather a sterile overburden, followed by an archaeological layer. This is not always the case and excavators must be cautious not to miss the subtle changes. Additionally, when changes are observed these are often difficult to record because of problems in establishing vertical datum points. This can be an extremely difficult problem and bubble tubes or depth measuring devices will have to be used to make these measurements. [...] It is worth noting that underwater, archaeological chronology can have a different significance than that

> of an archaeological site on land. In the excavation of a shipwreck, stratigraphy may have little or no temporal significance, but it may have a particular spatial significance (Green 1990:128).

It is obvious that a shipwreck is not like a Mayan city, where the interfaces between every different layer possibly signify an occupation, an abandonment or a destruction level. It seems as if this interpretation sees that because that kind of particular stratigraphy is not present, the layer on a shipwreck site is not considered as such or is not significant. In a sense, that view is missing the point of the archaeological interest in stratigraphy. What we see in the stratigraphic sequence of a wreck is the physical record, the physical residue of a process that goes through several changes. The different layers in a wreck obviously do not represent phases of occupation. However, they still represent a sequence of events in exactly the same way, which will be used to understand how the site got its present shape, how the archaeological assemblages were organized, and what is intrusive and what is associated. The last can be of particular meaning in sites that have been disturbed but where the intrusion is not evident at a first sight (Adams 1991).

It seems as well as if Green is only speaking about sandy contexts where the natural properties of the sea bed present practical difficulties for excavation. There are, nevertheless, a number of examples where stratification is absolutely clear in such conditions, like the *Sea Venture* (Adams 1985), in thicker sediments as the *Mary Rose* (Marsden 2003), and of course there are many examples of clear stratification in various other environments, such as estuarine, with the HMS *Swift* in Ría Deseado, in the Argentinean Patagonia; and lacustrine with the Bulverket site in Tingstäde Träsk, in the island of Gotland, Sweden (Rönnby 1995; Rönnby & Adams 2006).

The overview of the field presented in this chapter discussed some of the key passages that have shaped what maritime archaeology is today. It also shows the route by which theoretical and methodological questions have been growing in the field. This was in a very lateral way at first, and more resolutely as the years passed. The initial stress on techniques has recently been more accompanied by methodological concerns. Although many of the problems already discussed are theoretically driven, the place theory openly plays in the sub-discipline is not that obvious. The next chapters discuss theory and maritime archaeology in open ground.

CHAPTER III

DISCUSSING ARCHAEOLOGICAL INTERESTS AND STRATEGIES

A wide choice of cognitive objectives

A central constituent of understanding how we work with knowledge and its different stages and processes is to devote attention to the concept of cognitive objectives. The importance of this region in the making of our mental maps in archaeology was underscored by Gándara (1993), stating its deep importance in the way research is conducted and its influence in the practical implications derived from the concept. Basically, the cognitive objective refers to the type of knowledge a particular research seeks, as well of course research conducted under the steering of a theoretical position. A characterization can be divided into four possibilities that sometimes get mixed, making it difficult to establish the differences between them: to describe, to explain, to comprehend or interpret, and to gloss (*ibid*).

Someone could argue it is not relevant to be so precise in the use of these terms and discriminate in the cognitive objectives, as "at the end of the day we all need to describe and we all make interpretations". There are many arguments to dismantle that assumption. As has been said, the valuative, ontological, epistemic and methodological postulates are those driving the work of a given research community and are deeply related to the different theoretical positions in use by that community (it does not matter if the community is not aware of all of them). And they influence how that

community produces concrete research. Those researches, conducted by the orientation of theoretical positions, should show an internal coherence of these aspects, and a fundamental element of coherence should be present between the cognitive objective, the ontology and the methodology (*ibid*). Also, it is not common to find absolute consistency between what a researcher can tell about his or her work and what that work is in reality. If we have someone arguing in favour of giving explanations, but their publications are only concerned with accounts of materials and sites, without causal relationships, then no matter what the author claims, the output is descriptive, not explanatory or interpretative.

This region of value concerns is also related to the ethical, the political and even the aesthetic justifications a theoretical position is coupled to. For example, science philosophy invokes the condition of parsimony as one of the elements that could guide us to decide between two rival theories. Between two balanced theories the most "elegant" would be the most eligible. This would be an ethical decision in the sense that we are giving a "value" to the condition of parsimony, and it is as well an aesthetic criterion due to the elegance of a given explanation of a phenomenon. Main elements of the value area are related to the concern of questions like "Why do I do what I do?" "Who I am doing it for?" and "What kind of knowledge am I pursuing?" The last of these questions is the one most directly related to the issue of cognitive objectives. Answering it is a direct declaration of the cognitive objective we can be interested to chase.

A *description* is a goal pursued by normative archaeology, and which is heavily rooted in what Marvin Harris used to call 'historical particularism' (Harris 1999, orig., 1979). Hence it is description itself of archaeological remains that is the goal of research, producing lists of materials and creating an image of the past depending on the experienced determination of features. Description seeks to answer questions like "how many [objects,

sites] do we have?", "what are they like?", "when did it happen?" The approach to description as a main goal of research was what moved Binford and others to rebel against it, as part of his concerns about the lack of proper justifications of archaeological inferences, as without these they are considered to be mere intuitive notions.

In this sense we need to say the 'traditional' or 'normative' archaeologists, so much criticised by the New Archaeology, of course had their own perspective about it. They would argue that the characterization of their descriptions in this light would be incorrect. They also strived for explanation, but the problem was that they mistakenly assumed that explanation was self-evident in the described data. For example, a scatter of pottery type A is stratigraphically below a similar distribution of pottery Type B, separated by a destruction layer. Therefore, 'self-evidently', the people using pottery type B represent invaders who displaced the users of pottery type A. A variation on this cognitive objective is an "identification", in which we take a case to be the example of a larger class of cases: "X is a chiefdom".

An *explanation* would be a different cognitive objective. That is to say the search for "causal explanations", which within the New Archaeology was initially embraced under the Hempelian model, which later fell into disrepute. The D-N model (deductive-nomologic), was originally proposed by philosophers of science Hempel and Oppenheim (1948) and refined by Hempel (1965). This model was taken as the guidance to be followed in archaeology by people such as Fritz and Plog (1970) and Watson, Leblanc and Redman (1971) and advocated the idea of formulating archaeological explanations in the form of general laws. According to this view, an explanation is "the subsumption of the relation between two or more variables which is true for all times and places" (Fritz and Plog *op cit*:405). Later, Plog (1982:29-32) added three components as part of an

explanation: formal, substantive and operational. The formal refers to the "process of constructing clear and at least testable arguments". In the substantive component, explanation is "accounting for observed variations". And in its operational context, explanation is "the activity of designing research and of attempting to ensure that the variation of study is, in fact, observed". The adoption of the Hempelian view was criticized (Renfrew 1982) regarding the mechanistic way in which the model was approached in the 1970s, orienting all archaeological explanations in the form of general laws. Another conflict of the so called "law and order" viewpoint is that it advocated the confirmation of explanatory propositions as a step for reaching an explanation (Fritz and Plog *op cit:*411).

Seeking for explanations has been one of the most interesting and debated topics in archaeology in the last five decades. With such an impetus is not surprising that a number of competing approaches have appeared. Another influential view was proposed from a systemic point of view in which the search for causality is also a central idea: "Culture is multivariate, and its operation is to be understood in terms of many causally relevant variables which may function independently or in varying combinations. It is our task to isolate these causative factors and to seek regular, statable, and predictable relationships between them" (Binford 1965:205).

The explicit search for explanation in archaeology coincides with a concern that was already important in philosophy of science: to lay the foundations not only of the processes of generating theories, but principally the processes of testing them. This search was one of the main interests of Karl Popper (1991, orig., 1934), who related it to the concept of demarcation criterion. For him, this criterion should be not the attempt to verify them, but to show the mistaken aspects of the theories. For Popper, the way to distinguish between science and pseudoscience is that a

scientific theory can be falsified whereas a non-refutable claim makes it pseudoscientific. In archaeology, the self-evident, common-sense based interpretations embraced by the cultural historical tradition were criticized as non-scientific and the offered solution offered came to be the search for explanations.

An explanation tries to answer questions such as "how is this thing as it is?, how did it come to be as it is?, how did it happen?" An explanation is also related to the big question of "why". "Why did this happen?" "Why in this form?" Other important questions for it would be not only "what are the changes?" but also "how can we predict the changes?"; "how are the changes occurring within the structure of a system as a whole?" The idea is to construct a view of the archaeological data in a systemic frame of reference. It is an objective closely related to the aim of understanding. Renfrew would also call it "a way to understand the pattern of events" (Renfrew 1996, orig., 1991:441) In terms of the responsible causal mechanisms, to "explain" is a different task than to "comprehend", that is so popular nowadays.

The questions impelling the cognitive objectives of *comprehension* or *interpretation* would be "what is the meaning of...?", "what is the motivation for...?" These questions become more important if we think in the spectrum of decision in a society. In this sense, we can ask "what is the motivation of a person or a society to do X?", "what do their actions mean?" This goal took a long time to take root in archaeology and it is of course heavily related to the introduction of hermeneutics in archaeology by people like Ian Hodder. Strangely, it was a historian who was the first to foresee its importance for our field. Collingwood, in *The Idea of History* (1946), gave some indications of forms in which archaeology could be hermeneutic. Therefore, comprehension and interpretation are goals of hermeneutic tradition.

Since 1982, Lenihan was clearly interested in these sorts of questions, although it was not so clear if they were explicitly searching for a hermeneutic answer:

> [...] how does this wreck site, in association with other shipwreck sites and written documents afford us a glimpse of changes in classes of things over time? Instead of focusing narrowly on the evolution of deck guns, we could ask a broader question, that is in reaction to what social and environmental stimuli does ship armament evolve over time? (Lenihan 1982:52)

The fourth in the list is the "gloss". This is an option that could have a space in the reign of terror of social and behavioural sciences, as its loose nature irritates and frightens researchers in love with the goal of objectivity, and could give apoplexy to any hardcore empiricist. Commonly, to gloss is considered to be a comment or note on the side of a written page, as it was used in historical manuscripts, where annotations from the author or from a reader were included at the paper's margin. In modern writing footnotes have assumed the role of glosses. Generally, it is also considered to be an alternative explanation, perhaps a marginal one, or one made 'between the lines' of a text. It is also considered to be a summary of a word, hence the word *glossary*. So, this is how it is to be used in explaining conduct, conceived as an aid, as a "clarification" or as an addition of meaning and marginal interpretation.

As a cognitive objective the gloss is difficult to define, as its better achievements are made via examples, metaphors and images. A gloss 'illuminates' our image of a given phenomena. A gloss steals the dramatic effect of the event and frames it in a narrative-literary context. It re-works that event in a 'dramatic' way attending aesthetic values and it is also used

as a vehicle for social criticism. Attempts to use the gloss in academic contexts were not really taken seriously before the works of people like Clifford Gertz, with his arguments about anthropology in general (and particularly social anthropology) being a form of narrative. The gloss does not pretend to be scientific, it does not propose hypothesis, and it is not interested in general behavioural laws. What it does is to illuminate our comprehension of a time or events.

The concept of gloss is surrounded by problems. If science, to be science, needs the possibility of self contradiction, of self denial, then any interpretation made on the basis of a single view cannot be considered as such. Of course one single mind can create a lot of scientific value, but needs to be able to be tested and disproved. Whether it is disproved or not is another matter but it needs to contain the option of being disproved. When we said something is true because it is scientific, and that is our sole argument, then it is the end of intelligence and reasoning.

Of course, this does not mean a gloss has no value. It has. A good and logical gloss has it. It is just that it cannot be considered science (and it does not intend to be). But it can "illuminate" scientific reasoning though.

Nevertheless, there is no logical contradiction in the idea of having an explanatory gloss. If we have a good interpretation or a good explanation, for example, and after giving all the necessary proof implications for a related hypothesis, there is no contradiction in glossing our data in order to give a more narrative perspective of the context we are working with. That the gloss might not be testable is, in this case, not a conflict to make a good "illuminating" companion to the underlying arguments.

Among the "maritimers", few have raised their voice about what we understand in terms of interpreting. One is McGrail, as he understands

interpretation as "the process of theoretically transforming excavated evidence into a reconstruction —from data to theory" (1984:23). Nevertheless, his approach is rather different to what is being discussed here, as he is speaking about reconstructing artefacts, particularly boats. He is not defining the reconstruction of a way of life or elements of it incorporating any behaviour apart from the practicalities of constructing and using a boat, but in this case his interest is in the finished product and not in the social implications of its process. His adequate warnings related to the fact that "enthusiastic reconstruction can outrun and overstretch the evidence" (*ibid*) are running on the same path.

This is an interesting difference in perspective of this terminology. He points out that in certain cases it would be better not to attempt a reconstruction if the present state of knowledge is not adequate enough. That is correct if the attempted reconstruction is only the boat. But reconstructions of many other elements of society can be undertaken without the need of actually "recreating" them. It is only enough to write down the hypotheses and the related positive and negative proof implications that would be needed to falsify the statement or not, and then of course search for the data to carry on with the testing. He does have a similar approach underneath the presentation of "excavated and deduced" data, accepting that there may be different equally valid hypotheses for reconstructing a boat find, but he does not go into the detail of how we could compare or measure the different advantages of each of those possible hypotheses, its merits and drawbacks.

So, McGrail's interest in interpretation is not related to the idea rooted in a hermeneutic view. As per the interests he has declared about boat reconstruction, it is possible to see him closer to the search for an explanation. His questions are better situated in the "how" framework: How it was constructed? How did it function?

Nevertheless, it is not always obvious what cognitive objective an archaeologist is seeking to reach, mainly because we do not usually start a research project asking what our cognitive objective will be —though perhaps we should? Therefore, it will be significant to see in the following section and in chapter IV some of the preferences in how archaeologists of different countries deal with these options.

Levels of approach to the maritime past

A particular case of explicitness in regard to cognitive objectives is an article by Peter Veth and Michael McCarthy: T*ypes of explanation in Australian Maritime Archaeology: The Case of the SS Xantho* (2001, orig., 1999). This iron steamship was lost in 1872 at Port Gregory, Western Australia. Following the on-site recording and excavation, and later recovery and on-lab 'excavation' of the ship's engine, the opening spaces of the latter were cleaned and marine concretions removed. The article offers a historical account of the bad judgements of Charles Edward Broadhurst, the owner, for selecting this ship for a set of diverse duties it was not able to perform safely, and of both the known characteristics of the vessel and the archaeological evidence for engine's bad shape. Then, Veth and McCarthy engage in an interesting yet brief discussion on three different possible standpoints related to the causes of the wreck. They observed the case from culture historical, processual and post-processual views. Moreover, they engaged precisely in an effort to study the space of personal judgment and the meaning of bad decision making in selecting a ship for a set of particular tasks. They were interested in the conflict between versatility and low maintenance versus reliability and safety and the resulting wrecking of the *SS Xantho.*

The case of the *Xantho* is directly related to a topic *addressed* in chapter II: the time *range* of our interest and its justification. This will later lead us to the choice of selecting an object-oriented methodology or a problem oriented one. These subjects are deeply related. It is rather interesting that on the one hand Keith Muckelroy advocated a problem oriented archaeology (1978:250); and on the other, he stated that there is indeed a time frame for what our interests are by writing that "the onset of industrialization and modern style bureaucracies in the early 1800 marks the cut-off point" (Muckelroy 1980:10). This is an idea which limits research not because of the problem to be solved but to a time period. This statement appears to be refusing historical archaeology as a natural complement to the maritime one, at least for the last 200 years. In the same line, he argued that "as an academic discipline, archaeology interprets the past on the basis of surviving objects; it becomes redundant at that point in the past after which surviving records, descriptions, plans and drawings of contemporary objects can tell us more about the culture of the time than we can learn from digging up a few relics" (*ibid*).

It might be argued that such a vision has changed in the last 30 years. Nevertheless, I have had the opportunity to discuss the inadequacies of such a statement in different countries and with many colleagues. So, perhaps undermining the value of maritime archaeology studying the recent past is an attitude not yet completely abandoned. Once more, a strange barrier appears to divide us from the other practitioners of the profession, perhaps because ships and boats are awkward entities to the non specialist, or perhaps again because of the environmental stigma, i.e., the water and the sea. The same colleague working in, or at least supporting the existence of historical archaeology can be the one saying that we do not have the necessity of archaeologically excavating ships from times which have provided us with extensive and various others forms of documentation.

Observing exactly these inadequacies of temporal frameworks in relation to the *Xantho*, Veth and McCarthy (*op cit*) made a useful comparison between what Muckelroy suggested as research stages in maritime archaeology, and a modern *mainstream* archaeological viewpoint. For Muckelroy the order goes from location of the site, its assessment, and identification, the formulation of problem domains, data collection and data analysis in light of that problem (Muckelroy 1978:249). On the other hand, Veth and McCarthy bring their attention to Renfrew and Bahn's proposal, encompassing the formulation of a research strategy to resolve a particular question or idea; the collecting and recording of evidence against which that to test that idea, usually by the organization of a team of specialists and conducting field work; the processing and analysis of that evidence and its interpretation in the light of the original idea to be tested; and the publication of the results (Renfrew & Bahn 1991:61).

Veth and McCarthy noticed a very important issue regarding Muckelroy's proposal for a theory in maritime archaeology, particularly on the topic of the elaboration of 'low' and 'high level theories'. Veth and McCarthy drew a parallel between these and the theories Bruce Trigger described with the same terms. The low refers to 'empirical research with generalizations' (Trigger 1989:20). One needs to track the terminology to fully understand what is meant. Trigger based his description following the perspective of Russian archaeologist Leo Klejn. Klejn (1977:2), was trying to make clear what should not count as "theory":

> Some archaeologists, such as positivists and empiricists, identify theory with empirical generalization, equating the law and the summarized fact. In general, I consider this use of the word "theory" incorrect and irrational. Others consider every explanation of facts theoretical (a sense subject to a series of reservations). Usually, however, the explanation of individual facts and groups of facts, even

> if it constitutes a "lower-level theory" does not have general archaeological interest on a par with the philosophical and methodological problems of the discipline.

Regarding 'high level theories', those denote "abstract rules that explain the relationships among the theoretical propositions that are relevant for understanding major categories of phenomena" (Trigger *op cit:*22).

Veth and McCarthy's point is that Muckelroy "made no provision for mid-level theory in his schematic analysis and it is at this point that many terrestrial archaeologists point to the paucity of genuine behavioural modelling in maritime archaeology" (Veth and McCarthy *op cit:*29). Following ideas of Raab and Goodyear (1984), Trigger described 'middle level theories' as "generalisations that attempt to account for the regularities that occur between two or more sets of variables in multiple instances" (Trigger *op cit*:20). As these imply the correlation of behavioural-material, it might seem appropriate to signal the insufficiency for behavioural modelling in our sub-discipline. However, in analyzing the current maritime archaeology one needs to wonder if this is indeed the case.

Two other conflicts arise within this debate. First, Muckelroy did suggest three levels of research, although they do not necessarily encompass the same line of thought of Veth, McCarthy and Trigger's preoccupations. For him, there are "three distinctive levels of investigation and analysis. The lowest level, dealing with the immediate object of study, the shipwreck [...], the intermediate one, which considers the immediate progenitor of that material, the ship" (Muckelroy *op cit:*226). And, in order to reach the third level, "it is necessary to go beyond the individual and specific events enshrined in these entities, and look at the maritime culture in which they were embedded" (*ibid*). Muckelroy's three levels perhaps should better be

treated as different scales of study within maritime societies, as different levels of abstraction. The disadvantage is the way in which he limited the subject of research as it seems that, within his characterization, maritime societies are only those who use ships and boats, and particularly those who operate them. Nonetheless, Veth and McCarthy indeed have grounds for their critique, as by the end of his book, Muckelroy (*op cit*:249) proposed a model describing the process 'by which a new site adds to the general store of knowledge in maritime archaeology'. In this model he recorded only two levels of interpretation, a low one related to the understanding of the original ship, and a higher one associated to assessments of cultural implications and conclusions about maritime culture.

The second problematic instance is the very term of 'middle-level theory' or 'mid-theory', which immediately and naturally reminds one of 'middle-range theory'. This is a term that at the same time of calling attention to important methodological concerns in archaeology is without any doubt conflictive, as it is perceived in many different ways, with no absolute consensus. As clarified in a very detailed analysis of the term by Raab and Goodyear (1984), 'Middle range theory' is a term originally coined by sociologist R. K. Merton in 1949. It was later introduced to archaeology by Binford in his *For Theory Building in Archaeology* (1977). Merton's use of the expression was directed as a means to advance in theorizing about *the causes* of human social behaviour (Raab & Goodyear *op cit*), whereas in archaeology is related to how to construct a bridge between the 'static facts' of the contemporary archaeological record and statements about the past, 'statements of dynamics' (Binford *op cit*:6). Nonetheless, as Binford was interested in how to relate the static with the dynamic, in the practice 'middle range theory' has also been understood as a platform to study site formation processes. The concept has also been explained in terms of the application of ethno-archaeological experimentation in order to add more

elements and analogies with which to construct that bridge between present and past (Johnson 2000:75-77).

Therefore, neither Muckelroy's three first levels, nor the latter two, are associated with middle range theory as understood in archaeology or in sociology. As for the question of lacking what middle range theory stands for in archaeology, I would say there are plenty of applications regarding the different understandings of the term, as it will be seen by different examples through the next chapters.

In order to avoid confusion, we should make a distinction here between what Veth, McCarthy and Trigger understand as low-medium-high *theories*. These three levels should be regarded as increasing levels in terms of scope and sophistication in archaeological inquiry. These are not to be confused to what we are discussing in this volume as theoretical positions. As explained above, a theoretical position implies wider concerns in terms of the logic of knowledge construction within its value, theoretical, epistemological and methodological areas; and it is not limited at all by the operational application or instrumentation of hypotheses. Two scales of 'theory' are here considered, large overarching theories as wholes (theoretical positions, like Marxism or Functionalism) and particular, focused theories (like the Marxist theory of value) (Gándara pers., comm.). Theoretical positions in archaeology include those of the level of historical particularism, processual archaeology and interpretive archaeology. These are distinctively different to an 'empirical research with generalizations'.

In order to move towards synthesizing those different levels of theory, scope and interpretation in an organized sequence of benefit to maritime archaeology, a model is presented in this same chapter. For it to be fully understood, first we need to discuss the concept of 'observational theories', in the effort of clarifying and making explicit the logic behind research.

Observational theories and maritime archaeology

In appreciating the value of observation strategies and tools to understand the development of theories, philosophers of science have offered valuable options. These are worth discussing, particularly in regard to the characteristics of researching shipwreck sites and what we 'observe' in and through them. Data, how we select it, record it, and how we understand it, is impregnated with theory, even if the one collecting the data is unaware of it or denies the value of theory building. This has been understood among theorists in archaeology (Gándara 1987 and 1992b; Chippindale 2000; Johnson 2000), but one wonders how much this situation has really been incorporated into general practice. Even in the case of empiricism, in archaeology and anthropology, or in historical particularism, the observations made are expected to *tell* us *something*. Data is 'expected' to show elements of a reality. This expectation is a theoretical charge the researcher imposes on the data. The observations been made, derive into basic enunciations about what it is observed.

According to Karl Popper (1991, orig., 1934, sections 28 and 29), scientific *basic statements* declare that an observable event happens in an individual region of time and space. These descriptive observations are structured in the form of 'singular existential statements': 'there is a wreck site in tempo-spatial region *k*' (or in some key, for us); or 'this and that events occur in region *k*'. These statements are then accepted or rejected by a community. Nonetheless, basic statements which have been accepted as satisfactory may incur the risk of becoming dogmas, but avoiding this is relatively easy if we analyze them through other arguments. Accepting basic statements has a relationship with perceptive experiences, but we do not justify statements through experience. The latter might encourage a

decision of acceptance or rejection, but basic statements cannot be justified by it, as much as it not possible to justify them 'by thumping the table' (Popper *op cit*:101).

These basic enunciations are not free of problems, only under the view of an ingenuous empiricism are data free of conflicts. Observations capable of assisting us in discerning between competing suppositions, assumptions, hypotheses or theories about our subject of research, are always obtained by the use of low level theories. We use and accept these to justify the appropriate use of instruments and methodologies to observe and record data, or to supply the theoretical foundations of our observation. Therefore there are no basic statements, only data obtained under the perspective of a low level theory (Gándara 1987:9). If we do not want to accept this situation then the alternative would be to believe that the scientific enterprise is the sum of accumulated 'proven' basic statements and hence remain in an eternal empiricism. In archaeology, historical particularism is not very far away from this perspective, as similarly to classical empiricism, it assumes research should be as a *tabula rasa*, free of initial contents, prejudices and theoretical burdens. But there cannot be sensations, 'observations', which are expectation free, and therefore there is no natural demarcation between observational and theoretical propositions (Lakatos 1998:26)

'Observational theories' was the term Imre Lakatos used to designate these 'low level' theories (Lakatos 1998, orig., 1970). Although he discussed them in one of his better known works ('Falsifications and the Methodology of Scientific Research Programmes', 1970, and reprinted in 1977 in the volume *The Methodology of Scientific Research Programmes*), there is little evidence that the help they can bring to organize and support the link between scientific practice and theory has been largely incorporated into

archaeology. To the best of my knowledge, the value they can bring to our discipline was first underscored by Gándara in 1987.

To better explain what observational theories are, Gándara used some examples derived from the history of science; a particularly illustrative one was also referred to and discussed by Feyerabend and Lakatos. In one of the many controversies Galileo got involved with, he defied the Aristotelian theory, which said that the moon, like the rest of the celestial bodies, was a perfect crystal sphere. Galileo countered this based on observations made with his telescope and on theoretical considerations, declaring that the moon's surface was irregular and had craters and mountains. His contemporary Aristotelian astronomers were reluctant to accept his observations. Their argument was that, as much as the instrument was of use on land, it was evident that the telescope was producing distorted images of the celestial bodies which could not therefore be accepted. In the famous dinner at Giovanni Antonio Magini's place, in Bologna, 1610, at which Galileo offered a demonstration of his apparatus, some of the attendees even made little effort to learn how to use the telescope, thus fulfilling their own prophecy of the instrument's limitations. Therefore, before he could use his observations to refute Aristotelian theory, the construction of a theory to support his observations was needed. Important advances in contemporary optics theory were required before his telescope could be used as a research tool. Such a theory was developed by Galileo and also benefited by Kepler's works on optics between 1604 and 1611 (Feyerabend 1993, orig., 1975:110-127; Frankel 1978; Gándara *op cit*:6-9; Lakatos 1998:25-26).

Apparently, the 'low level theories' Veth and McCarthy are concerned with, are our descriptive procedures of the material culture within the archaeological record (observations, not theories); and the lack of middle level theories should be better regarded as the lack of explicit observational

theories. Therefore, from my perspective, instead of seeing that maritime archaeology is lacking the methodological capability of producing 'middle level' theories, some work should be devoted to make explicit the observational theories in use. In other words, it would be highly constructive to state those principles which give theoretical support to our procedures and logic for data retrieving and data interpretation.

It would be desirable that in making explicit these observational theories, attention was devoted to the major aspects of data collection in the different field tasks in which we engage. Hence, the following ideas should be considered as part of a list that needs to grow and be enriched collectively. I would say major attention should be devoted to: the rationale of regional surveys, identifying the minimum analytical units in excavation; the processes of discerning stratigraphic sequences and possible diachronic relations of shipwrecks.

As a good example of how important these observational theories are, we can analyze the logic behind the magnetometric surveys with which the remains of one of the three wrecks of the 1554 fleet were located. The aforesaid fleet was lost off Padre Island on the Texan coast and some of the archaeological remains were archaeologically studied (Arnold & Weddle 1978) while others were subject to treasure hunting. In searching for the third wreck site a magnetometric survey of 45-meter line spacing between data collecting tracks was traced (Arnold & Clausen 1975). The wreck, a continuous site with massive concentrations of metal was found. But had the wrecking event been different and the guns and anchors scattered (the main ferrous masses actually detected by the magnetometer) as often happens in shallow, high energy waters, the site would not have been found. If individual artillery pieces resting in the seabed had been in between that lane spacing, the survey geometry would have been blind to those artefacts. Consequently, anything smaller was going to be missed as

well. As Murphy and Saltus showed (1990), the way in which ferrous material produces local alterations of the Earth's magnetic field need to be carefully considered in terms of the ratio between the ferrous mass of the object and the distance to the sensor. This means that a systematic archaeological survey needs to have much closer tracks than those employed by Arnold and Clausen. Murphy and Saltus' observational theory for justifying and designing surveys was more comprehensive than Arnold's logic used for searching for the 1554 remains. It was based on the geophysics underlying the use of the instrument, along with the analysis of how potential archaeological signatures might alter the magnetic fields. It also took account of the conditions under which these anomalies cannot be perceived. In short, if Arnold and Clausen's geometry was applied to any area on which the wreck materials were scattered, materials would only be fortuitously located if the sensor passed close to them. The survey to locate those 1554 remains was, at the time, believed to be the best way to apply magnetometric techniques to maritime archaeology. It was not. We could assume that had they not found the site perhaps they had re-surveyed with closer lane widths. However, as the site was found, the impression of that application being the most appropriate remained for some time. With Murphy and Saltus' deeper understanding of theories of magnetics coming from physics, those implications were properly understood in maritime archaeology. We can say that Murphy and Saltus made use of the theories of magnetics in physics as their observational theories in maritime archaeological surveys.

Moving on from this example, we can now discuss the use of observational theories in those 'higher levels' of theory considered by Trigger, Veth and McCarthy. The sequence of cases discussed here is of use to show that observational theories are not to be used only to address the data by using basic statements at their most simple descriptive form, nor are they only the technical justification for using certain apparatus; but mainly to

construct more sophisticated approaches to the archaeological record. Therefore, observational theories are of methodological use in driving research to reach a selected cognitive objective.

For discussing survey rationale we can exemplify the work conducted by Larry Murphy and the National Park Service in Dry Tortugas, Florida. This way of addressing regionality, I am happy to admit, had a profound influence on my own approach to research in projects in Mexico and Uruguay. Having at the time the opportunity to participate in Murphy's fieldwork in Florida in the late 1990s, I took the opportunity to discuss with him the logic behind this perspective and its theoretical consequences in some detail while executing the surveys. Therefore it is also a good example of theory-driven field research. In order to declare that wide-area seabed surveys can offer explicative products, more valuable than solely descriptive SMR's, we need —as much Galileo did— to make explicit why discrete individual observations (location and description of sites) can lead to an understanding of highly complex social dynamics.

With the intention of considering the location of archaeological remains as part of greater phenomena, and not solely as individual events, a rationale is needed. This includes sites in two distinct categories, casualty sites and activity areas. The former being lost watercraft, strandings and grounding sites. The Dry Tortugas approach also included a definition for activity areas, being anchorages, repair and salvage sites, and depositional sites resulting from discard activities. Discarding events are considered either as 'primary discard' as in anchorages, or 'secondary discard' such as trash disposal. "Discard sites vary in formation and structure, for example anchorages represent accumulations of short duration discard events from unrelated multiple sources. Areas offshore landings [sic] or docks reflect a more continuous depositional process over the life of the site by people engaged in similar activities. Secondary trash deposition sites can be

single, sometimes large events, or can be built up over long periods. Distinctions among these processes are important in that they focus attention upon the variable human activities that led the material becoming part of the archaeological record" (Murphy 1998:173-174).

The identification of reliable signatures for maritime behaviours and events are also part of the elements to be considered in constructing an observational theory of regional studies of maritime casualties. In other words, this is declaring which might be the characteristic features to be observed in the field so we can accept them as observed, validated data. With it, we can access the next 'higher level of theory' as by then we will not only have data, but groups of data linked to a problem; hence a correlation can be appreciated in the co-variation among phenomena.

In terms of excavation, a fundamental issue to be discussed at observational theories level is what is the basic analysis unit on shipwreck archaeology. In other words, what is the minimum unit that we can perceive as a coherent context from which we will derive answers to our cognitive objectives? For land archaeology sites, this can be debated as a room within a structure, an activity area within the room, the whole structure, or the horizontal and vertical limits of a depositional context. Which is this minimum unit when we speak about ships? Is it the whole shipwreck site? Is it a depositional context helping us to differentiate how materials are arranged before and after decks collapse? Is it a structural space, as it can be an officer's cabin (if its location in the site can be presumed prior to excavation)? Minimum analytical units, similar to activity unit or room, would be confined to structural spaces of a ship, such as the *Mary Rose*'s galley, a *Vasa*'s gun deck, the captain's camera in the *HMS Swift*, or the gunroom in the *Amsterdam*. If we want to push it even further, can we make sense of a coherent context from a confined space as the medicine chests found in both the *Mary Rose* and the

Amsterdam, or do we regard these only as specialized assemblages? Changing to a larger scale, is the minimum unit the whole of the ship's remains? Can it be the whole site before excavation, or even without it, if a non-intrusive strategy is selected?

A pause must be taken before going into this subject. Many archaeologists would argue, with reason, that surely we can get enormous archaeological benefits from investigating sites without excavating at all. In many ways that is why addressing regional surveys is of such a great importance. And along with it comes the necessity to address non-intrusive or minimum intrusive site recording. This does not imply that surficial recording need not be intense. We can acquire different classes of data by various techniques without actually moving or raising a single object: wood sampling, site delimitation by means of low frequency acoustic techniques, ferrous content area delimitation by means of magnetometry, photography, video recording, core sampling, site plan recordings, etcetera.

Partially excavating a site should normally be referred to what the research aims are. It might be that what is needed to be known are simply the general characteristics of the site. As an example, very close to the site of the *Grace Dieu*, in the river Hamble in southern England, there is another possible wreck, detected by geophysical surveys, but which has not been ground-truthed yet. It could be possible to find out whether the acoustically reflected object is a wooden shipwreck or not by excavating a small trench. A limited research aim certainly but one which may be specifically directed towards assisting important decisions about protection and management. In the trajectory of archaeological enquiry it could be possible to go back months or years later and excavate a square meter of it to see if there is enough structure which could allow us to know if it is also from the 15th century, or perhaps a Tudor or a later ship; the first detected joints of planks might give enough information to know it

without making any further excavation (Adams pers., comm. 2007). This exercise would lead us to express that descriptive basic statement. But if the research aims are addressing other objectives than description, more explicit argumentation is required each time we attempt to reach theories of 'higher' status.

The analytical units depend on the research aims, on the research questions, and the ontological objective we are interested in. And, ultimately, as these elements depend on the theoretical stand point of the researcher, we can conclude that any field strategy is a theoretical decision. In order to better justify and understand the data retrieved by any field strategy and its value as an inferential tool to reach those 'high level theories', the supporting observational theory should be explicit.

In understanding the stratigraphic sequences of a site, we produce elements for the better appreciation of site formation processes and the ways in which, in Schiffer's terminology (1972), material culture goes from a systemic context to an archaeological one. The last point is of particular attention, and it is related to the dissatisfaction and platitude of typifying shipwrecks as 'time capsules' (a topic to be discussed in the next chapter). Sound efforts have been devoted in identifying the key issues of site formation processes, examples include Muckelroy (1976 and 1978), Murphy (1990), Quinn *et al* (1997), O'Shea (2002) and Gibbs (2006). With careful analysis of the stratigraphic sequences, such as the one of the *Mary Rose*, attention can be devoted to surfaces (the moment on which the depositional event finished), which can help us in distinguishing between pre-depositional and post-depositional signatures. This of course leads to a more comprehensive understanding of the spatial relations of the archaeological assemblages, therefore giving stronger coherence to any interpretation based upon them.

A problem oriented - maritime knowledge model

As part of the intention to collaborate in the development of the theoretical frameworks of our trade, it is also fair to offer a general set of proposals about the ways which I consider more appropriate for charting the different elements needed for knowledge construction in maritime archaeology. This model could also be easily used for any other forms of archaeological practice, as it is directed to the logic of research, not to a theme in particular.

This scheme is a combination of a model integrated by Colombian archaeologist and medical anthropologist Ingris Peláez and my own viewpoint (Herrera & Peláez, in prep.). It resumes some of the discussions we have followed across the years and tries to incorporate a general perspective of archaeological research into the particular scope of its maritime aspects. Our ideas coincide as both her interests and mine arise from an epistemological stand point, and from complexity theory. Therefore, the consequences in terms of the different ways to construct several options of knowledge are formally fulfilled by both of our perceptions.

The model is almost self explanatory. It shows four topic lines which develop and increases in sophistication as the research advances (Illustration 3.1). These topics are the *level of complexity* which we perceive. The *concept* defines what we are reaching at different moments as the research matures. This can be taken as the knowledge penetration at different epistemological stages. The *product* we can offer depends on the stage we are and/or on our orientation of the research. And the level of *appreciation of reality* stands for the depth of the cognitive objectives to be reached. Not all research projects go through all the boxes as this very much depends on the kind of product they are interested in fulfilling.

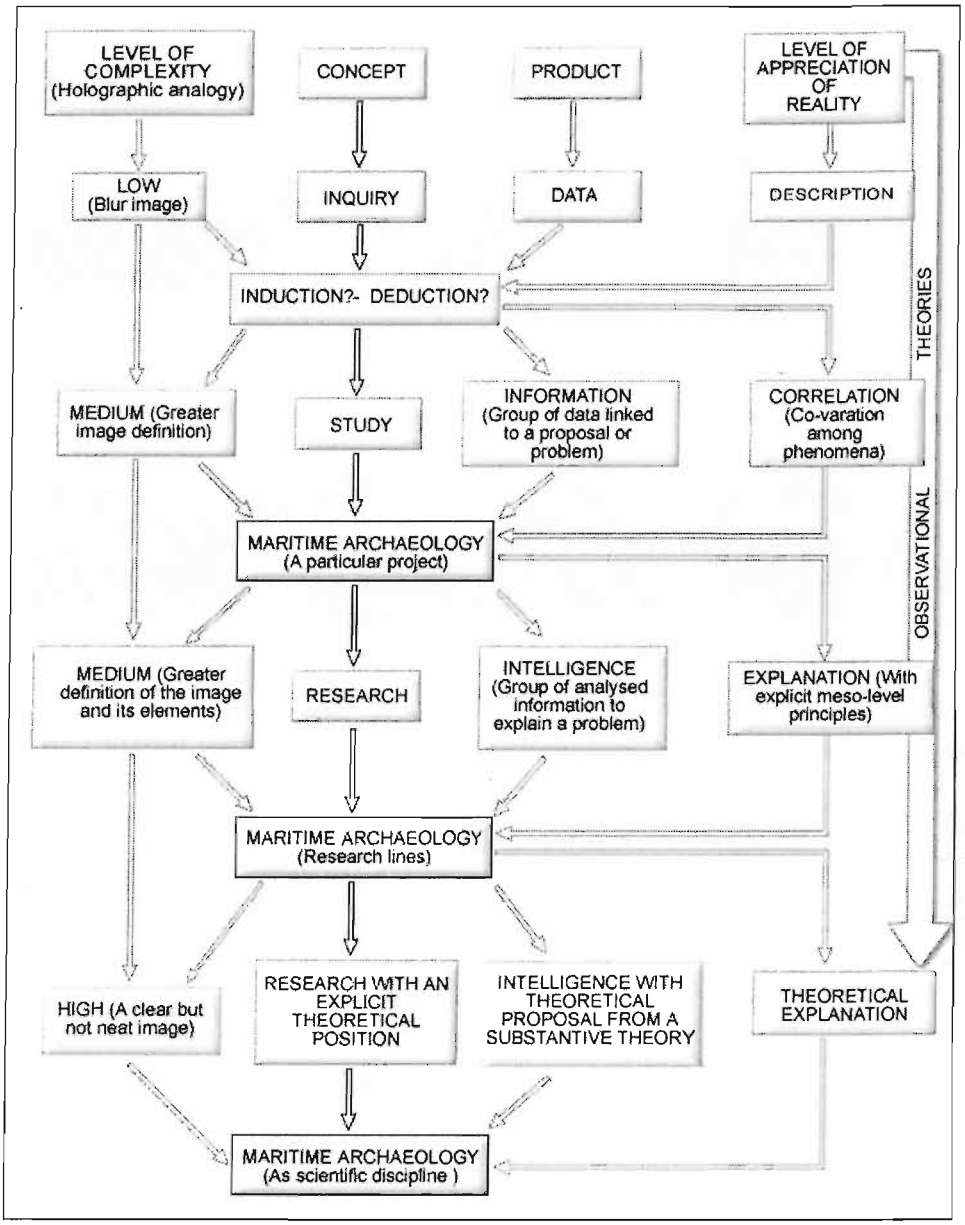


Figure 3.1. Schematic model for problem-oriented knowledge construction in maritime archaeology.

To the left we have a column representing the level of complexity we can appreciate from social phenomena. Following the idea within complexity theory that reality is not properly understandable if sectioned into

separated parts, the holograph is a good metaphor to use. A holographic image is produced by the use of a laser beam through a mirror semi coated with quicksilver. The mirror will reflect part of the object so portrayed and return it to a photographic plaque. The remaining light will pass through the mirror to the plaque. The produced image in the plaque appears to be not more than a sum of mixed concentric circles. But when the plaque is lit up again by a laser, the projected result is striking because the original model will appear as a three dimensional image. Even more remarkable is that if we cut just a piece of the plaque and light it up we will see not just a piece of the original model, a segment contained in the cut piece, we will still have the whole image. It will not be neat, but a bit blurred. Nevertheless, it will remain to show a three dimensional image of the whole (Briggs & Peat 1989:118-120).

The analogy is a powerful intuitive grasp of totality. It works for the model here discussed in the sense that while doing research of the past, we will have different levels of image sharpness of that past, showing elements of that wholeness, although always carrying its share of haze. As we descend in the other columns of the model, our image of the past will be sharpened more and more.

One of the beautiful aspects of archaeological research is that while seeking to answer a particular question, 'how developed was the material culture of maritime warfare in Tudor times?' for example, we might discover that pastime games and music played an important role onboard war ships, and that these materials were carried onboard even on the verge of a battle, as the Mary Rose excavation showed. A war ship will reflect many other elements of daily life, of other aspects of its situational matrix.

Nonetheless, the use of the holographic analogy is less optimistic and less enthusiastic than the idea of the new archaeology of being capable to see "the order" emerging from the archaeological context and that the past could be known both for the reconstruction of the material culture and for those events not observable in the empirical reality (López 2003:3). The analogy aims to understand these possible reconstructions and invisible elements of the context, but it accepts the fact that, depending on the methodological depth and sophistication of the research, the image we create will be more or less neat.

The *concept* column is the backbone of the model, as it penetrates into the epistemological core of a project, depending on the knowledge product to be reached. It is also the route through which all the other elements converge at different moments. We could be satisfied by a mere inquiry, like asking "how many sites are there?" or we could construct a far more complex enquiry involving all the analytical and interpretative components of scientific investigation. To reach this point, the researcher will need to pass through all the phases in the column, and take important methodological decisions, like opting for an inductive, deductive or a graduated though coherent approach.

The *product* column is related to the internal coherence of what we start to produce with our work. A stream of mathematical data can lack significance until we know to what it is related to, e.g. if it is a collection of numbers which represent magnetic values. Once the data is started to be correlated it is transformed into information such as indicating the variation of a magnetic field, possibly indicating a submerged wreck; or the way in which scattered beams and nails starts to make sense in the mind of the excavators so they can draw the shape of the wrecked ship's hull.

Finally, the *level of appreciation of reality* column has a double purpose. On the one hand it shapes the relationship of the other columns by integrating them logically. On the other, it is picturing the kind of cognitive objective we will pursue through a given project. This might go from a description which could content a historical particularist or go to the theoretical dexterities needed to reach an archaeological explanation. The use of *meso-level principles* and observational theories are considered as needed. The term *meso-level principles* refers to particular theoretical assumptions which are explained or understood in coherency with a theoretical position. This mean that the lower level, the one closer to the empirical data, has an explicative (this can be within a causal logic) or comprehensive (in hermeneutic terms) connection with a larger level, with the theoretical position. These principles are not generated by induction from the empirical data, but through a constant relation between the data and the theoretical position. The data without theory is unthinkable and vice versa.

CHAPTER IV
DISCUSSING KNOWLEDGE

Is the maritime a thematic archaeology?

Maritime archaeology could perhaps be considered as a "thematic" archaeology. This would be the case if our field is not pretending to address a global approach and is not conducting studies on the totality of human experience, such as with some of the main theoretical positions of general archaeology that we are used to (Gándara 2006). Then, as with gender or landscape archaeology, for example, which can be tackled from many different theoretical positions, maritime archaeology would be driven not by particular theoretical positions developed by or for it, but by other independent positions. Thematic archaeologies can be considered as focussing on a section of social reality which might offer complete visions, but only of that particular segment (*ibid*). What we could find in this analysis, therefore, are elements of the said positions, with their own characteristics and not with a particular reference or approach to the theme in question. Referring to maritime archaeology as thematic archaeology is not diminishing it in any sense. This characterization of thematic archaeology is and will be valid if we are not interested in the whole, but we should stay aware that there are some elements and traces of an initial interest in totality.

In current practice there is growing interest towards that orientation. This encompasses various aspects, ranging from regarding the regional and

social aspects of maritime sites, to studying social change pictured through technology traditions, as well as the broad path taken within socio-political developments where the ship is a major tool of state building. This also encompasses less technologically-driven approaches that might analyse the social meaning of wrecking, or the meaning of a social maritime landscape and the symbolic aspects of the ship, or perspectives concerning intertextuality, behaviour in maritime risk situations, and even human responses to fear and how they are reflected in site patterning etc. These topics indicate a momentum towards an investigation of the whole, of meaning and change, and critically with the source materials from maritime contexts. Consequently, if we were to pursue this task as a community then perhaps it will no longer be necessary to conceptualize our craft as thematic archaeology. This immediately suggests the need to devise a theoretical construction in its own right. It is difficult to predict at this point if maritime archaeology will ever lose the thematic colour it has today. It is certainly an attractive and passionate theme to observe how different identifiable arrays of ideas pursue an understanding of the entirety of culture, and behave in time across the maritime spectrum of archaeological research.

In normal circumstances only the main creators or "champions" of a particular theoretical position tend to promote it in its purest or most definable form. Followers of that position will adopt more eclectic standpoints. If they do not consider themselves as followers of any theoretical position in a concrete sense, then the level of eclecticism will be increased, sometimes to very high levels. Detecting precise and explicit theoretical positions in archaeological practice is a very problematic exercise, owing to the fact that the majority of its practitioners do not entwine the aforesaid purest form of a position in how they live their work. It is normal practice to take elements of different terminologies, parts of ideas, methodologies, and maybe adopt some techniques, and create nice

theoretical Molotov cocktails. Many archaeologists concede this occurs in the practices of others but might find it hard to swallow themselves. Working in this way is often a shortcut to becoming a theoretical rag-and-bone man, but it is certainly common and normal practice.

This needs to be taken into account while doing the kind of theoretical analysis that is intended here. It is perhaps overoptimistic to expect to detect this easily in how we work as a community, concerning how knowledge is constructed and how we form the justifications for what we do. Another difficulty is that up to this point our community has been filled with a highly disparate range of practitioners. This is not a complaint, as we stand upon the shoulders of the pioneering developers of the field, and some of the practitioners whose first degree or profession was not in archaeology. Notable contributions that have defined the discipline include Colin Martin (journalist), Seán McGrail (former navy pilot, mathematician and master mariner), Basil Greenhill (historian and ethnographer), Peter Throckmorton (journalist), and so on. In a sense, they had the equivalent role that persons like Pitt-Rivers had on land. It is also true that the diverse origins of these human building blocks of our craft have had a side effect. As they learned the practical dexterities of archaeology while doing it, it was not their primary concern to draw attention to the theoretical-methodological side of it. We now live in different times, and partly thanks to their invaluable contributions, we can apply as much impetus to theoretical concerns as to fieldwork.

Archaeological perceptions of ships

The archaeological potential of boats and ships has been the main centre of interest in maritime archaeology. Similarly, these objects have had a special lustre to attract many archaeologists, being the first power to

induce them into this particular field. However, this focus on the vessels has allowed our land-based colleagues to perceive and pigeonhole the maritime archaeologist as a person solely interested in ship technology, ship events and ship-related artefacts. The prominence of ships and boats as a subject of study has been the reason for emphasizing and orientating most of the practice in terms of nautical activities, at least partially disconnecting those from the wider dynamics of society. This seems to have led to some dissatisfaction due to "the failure of theorists to address the main problems of ship archaeology" (Gibbins 1992:83), and because maritime archaeology "has suffered from a lack of concerted strategy and methodology, which has served to distance the pursuit from the mainstream" (Gibbins 1990:376).

Without neglecting the existence and magnitude of these problems, the perspective of contemporary maritime archaeology is not necessarily reflected in such a drastic black-and-white way. The field has been gradually turning the focus of interest towards the wider spectra surrounding the ship. In such approaches the ship itself is no longer the main focus of study but rather the society(s) and wider processes to which the ship, its crew and supporting social structures are but one part. However, this change of disciplinary view is not completely generalized.

It is well known, however, that the first works carried out in the early 20th century in marine environments took little note of ships in particular. The journey within which this perception has changed from conceiving the ship as a mere carrier of interesting objects to be considered as the prime focus of research, and how later ideas around it have been enriching studies of maritime culture, is at the core of maritime archaeology's history. These visions and understandings of the ship are as versatile as numerous. They constitute not a limitation of our field, but a magnificent area for the enhancement of our interest in the past through maritime activities.

By reviewing the first experiences of fieldwork conducted underwater in the Mediterranean, it is possible to see that interest primarily focused on the 'antiquities' with which ships were loaded. Some of these early discoveries came to be known because of the efforts of sponge fishermen. Notorious examples of pieces of art recovered were the sculpture of Zeus salvaged off Cape Artemision (1928), the bronze *Hermes* signed by the Greek sculptor Boëthos of Chalcedon, retrieved from Mahdia, and the fourth-century Demeter bust from Marmaris (1953) (Bass 1966; du Plat Taylor 1965; Frondeville 1965; Throckmorton 1969). Some of these first experiences, such as the salvage at Antikythera were however, not just the result of the discovery of unique objects isolated from other materials, but evidence of a complete site. Any interest in the study of the hulls and what could be gained from them seemed to be absent and needed to wait. Within the fieldwork carried in the Mediterranean between 1900 and 1960 archaeologists were rarely involved and not until Bass' excavation of the Cape Gelidonya wreck were archaeologists present as divers.

After that point, for many archaeologists the main problem regarding studying ships has been and still is, how to properly record archaeological information in submerged environments. This appears to be only a technical, and not a theoretical, question. However, if we try to see what *properly recording archaeological information* means, then the question becomes very theoretical on many levels. One issue is that it is not only a matter of technique, but of "what" should be collected by the means of technique. Many have spoken on this issue. Frédéric Dumas (1965) stated that any report, if it is to be useful, should at least encompass: a geological analysis of the site and its marine environment; a statement of the total working time spent on the bottom; a description of the machinery used; and the gross and net weights of objects lifted (especially when these represent the cargo of a ship). For him reports should also include 'full

analytical descriptions of the difficulties encountered in the course of excavation'. This last suggestion proved its value in avoiding repetition of certain problems or mistakes. Dumas recalls the problems experienced by Gianni Roghi at the wreck site of Spargi in the 1950s, where, after exposing a segment of the hull during excavation and leaving it unprotected until the next season, the wood became degraded.

Peter Throckmorton was one of the first people to catch a glimpse of what we understand now as site formation and transformation processes, although he titled it rather eloquently as a ship's "life-in-death" (Throckmorton 1969:11). His argument was that we could predict that life-in-death of a wrecked vessel if we knew what the ship was made of, the characteristics of the water in which she sank and the attributes of the sea bed where she lay. The progression of an archaeological understanding of these elements through analysis and interpretation would later result in a 'resurrection' from the wrecking event, 'her last agony', virtue of our archaeological work.

To put it in today's words, site formation and site transformation processes need to be part of our main concerns; on both its practical and theoretical sides. Why is this considered a theoretical problem? It is because integrated studies about how sites react through time and to human intervention, and how this impacts research and heritage management mechanisms, are matters linked to the ethical side of our profession. This is an ethical problem because if we did not think it important to preserve and monitor sites for research, collective enjoyment and education there would not be any further reason to pursue this subject. It responds to the value we assign to historical and archaeological remains. Consequently, any effort in understanding site formation processes is expressly technical but inherently theoretical.

From my point of view, the data to be retrieved, and the necessity or not to undertake any intrusive action in an archaeological site, should be driven by the questions stated in a professionally prepared research design. Only if there is no other way to answer the question should we engage in the intrusive action of disturbing the site. I am convinced that I am not the only one with such a point of view, which is relevant for both maritime and land sites (Murphy pers., comm., 2007; Lenihan pers., comm., 2007, Russell pers., comm., 2007; Adams 2002b). The general practice of setting clear research statements within research designs within the discipline follows that principle, but it is also true that for every clear research design there are many others that are confusing, poorly proposed, or inaccessible to the rest of the community due to non-publication or non-compliance to enquiries, or even did not exist.

One crucial influence driving the questions we ask of the sites is that of the 'theoretical spectacles' we use, a concept that many colleagues do not concede as such, but which is still relevant, and bears witness to the need for the present analysis. As theories appear and change, trying to shift concentration to different areas of research, different puzzles, new questions arise, involving the possibility that old questions might be forgotten for good or for some years.

Shifts in research interests are biased by the general perception of cultural heritage, its management and perspectives, coming from not just the archaeologists, but also governments and the general public. The wrecks of the German High Seas Fleet are a good example of how all these views can change radically in a compressed time span. At the end of World War One the fleet of 11 battleships, 5 battle-cruisers, 8 cruisers and 50 destroyers, lay anchored in Scapa Flow, a semi-enclosed sea area in the Island of Orkney in northern Scotland, and were scuttled by their crews on 21st June 1919. Large salvage operations followed. These ships and their

wreckage have been subject to a variety of perceptions and ongoing changes in those perceptions. Initially considered as powerful weapons, then as a source of scrap material, later as diving amenities, they are nowadays considered as national historic and archaeological heritage assets (Oxley 2001 and 2002).

Peter Throckmorton arrived at a point not very often underscored within the sub-discipline, stating that the "peculiar job as a ship archaeologist [...] is to read, from the wrecks of those which sank, the story —long or short— of the ships which sailed safe to port" (Throckmorton 1969:11). This is an interesting perspective, particularly for the time in which he was writing. His words, written almost 20 years before Hodder's *Reading the Past*, come quite close to later interpretative views of archaeology; certainly the semantic field is the same.

Related to that idea, the wreck database has been evaluated in many ways, pointing to its value as archaeological material. One of these perspectives pictures this database as showing a bias towards the notion of failure, being an account of vessels sinking due to being poorly designed and from receiving low levels of maintenance, giving rise to data that constitutes a collection of failures. Conversely, it has been argued that the database should be viewed more positively as a result of human enterprise and calculated risk (Adams 2001). Within this perspective Throckmorton's aim is indeed attainable.

In terms of the archaeological power of the shipwreck database, the failure of a voyage is influenced by the prevailing social and economic pressures, which overshadow the process of correctly assessing the relevant dangerous situations that are encountered at sea. Therefore, it is not the case of a collection of poorly designed and failed ships. It is a sample of social pressures, stimuli and motivations. This is the case, for example, for

different types of decisions made by the *Carrera de Indias*, which was the fleet system running between Spain and its American colonies. It was not uncommon for a fleet to set sail even if known adverse conditions were about to occur or were clearly visible, such as going to sea very close to, or directly within, the storm seasons for a given route, contradicting the knowledge and advice of experienced seafarers (Herrera 2003). The same kind of risk behaviour can be seen in the selection of ballast materials, making them more economical, in spite of safety concerns i.e. using sand rather than stone or metal ballast, at the risk of clogging the bilge pumps (Herrera 1997). Another economic pressure has been the need to keep a vessel in service when its ability to perform to safe levels was hindered by being close to the end of its use-life. This has been expressed as the 'one more voyage' hypothesis (Murphy 1983), formulated from studies of vessels on the Great Lakes but applicable in any maritime context. These socioeconomic pressures that lead to disasters do not, by any means, override the value of this particular archaeological resource. To the contrary, along with those vessels lost in battle, or those overwhelmed by unexpected storms, or those resulting from mistaken nautical decisions, the ship archaeological record allows us to investigate vessels still forming part of functional fleets at their time of use. The result is then an opportunity to research not the vessels, but the people using and perceiving them within a situational matrix.

Time capsules and closed finds

One particular research problem concerning the scope of maritime archaeology is that of the scales of our work. When we work on sites, do we regard them as distinctive historical entities, whose interest is based on the particular uniqueness they individually encompass? It could be argued this has many times been the case, with historical particularism following

this line, and being particularly influential in the USA and Mexico. It can also be argued it has occurred because it is a commonly used or overused phrase to describe shipwrecks as "time capsules". A time capsule is a moment frozen in time that speaks rather uniquely of what happened at that precise instant. The analogy conveys a sense of romanticism to some, and many times its widespread use and succinctness to conjure appealing imagery makes it easier to enlighten a non-specialist as to what a shipwreck is. However, the metaphor does not function completely as it does not truly describe the rationale for our work. If analyzed, that overused analogy cannot resist a serious and detailed critique. A time capsule is an instant snatched from the flow of time, which a shipwreck or any other archaeological site is not. To see it as a time capsule is to see it in isolation and it confuses what archaeology is about. One could argue, therefore, that to avoid that conflict we should simply evade seeing sites in isolation. However, that is not always the case and that confusing metaphor has become popular in and out of archaeology.

The archaeological site of a shipwreck is the material remnant of a sudden event, in most cases tragic and violent, but also one which is totally linked to the cultural milieu of which it is part. At least three considerations must be taken in regard before declaring a shipwreck as a time capsule: site formation processes; the operation of large social dynamics and the role seafaring has among them; and lastly, the nature of the material culture present on board as well as understanding the ship itself as material culture.

Firstly, understanding a shipwreck as a time capsule denies the role of the ongoing and greatly significant post-depositional cultural and natural processes. The importance of site formation processes resides in the fact that we never find the site as it was in the moment of abandonment or wrecking. The study of site formation processes is a way to understand

how that physical residue changes over time. Only then with that diachronic perspective can the archaeologist attempt a better and more coherent interpretation of the spatial and formal analysis of the archaeological record. One could say that with a sound understanding of formation processes we can determine how the archaeological materials were related at the time of sinking, hence the relationships of these materials can be more visible as a result.

Secondly, looking at the widest possible scale of processes will yield the most productive perspective in archaeology. This is, in other words, the difference between choosing to embrace a site-specific archaeology of the event, or choosing to enfold an archaeology interested in the phenomena operating in large scale processes, both in temporal and spatial terms. To phrase it more ontologically, the object of study is not the ship nor the shipwreck, but the change of maritime cultural practices over time and how that is related to the societies supporting the operation of those ships. We study societies, people and processes. This will include shipbuilding and nautical technology, but also the stimuli and reasons for the crew to sail in the area where they finally wrecked, as well as the coastal sites supporting seafaring activities.

Lastly, to be truly considered a time capsule that moment, apparently frozen within the flow of time, should only represent a synchronic collection of material culture. If it is a 'capsule', it should only relate to what happened inside of it, to what is possible to be learned about that single discrete site in that instant. That is seldom the case with ships, wrecked or not. A ship does not necessarily carry objects belonging only to a single culture, and many times the reasons for a ship to exist and to operate are precisely incorporated into the dynamics of commerce and people movements as part of larger contexts.

Ships are subject to maintenance and refurbishment, which might imply important structural transformations during their functional time span, therefore adding somewhat to the history of the ship structure. Therefore, what we are looking at in terms of the ship modified architecture is a story of technology and adaptation that can range even for decades. This was the case with the deck transformations for the *Mary Rose*, where the refitting was considerably more than minor, as it included changing heavy main deck beams and transom knees (Dobbs & Bridge 2000). The remains which were excavated off Portsmouth are different to the *Mary Rose* as it was built more than three decades before. With more than 200 years in between, the *HMS Swift*, wrecked in Deseado Estuary, in Argentine Patagonia, has also archaeologically demonstrated important modifications to its decking structure and solutions to what was supposed to be the original design (Murray pers., comm., 2007). Therefore, as much as a building which has been subject to changes on its structure, such as adding or losing walls, rooms and floors depending on the inhabitants' necessities, ships can be also subject of these architectural changes through their use-life. What questions come to mind concerning these types of changes? Obviously they must be diachronic in nature, because what we see with those modifications are responses to different kinds of stresses, environmental, economical, military, etcetera. The question here goes beyond the synchronic event of the ship. The material culture is part of a ship, of a shipwreck, but it does not respond only to the ship. It is a matter of behaviour. The reasons for the modifications and for the majority of material culture we find onboard are better related to questions as to why people did the things they did to respond to distinctive stresses in their part of the world. These kinds of questions would be almost, if not totally, impossible to answer if we characterize shipwrecks as time capsules.

Yes, the *Mary Rose* sank in minutes, carrying whatever and whoever was onboard that day. That is undeniable and constitutes the first and most evident circumstance. However, to accept that archaeology can only see that immediate context as an encircling boundary is confining the discipline to severe restraints, and the obvious result will be a cramped view of the past. It weakens the whole process of archaeological thinking.

The special conditions resulting from the wrecking process and the contextual relationships between the ship and its contents enable us to work up to these aspects in a way we could not if the systemic integrity was invisible to us. The present dismissal of the term 'time-capsule' should be understood only as a cautionary perspective in order to avoid overlooking those diachronic contexts. Features/sites that exhibit these relationships are better termed 'closed finds'. The advantages derived from contextual relationships between objects in closed finds should not negate the analysis of the ship in a diachronic way. To the contrary, they broaden the possibilities.

All physical residues of a shipwreck exist roughly in the same place and certainly in the same moment, but are not frozen either in time or in space. While collapsing, the ship structure, which contains an immense collection of archaeological assemblages all spatially related, will in many cases alter those relationships within a process that can last over prolonged periods of time. This creates a new configuration that now encompasses structures involved in decay processes, artefacts, and sediments, controlled by the geomorphological dynamics prevailing at the site. We read those post-depositional processes, filtering them out in order to understand how the structure was before it collapsed, the artefacts before they slid down the deck, the owner before he was eaten by crabs, etcetera.

A more speculative perspective regarding the time frames involved in shipwreck archaeology is that, because wrecks are often the product of dramatic events, they rarely leave opportunities for the more common dynamics occurring in other kind of sites, such as the variation in degree of the processes of abandonment. Of course this is not a rule that might be applied to all wrecks. The actions taken in nautical casualties occurring near to the coast, and in maritime surroundings where salvage can be attempted, can be equated to a degree of abandonment, not as immediate as with a sudden sinking in non-retrievable circumstances, but still at high speed compared to any other archaeological deposit. In Schiffer's terms (1972), a shipwreck site will present a more intense degree of systemic integrity at the moment of sinking. The possibilities of archaeologically perceiving that integrity depend both on the post-depositional processes, in the quality of the site formation process analyses, and on how much the archaeologist in charge is aware of the value of observational theories at practice. In addition, Adams (2001) points out that the integrity of such relations can yield symbolic attributes not often obtainable from other sites.

Even in terms of heritage management it would be better to avoid describing shipwrecks as time capsules, as this denies one of the most important aspects of archaeology, the study of cultures over time. This concerns not only how they were, but in which processes they were involved, and how much they were interconnected with other societies and cultures, and even further with the co-variations among them. Therefore, it will be more productive to describe wrecks to heritage managers and government delegates as primary elements for understanding the flow of civilization, rather than as a frozen, social ice cube. This vision might be useful to help them see that protecting the maritime heritage as a whole is the only way to potentially understand that relevant component in the history and processes of humankind. If not, it would be rather easy for

authorities to accept the loss of particular sites, overlooking the fact that this will destroy the possibilities of further general analyses.

Regionality and wide range goals

The wide scope of research within shipwreck archaeology is a matter of scale. The issue of scales bounces back to the discussion concerning the vital role of our questions in determining our practical procedures. Regarding the task of creating a picture of the extent and nature of the archaeological resources it is necessary to discuss how and for what reason we might be interested in knowing them. If we are ignorant of the archaeological deposits in a certain area of the sea bed, but we know certain vessels might rest there, we would need to opt between a search and a survey. There is a clear difference between them. They respond to different questions, demand particular field procedures and depend on very different theoretical assumptions concerning perceptions as to which would provide the highest value in terms of understanding the past. This depends if one has a particularistic approach interested in the archaeology at the scale of the event or one is interested in larger scale processes.

Studies of large scale processes could appear to be inevitably antagonistic with an 'archaeology of the event'. However, Mark Staniforth's excavation of the *Sydney Cove* wreck (1797) in Australia added another working option by using a theoretical approach coming from the Annales School. The approach focuses particularly in Fernand's Braudel's three scales of history, being these: short, medium and long term (Braudel 1980). Staniforth's argument seeks for a dual perspective. He is interested in the event, understood as an inherent condition of a shipwreck, but he also defends that it is by incorporating "the event into the longer term and the larger scale [...] that maritime archaeology has some of its most powerful

explanatory value" (Staniforth 1997:19). He constructed his argument not by solely looking at the porcelain assemblages onboard, such as dinner and toiletry sets (Staniforth 1995 and 1995), but by looking "at the link between personal hygiene and certain infectious diseases and the changing social discipline associated with personal cleanliness" (Staniforth 1997:19). Therefore, his approach attempts to use the archaeological record to study the event alongside longer processes, such as hygiene changes over time and its meaning, colonization, exploration, capitalism, etcetera.

The National Parks Service's Submerged Resources Center (NPS-SRC) in the USA has been working under a large scale processes perception for many years, primarily while surveying and documenting the maritime archaeological record within Point Reyes National Seashore, California, in the 1980s (Murphy 1983, 1984a and 1984b), in the 1990s in Dry Tortugas National Park and Biscayne National Park, both in Florida (Murphy 1993; Murphy & Johnson 1993b; Murphy & Smith 1995), and in Isle Royal National Park in Lake Superior (Lenihan, 1994). Most of this work has been pushed forward by archaeologist Larry Murphy's conception of the task. This approach has focussed on maritime behaviour within a particular context, and looked at the broader processes responsible for structuring that maritime behaviour, and that affect primarily the maritime archaeological record. This has been conducted in terms of studying the seafaring relationship between the European nations and the developing colonies.

This matter is concerned with determining the archaeological information about the past we pursue. The question about scale has a lot to do with the kinds of research that might be considered as more productive. Certainly, we have to understand the site at the artefact level, at the feature level and at site level, but that in itself is not as productive as when picturing it on a larger and regional context. Furthermore, it is possible to

look at the large scale processes that structure the archaeological record, whether they be the development of settlements, the development of concentrations of shipwrecks, or the development of maritime trade over time. The most penetrative way of approaching that is to look at it at the largest scale we possibly can. All the scales have to be addressed, but the widest possible scale should be given more privilege because that is where the most interesting questions can arise (Murphy pers., comm., 2007).

Murphy is most interested in studying through the maritime archaeological record the historical archaeology of capitalism over a long period of time, looking at its manifestations, particularly for a maritime context (*ibid*). In order to follow this interest, looking at the world system as it operates and appears today, one needs to structure questions related to 'why'. Therefore, why the ships were built in the way they were, and why they were used in those specific ways. Another productive way to see it is in the framework of competition. The spheres of processes such as colonialism and de-colonialism only occur at a large scale, both temporally and geographically. Murphy's interest in the operational details of the system at the widest possible context truly matches with his field practices.

A maritime historical archaeology of capitalism?

A historical archaeology of capitalism, to be used in the sense that Murphy does, should be a tool for better understanding the social changes in the recent past at large scales and over wide interconnected areas. From that approach, the study of the archaeological record should allow a better understanding of the social dynamics in operation among nations. This takes into account all the important maritime means of communication, moving then from site scale to regional, to state, in an integrative and

vigorously changing historical context. This is a maritime perspective to what otherwise was suggested by Leone as being within the interests of: "finding ways to use historical archaeology to study processes relevant to the dominant Western economy of recent history" (Leone 1999:3).

Another example of exploring the research possibilities between maritime archaeology and capitalism comes with Dellino-Musgrave's work (2006). By studying the pottery cargoes of 18th century British ships *HMS Sirius* (wrecked in Norfolk Island, Australia, 1790) and *HMS Swift* (lost in Puerto Deseado, Argentina, in 1770), she is interested in analysing "British action through material relations by interpreting the consumption of pottery in the Royal Navy and colonial contexts" (*opcit*:30). Her approach shows an interest in studying the necessary chains of action that relate local events to commerce, consumption and colonization under a capitalist framework. For Dellino-Musgrave "the development of the shipping industry, trade and movement of exotic goods have been considered, from an 18th century perspective, as a way of defining European ways of living in a changing social world bringing the equation 'modern' *versus* 'tradition' into discussion" (op cit:78).

However, the approach of a historical archaeology of capitalism should not be regarded as a research entity devoted to the history of Britain and its colonies, particularly the USA. Nonetheless, this seems to be the dominant case with some of the current literature on this subject (Leone 1995; Leone & Potter 1999; Johnson 1993, 1996 and 1999; Purser 1999). The general vision seems to privilege a north-western view, or even a solely English-speakers' view. This would be seriously limited in scope, and could tend to privilege its reading from the relevant social contexts prevailing there.

If the historical archaeology of capitalism is to become to be strongly rooted in archaeological practice this approach could not only better

inform the modern audiences about the economic routes taken in the recent past in order to shape the modern world, but also to perform (if used responsibly) the all-important act of giving archaeology a significant social role. For Leone:

> Without the explicit consideration of politics at both the local and larger levels, there can be no adequate understanding of the material bases of historical archaeology in our own society. Nor can we effectively realize, without such an orientation, the rationale for historical archaeology as the study of European expansion throughout the world. The alternative is to continue to live with our current political innocence and political ineffectiveness (Leone 1995:251).

The importance of incorporating political concerns within research has also been commented on by Alison Wylie. For her, historical archaeologists should study capitalism "because the archaeological record is, indeed, a primary resource of information about the material conditions of life, and the social, ideological mediation of these conditions, that are constitutive of contemporary capital social formations" (Wylie 1999:24). It is interesting that if a historical archaeology of capitalism can follow the route Leone is describing in the excerpt, then it will be following a very similar path to the one Latin American Social Archaeology has been interested in since the 1970s, in terms of the social character involved in archaeological practice, which has been one of its most relevant aims. Latin American Social Archaeology attempted not only to recover the past, but to search for the meaning of that past and how it plays a fundamental role in the national development of Latin American countries (Benavides 2001:355). However, this is not peculiar to Latin American Social Archaeology but a common factor of how many societies have used the past in the present. Of particular relevance in this respect is that this position reacted against traditional archaeology at the same time of highlighting the necessity to

have congruence between the archaeological and political practices of its followers (Gándara 1994:97).

Nonetheless, Leone's perspective is risky and ontologically self-limited in the sense that it is missing the point of the larger comprehension of historical processes. The point should not be to focus on European expansion, but on the social interactions between Europe and the rest of the world, and how it was a two way process of mutual influence (however unbalanced it was in terms of social realities and abuses). Europe can not be understood today without the influence of the former colonies, from the largest political spectra at kingdom and government levels to the effects of daily life in a humble village.

Because of the undeniable influence that the history of capitalism has in the world as it is today in terms of shaping international relations, commerce, warfare, politics, frontiers, etcetera, to execute a historical archaeology of capitalism only from a north-western approach self denies the major interpretive and social implications this approach advocates for itself. As pointed out by Johnson (1999), these entities of interest are not unique neither to historical periods nor to capitalism, but central to the whole archaeological practice. This is also the case for the wide ranging scope of interests in Murphy's approach to a maritime historical archaeology of capitalism. Such a perspective seems to be an important addition to the theoretical project of maritime archaeology.

However, we need to review a critical weakness within the theoreticians so far involved with the historical archaeology of capitalism. The problem refers to look only at the Anglo-phoned world and the parallel conflicts this restriction poses. This of course influences the examples they use and the way they phrase their arguments.

We might assume a number of reasons for such a directed vision. There is the underlined and implicit assumption that capitalism is something that started in northern Europe and that initially was to be found in protestant societies. Therefore, to find it in Britain and in its colonies in America would be a direct outcome. Influential historical perspectives have shaped this viewpoint, such as Max Weber's essay *The Protestant Ethic and the Spirit of Capitalism* (1967, orig., 1904-5). Perhaps reviewing the questions posed from an archaeological perspective can aid to understand the problem. Johnson's interests, for example, derive from questioning why capitalism and industrial revolution started in England and only later in other areas (Johnson 1996). So to an extent the question is already assuming part of the answer. The problem is partially framed precisely by the way in which the original question was framed.

Other conflict of this approach is that it seems to focus primarily on the origins of capitalism. This could justify the geographic constraints of interest. However, capitalism has been a major form of influence in the world over the recent centuries and the ways in which it has affected other regions should not be left aside in the effort to understand it. Therefore, another important question should be not only about when and how it was originated, but how it has influenced the social realities of other regions. This is a topic that could fruitfully be explored.

Just framing the scope of research from an Anglo-speaking perspective runs three risks: Firstly, it might ontologically limit the subject. Secondly; the resulting studies might be biased by the perspectives of those who are engaged in the societies which today hold the political dominance from capitalism, without examining other areas of the world which are and have been influenced by capitalism. And a third problem is that there is an unconscious repetition of an ethnic bias consisting in considering that Anglo-speaking societies are dynamic and progressive, and other societies

such as Hispanic ones are backwards, rural and agrarian. This of course is influenced by the prevailing clichés of the world that surround us.

Under that viewpoint, there would be concrete historical questions to address. For example, what were the social dynamics particularly between Spain and Portugal and its colonies between the 16th and 19th centuries? That was a dynamic and changing relationship which does not respond to that stereotype of backwardness and stagnation. Can we say these places became capitalist just like Britain and its colonies? Clearly not, because there are other social forces at work. There was something different going on in there. What we have in the set of colonial relations is a complex, dynamic and changing context that is as interesting as what was going on between Britain and its colonies. And, just as with Murphy's approach, maritime archaeology can have a central role in answering these questions.

Maritime or onboard societies... Closed or open?

Another significant aspect of maritime archaeology that needs to be visited is related to whom and what part of a whole society we are studying with shipwreck sites. On the one hand, Muckelroy defined shipboard societies as 'closed communities' (1978:221), closed at both ends of a maritime voyage, therefore implying the isolation of that human group for the duration of the trip. On the other hand, Spanish historian Pablo Emilio Pérez-Mallaína has pointed out that it is not possible to generalize about people of an epoch through what we can learn from their nautical world. For him, "it cannot be pretended that a human group sailing on a ship, or that the group on land linked to maritime interests, can represent the social whole" (Pérez-Mallaína 1996:17). Both perspectives encompass certain problems. I have discussed some years ago that instead of being a closed community, a ship can be perceived as an open social system,

opened to its own world and to ours. The sailors and the land-based people linked to the maritime world (merchants, functionaries, cartographers, painters, writers, scriveners, court members, eventual passengers, shipbuilders, etcetera) are indeed carriers of the 'mother culture' to which they belong, i.e. they are carriers of customs and culture. The fact that they might not show as strong similarities in the material culture within the archaeological assemblages we can investigate, is part of the two facets which are complementary sides of the same history and processes. Special features are derived from shipboard societies, and the activity happening on board might be in many ways distinctive to anything happening on land (Herrera 2001:67-8). Perhaps a more prolific and inclusive way to see these assemblages would be to characterize them as a means to study daily life on board.

Keeping the separation between land and sea people might impose a false barrier; preserving the supposed antagonistic dichotomy that exists between the landsmen and the seamen, particularly signalled by western industrialized societies. It is questionable that the society can be divided in such a radical way, that the sea divides a human group. An example of the unity between land and sea might be useful now. The fishermen in the Isle of Chiloé, in Chilean Patagonia, are well known for their sailing skills. Nonetheless, if one were to be on the island at certain periods of the year, one could see scarce activity in the harbours and wonder where the sailors are. Upon asking, the answer might be 'they are cultivating potatoes' (Chapanoff pers., comm., 2002).

Among his many voyages, Alejandro Malaspina led intense scientific expeditions to the Spanish Colonies in America and Asia since 1789, and was later commissioned to search for the Northwest Passage. On his exploration voyages his crew thoroughly documented animals, plants, and societies of the places they visited. Had his vessels *Descubierta* and

Atrevida sank in the middle of that intense research voyage, could we describe them as closed communities while they were interacting with other crews and with many coastal communities? This raises the question as to when we can characterize both ends of a voyage. To typecast seafaring communities as closed denies an important role in sailing. To adopt the term for only the discontinuous legs of the voyages on which a crew had no contact with others is not practical, as there would be few ways to account for them.

A more productive orientation, rather than asking questions about maritime cultures or shipboard communities, would be asking questions regarding the maritime aspects of culture.

From wreck to shipyard, to city, to society

Another case of archaeologically looking at the various questions and scope related to the scale of approach is in the work of the Dutch archaeologist Jerzy Gawronski. He has been working along similar lines regarding the cases of the Dutch East India Company's (VOC) ships *Hollandia* and *Amsterdam*, and is interested in seeing archaeological practice as material cultural studies (Gawronski pers., comm., 2006). In order to have a wide observational perspective of how ships can inform us about the 'largest technological socio-economical, and cultural systems of the society from which they originate' (Gawronski 1997:1), he has taken the evidence provided by two ships of the same period.

The *Amsterdam* was lost in 1749, when it was struck by a heavy storm and ran aground on the beach of Bulverhythe, near Hastings, southern England. Due to its massive weight it sank in the soft banks of a silted up riverbed. When rediscovered, in the late 1960s, the site suffered the violent

intervention of mechanical excavators used in treasure hunting activities. Nevertheless, archaeological excavations in the 70s and 80s proved that the physical integrity of the artefacts on site and the preserved spatial relations among them were relatively high (Gawronski *et al* 1986; Gawronski 1990, 1991 and 1997). On the other hand, the *Hollandia*, sank in the Scilly Isles in 1743, due to the hull hitting a rock. In contrast to the *Amsterdam*, the site's area is subject to high levels of swell and current activity, the organics and delicate materials were poorly preserved and the original assemblage of the ship's content was considerably disturbed (Gawronski 1992:1997).

Gawronski has been working on the relationship not only between material culture within the ships, or among them, but how they are related to the VOC and to the city of Amsterdam as a centre of economic network of the company's shipbuilding and shipping activities. This led him to suggest three levels of archaeological interpretation: The site's physical reality, that is at individual site scale; the company's context, its practices and procedures; and at a broader scale of interpretation the ship, the shipyard and the VOC as part of an entire society, in this case the society of the city of Amsterdam (Gawronski pers., comm., 2006).

These levels of interpretation need to be related to their own set of questions. The first one is concerned with the material aspect of a site and it is associated to understanding its physical entity. Here we are concerned with site formation processes; with the material reality as it is now, and also with the material reality as it was before entering an archaeological context. In this first level we are addressing questions relating to the shipwreck and the original ship. We need to understand the formation of the shipwreck site in order have better elements to understand how the original ship was before it sunk. It means assessing a massive artefact which contains thousands of other individual artefacts which are all in

spatial and functional relationships with each other. In order to do so, we need to understand how these relationships are altered over time. These are Schiffer's *n-transforms* (1975). However, we also need to pay attention to the period between the moment of the ship reaching the seabed and when we start the site investigation. That period might include the last minutes, hours or even days of the vessel, as the crew might have been jettisoning materials and altering the ship's integrity while trying to save it. The latter are *c-transforms*, cultural activities impacting on the future archaeological signature. Adams (2001) has also made this point regarding the loss of the *Sea Venture* in Bermuda in 1609. The wrecking process of that vessel took four days and involved a social as well as physical reorganisation of the ship with consequent results in the visible archaeological record. It is obvious that *c-transforms* happening after the wreck shall not be left aside for many shipwreck sites, as contemporary attempts at salvage are frequently recorded when the circumstances of loss allowed it; and post-contemporary and modern salvage will alter the archaeological integrity of the site and they might not be easily evident. Yet they often are.

For the second level of questions we are dealing with the context that this entity was part of, and how it was related to other aspects of the reality to which it is related, which can be biological, geographical or social contexts. The interest here is with the contextual situation of the ship. For example, this might be the journey it was involved with, including the intended route, the social motivations to undertake it, the transported goods and the selection of vessel in itself, as well as the crew to operate it. In short, it relates the ship to the situational matrix of seafaring (Herrera 2001). Therefore, this second level of questions deals with the larger framework to which this ship was part of, as it reflects elements of that framework. The questions deal with the society, the people, and also the events which make part of the existence of this vessel.

On this level the scope for questions is certainly broad. The questions go from the very specific to general and holistic ones. Ships are a social product and on this second level they reflect the shipyard and the enterprise sending them to sea, in this case the Dutch East India Company. For the VOC these ships were both a product and a tool, because the shipyard as such was also a microcosm, a homogeneous entity with a technical infrastructure, with hundreds of people as personnel, divisions of labour, with specializations, production and trade (Gawronski pers., comm., 2006). Therefore, there was an entity, the VOC, which established the shipyard, which produced this other entity which is the ship. The ship was also an invention of enterprise; as they built the ship for a certain number of purposes, to be a product of the Dutch East India Company. Therefore, when we are over the ocean's bed and we see the remains of the vessel, what we see on this second level is the product of the company. From the first level, the material and dimensional reconstruction, we come to a second level which entails interpretation, in which by understanding the ship we start to understand as well the company and we start to understand the functioning of the shipyard (*ibid*).

Finally, Gawronski's third level of interpretation is strongly intertwined with the second. The shipyard and the company are part of a larger society; the shipyard is located in a city, in this case the city of Amsterdam. The shipyard could only function through a network of trade and production which is part of the economic structure of this city. So at the end the ship which we see resting in the bottom of the sea also reflects the socio-economics of the city of Amsterdam (*ibid*).

Each single artefact which was onboard the ship came through the infrastructure of the yard, but came as well through the infrastructure of Amsterdam. Each artefact is related to the socio-economic behaviour of the

city in a larger context. So, with these three levels of interpretation it is possible to make a step from the first set of questions (dealing with the physical aspects of reconstructing the shipwreck, and reconstructing the ship as an individual entity) to a second level of questions which are dealing with context. Dutch East Indiamen can be situated in an immediate context, which is the shipyard, and a larger context being the city and society (*ibid*).

After reviewing Gawronski's levels, it has been demonstrated that the three levels suggested by Muckelroy, previously discussed in chapter III, are indeed reachable in even broader scope than he envisioned. Along with Murphy's examples, these make evident that manifestations of theoretical insights have been applied and are presently part of our regular practice. Our limitation resides perhaps more in the lack of communicating our theoretical perspectives than in their very existence. The same situation characterizes the existence of observational theories. It is expected they have not been called as such, as this term has been in use to a certain extent in Latin American archaeology, due to Gándara's influence, but not in other regions. Nonetheless, what the term observational theories stands for is part of our practice.

CHAPTER V

JUSTIFYING KNOWLEDGE

Why is it necessary to discuss ethics in a volume dedicated to theory?

An interesting and important aspect of research, though relatively unseen or discussed, is that of the role of ethics and the massed cargo of values it is laden with. A common idea is that science is good in itself, that it is free from outside influences aside from those involving pure research, and that it has boundaries that separate it from those noxious influences. This vision is not only Manichaean but unreal, and it has been opposed by theoreticians related to social constructionism, such as Ian Hacking (1999) and John Searle (1995); and even by post-modernist philosophers such as Jean François Lyotard by stating that the legitimacy of science is no less socio-political than it is epistemological (Lyotard 1993:43). However, to find open debates about this issue is not as common as it is desirable, apart from those amongst philosophers of science. Archaeology is no exception. Our craft, as with any research activity, is not isolated from the interests of funding agencies, political agendas and the influence of historical characters. These elements have had of course a weight in the development of maritime archaeology.

If there is some doubt as to the effect of such external influences we simply need to think of some of the projects which at different moments have been protagonists in the development of the field. The Lake Nemi ships

experienced almost 500 years of sporadic exploration, including the work of Leon Battista Alberti in 1446, Francesco Demarchi in 1535, Annesio Fusconi in 1827, and Eliseo Borghi in 1895, until Mussolini's interest in the ships promoted the pumping of the lake and the recovery of the ships under the direction of Guido Ucelli. It is unlikely that Mussolini was interested in the purity of the science, but instead coveted the potential use of the Roman discoveries to emphasize his idea of a re-born empire under the guidance of the *Fasci di Combattimento* model. In very different cases, the *Mary Rose* and the *Vasa* had the advantage of being favourite vessels of their sovereigns. Centuries later it was possible for the archaeologists to benefit from that context and involve the English and Swedish crowns to sponsor or support the projects. The involvement of royalty also attracted welcome media attention in promoting the project and attracting extra finance.

Science is often considered neutral, giving the sense that its descriptions are likewise neutral. This apparent neutrality allows the impression that there is no value behind that description. This is because values are often considered to involve an emotional reaction that is socially generated, and therefore subjective and not 'scientifically pure'. However, it is also supposed that science contains the value of 'virtue' because of its pursuit for 'the truth', a truth that is allegedly searched for without the interference of other values. Here is where the main conflict resides, as this presumes confusion between value and impartiality.

It is with the arrival of characters like Thomas Kuhn and Imre Lakatos that these problems began to crop up more openly and regularly. They highlighted the way in which research is socially influenced, with this influence derived from values. Their criticisms of the concept of neutrality showed the paradox that, without values to guide the problems that an emerging paradigm is interested in, the latter would be impossible or

irrational. A new paradigm would convey problems or 'puzzles' that might have been irrelevant in the past, similarly ignoring the questions that were seductive to the previous paradigm.

In archaeology, we have theoretical positions which acknowledge neutrality as one of its aims, such as with culture history and with many lines of processualism. We also, however, have positions which oppose the myth of neutrality, such as social archaeology, such as when seen from a Marxist point of view. Postprocessual perspectives also imply a distancing from a neutral approach by the very nature of promoting various interpretative, gender, and historical archaeologies. Latin American social archaeology has been concerned with this issue; the concept of 'theoretical position' openly emphasizes the role of values in research. In other words, it is concerned with the axiology of archaeological practice. Under this approach, to make explicit the component values of any given research allows one to orientate decisions, as well as help to answer questions on *why we do research?*, *for whom?*, *what for?*, and then to align them (Gándara 1993). This explicitness allows more coherent ways to answer *how* we will do it.

Ethics in maritime archaeology

Research does not exist without influences. These are influences mainly of thought, economy, politics, and ethics. All of them leave a deep mark and maritime archaeology, no less than other fields, has its bruising encounters with them. The governmental agencies engaged in selecting which projects are funded, influence the subjects selected for research, and even how they are carried out. The political use of science has similar effects. At different historical moments, the way which scientific work is perceived by society has had a great influence on its practice. All these

matters have an influence on our field of research, and for archaeology an ever-present concern is the preservation and conservation of cultural heritage. The next paragraphs will deal with how that value is linked to remains of maritime sites.

Within its scope then, ethics must be a central interest of maritime archaeology but as much as it is important in any scientific enterprise, their effect on our type of work is particularly bestirring. It is a privilege to work with cultural heritage, but because it is in principle owned by the whole population, it carries an onus of responsibility that puts our work under close scrutiny. And the issue in which this is most keenly felt is that of ship cargoes, potentially under constant risk of economic exploitation. We need to openly discuss why ethics are so important from social, practical and philosophical standpoints. We also should ask in what ways and to what extent is social science important to people.

Many of the main questions of this volume concern the different ways in which we construct knowledge. However, we also need to consider its benefits and who are its beneficiaries. Of course this matter is of prime importance in all sciences, but as we work with material culture which is the common property of large masses of people (though perhaps not directly under their control), and it is also a finite, non-renewable heritage, it demands the highest attention. We have been discussing questions related to "what we can find out" and "how we find it out". The complement of these two former questions are "what can we do with the information we find", and "who is it for". These are questions related to 'why' is worthwhile to do it and what is the point of doing it. This is central to our profession: how conscious am I of the consequences of my work and my responsibilities when handling a heritage which is not mine?

Ethics need to be constantly present in our work. It needs to be a key topic under consideration in any piece of work which discusses our strategies

and reasons to touch and research the archaeological material we work with. Ethics corresponds to the very principles of what we are doing, namely to be responsible about what we do. This has positive or negative consequences for other individuals and societies. If I touch an archaeological deposit I alter it. If I excavate I destroy its contextual integrity and annihilate all the potential information that I am not able to see and record. If I destroy it, I raze something that is not my property, but that of a community that may be constituted by millions of people. Therefore, this is not a trivial issue.

Responsibility is always a personal decision, an individual choice. It is necessarily influenced by the surroundings, but is ultimately a personal decision. One needs to formulate procedures which imply the use of a non-renewable resource to answer a set of questions that one considers to be important. This means that action involves responsibility.

There is an implicit code of conduct and ethics within archaeology. This code is usually not written explicitly, apart from notable exceptions such as those of the British Institute of Field Archaeologists (IFA 1988), or that from the Australian Institute for Maritime Archaeology (AIMA 2001), or the UNESCO Convention. It is understood that archaeology stands for the proper research, conservation, preservation, exhibition and publication of national and international heritage. Nevertheless, this is not always the case. Sometimes other interests masquerade as archaeology. We find cases of archaeologists openly placing their bank balances above the principles of heritage preservation when they decide to work for treasure hunters. This perspective derives partly from what I have seen in Latin America, but is also a standard situation when it appears:

> Somehow it always seems to come down to money. The commercial value of some shipwrecks motivates treasure hunters and keeps

> underwater archaeological resources apart from other cultural resources in terms of treatment under the law, in public policy, and in the popular mind. And it is no coincidence that the most vocal advocates of collaborating with treasure hunters are those who themselves are currently receiving, or have received, substantial financial compensation from commercial salvage projects (Elia 1999:116).

The reader should note that I will always use the term 'treasure hunter' instead of referring to persons involved in "private enterprise" or "investors", or any some such terms. Many research institutions are private enterprises but do not engage in trafficking archaeological materials. There are many associations, groups and individuals investing in archaeology, who do not destroy the context in pursuit of shiny objects. Archaeologists working for treasure hunters are themselves transformed into one of them, abandoning the ethical standards of the profession. Alongside many of my Latin American colleagues, I have been engaged in strenuous long-lasting battles to protect several countries' maritime heritage. We have spent years in this intense and exasperating defence, with the worst and most damaging situation being that of an 'archaeologist' helping the treasure hunters.

The situation of archaeologists working for treasure hunters is called by Donald Keith as *the trappings of legitimacy*. That is what these companies look for, someone 'acceptable' who can legitimise their work, someone from which they can use not the knowledge but the credentials. They can then say 'you archaeologists gave this person a degree, our work is valid' (Keith pers., comm., 2007). Keith recalls an archaeologist who worked for the *Whydah* project. This was an example of treasure hunting during the 1980s with a wreck that is presumed to be that of the pirate Black Beard, who lost that ship off Cape Cod in 1717. "The colleague working with the

Whydah quitted after a while and then admitted he made a mistake and went back to his former colleagues. As if it was accepting something is wrong and twisted and later on saying 'oh yes, I know murder is wrong, I shot someone, but now I am back in the law'. No Penalty" (*ibid*). I totally agree with Keith's concerns. These archaeologists should not be allowed to return to the fold after demonstrating that they can not live up to the most basic ethical standards.

There were actually a number of archaeologists working on this project, among them Edwin Dethlefson, at the time president of the Society of Historical Archaeology (SHA), based in USA (Elia 1999). After receiving criticisms from the archaeological community Dethlefson resigned, "not from the *Whydah* project but from the SHA"; he later realized he had little control over the work and left the project (Elia *op cit*:109). The treasure hunters then contracted archaeologists Warren Reiss and Michael Roberts. However, Reiss left the endeavour due to a dispute within the project regarding control, funding and excavation strategy (*ibid*), not before publishing a paper praising the effort of working alongside 'salvage interests' (Reiss *et al* 1986). Later, Reiss publicly reversed his position (Elia *op cit*:109).

Archaeologists who work as treasure hunters can be considered as the latter. They are treasure hunters with an archaeological licence. Many of them would say "well, it is legal in this country; I am not breaking any law". But the existence of a permissive law does not make it ethical. There is also a personality matter involved. Normally archaeologists working for the treasure hunters have similar needs and coincidences: a liking for media appearances, to see their photograph printed here and there, with the internet increasingly taking over from books and newspapers in this respect; the wish to make larger amounts of money for often easier work, than professionally driven archaeology can offer; not having any interest in

the people and the country who are the owners of the heritage being sold off; and, finally, not being competent archaeologists to pursue real and legitimate work.

An archaeologist working for treasure hunters has as many ethical inconveniences as a doctor working for an organ trafficker. It is exactly the same situation, contravening the role of the profession by using an element of its expertise in search of personal gain, resulting in permanent damage to others' rights and heritage. Toni Carrell similarly sees it as self-serving conduct:

> You can make all the excuses you want: 'well, if I do not do it, all the information will be lost'. I do not think there is any excuse for it, under any circumstances, particularly if all what that archaeologist is doing is providing legitimacy to an otherwise unethical and inappropriate exercise. I know there are countries that say 'you had to have a bona fide archaeologist working with the treasure hunters'. What they are doing is providing a service to the treasure hunter and not to archaeology. Those countries that require it are often thinking that if I have 'a real archaeologist' working with this group they will make sure that things are done right and that objects will not be destroyed, objects will not disappear and objects will be properly catalogued, recorded. But we all know from experience, whether that is from the *Whydah* or from any other project, that that does not happen. The archaeologists do not drive the project; they are definitely not the dog that is wagging the tail. They are the tail that is been wagged by the dog. What they say does not hold any sway in the project at all. Any archaeologists that work with treasure hunters are deluding themselves if they think they are going to make any difference at all. It is the money that drives the bottom-line, not the research. Quite frankly any information that can be gathered probably

never gets to be published anyway because the treasure hunters are not going to bother with that either, unless they think it can be helpful in marketing the things. The UNESCO Convention is very clear on this point. The artefacts cannot be sold to support the project (Carrell pers., comm., 2007).

Portuguese Filipe Castro started in this field through getting involved with heritage protection. He has been one of the commanding voices in the struggle against archaeology being improperly used for the benefit of just a few. He is now a member of INA. Apart from his interest in Iberian shipbuilding and seafaring (Castro 2000, 2005 and 2006), he has maintained his concern regarding ethics, and is also immersed with the development of the field in other places. He tried to start research on the Playa Damas site, a 16th century wreck in Panama. If successful, that project would have not only brought interesting new perspectives about seafaring exploration, but also provided a kick start to the field in Panama. However, there was a treasure hunting company who contracted a land archaeologist and convinced the local government to commercially exploit the site. Castro considers this state of affairs as a crime, and that we should confront these 'archaeologists'. By not confronting them the goal misleadingly shifts from trying to solve a problem to pretending there is no problem at all. It appears as if there is some fear among archaeologists when confronting these people because they serve companies which have expensive lawyers at their service. Castro has an opinion which is not shared by everyone in the field: "If one has fear this one should stay at home. It is not moral. We should confront them in the conferences where they appear, do it publicly" (Castro pers., comm., 2007). Nonetheless he is not alone in this position, with others particularly active in this respect including Dolores Elkin in Argentina, Alejo Cordero and Valerio Buffa in Uruguay, Diego Carabias in Chile, and Larry Murphy in the USA. I am totally convinced as well in regard to this position.

For Dutch archaeologist Martijn Manders it might be argued that we all hunt for treasures, with the difference coming in what we define as treasures. "The problem is that treasure hunters exploit historic shipwrecks for a gain of themselves, so for a limited amount of people. We exploit shipwrecks for the gain of everyone, for the gain of the public, because we think it is a heritage, a common heritage for the benefit of us all" (Manders pers., comm., 2006).

Another concern is how we reach the general audiences, how effective or not we are in sharing the benefits of archaeology with the public, and how we convince them that archaeology has an intrinsic, communal and social value. The need for better strategies to approach the public has been highlighted: "The commercial salvagers knew how to address to people. This is why we still have films in National Geographic and Discovery Channel on treasure hunting and not in archaeology. And they call it archaeology. They addressed it much better than us" (Manders, pers. comm., 2006).

A clear example is a documentary presented by the History Channel portraying some of Mensun Bound's activities in Uruguay (*Last Broadside* 1998). Bound is an archaeologist associated with Oxford University who works for treasure hunting companies. He appears as the programme presenter and as "Director of Archaeology. Oxford University MARE" (*ibid*). The Uruguayan Government, through the Nation's Heritage Commission (the equivalent in function to English Heritage), has made all possible efforts to stop this kind of plundering activities, but the existence of a permissive law has been one of the critical problems (Martínez & Silveira 2001). The subject of the documentary is a case well covered in the media in recent years: the exploration and exploitation of the German 'pocket battleship' *Admiral Graf Spee*, sunk off Montevideo in 1939, in the outcome

of what it is known as the 'Battle of the River Plate'. From this wreck, Bound and the treasure company have salvaged artillery (as presented in the program), a telemeter (in 2004) and the ship's massive Nazi bronze eagle (in 2006). The Uruguayan Heritage Commission attempts to stop these activities led to a lawsuit in 2004 against the Commission's president, because of interference with the process of selling salvaged artefacts (*El País*, 2004). However, the documentary aired on the History Channel says: "Now, Uruguay wants a piece of the Graf Spee. To retrieve it, the government has turned to Mensun Bound" (*Last Broadside* 1998). The documentary never mentioned the real character of the economic enterprise and tried to present it as a very professional exercise, which it clearly is not. However, the large audiences can only but be convinced that the operation was proper maritime archaeology.

This is a clear case of an archaeologist serving and mutating into a treasure hunter, with the aggravating factor of the superficial academic respectability of an otherwise prestigious university. He has been presented to the Uruguayan media as "one of the three world experts [in 'submarine archaeology']" (*El País* 2004) and as "Oxford University director of submarine archaeology" (Fornos 2004:44). Presenting an archaeologist in such a way, as the legitimization instrument for treasure hunting, is a deceitful tactic dependent upon the ignorance of the local media regarding the true function of maritime archaeology. However, his academic understanding of Uruguayan history was demonstrated when, in the aforesaid documentary, Bound says: "I realized then that if we could lift this gun, Uruguay will have a lasting monument to the most dramatic event in its history" (*Last Broadside* 1998). Presenting the battle of two foreign nations' ships which happened only 60 years ago, as the most dramatic event in its history, more than Uruguay's process of independence, internal wars, dictatorship, or its return to democracy, is both crudely Eurocentric and intellectually indefensible.

Another side of this problem stems from when archaeological results are not presented in the best possible way, even if they are part of an exhibition inside a museum. A problem emphasized by Egyptian maritime archaeologist Emad Khalil is "the need to stress on the importance of presenting the end product in the best way that people can benefit from, either in museums or universities, proper publications, or in education. In Alexandria, for example, all the artefacts that have been raised during at least in the past 10 years are now in museums, but they are mostly useless. They are in a government museum, and there is public access to everyone to see them, but the amount of knowledge and information people can extract from the way they are presented is awful. Artefacts from Sadana, thousands of them are still sitting in the conservation laboratory. They have been processed properly, they have been excavated neatly, and they have been hopefully conserved properly, but they are sitting in store rooms" (Khalil pers., comm., 2005).

While Manders' and Khalil's viewpoints are absolutely valid, there have been different efforts made to provide education through various forms of demonstration. However, the mass-media penetration of treasure hunting companies has exceeded these commendable attempts. Dan Lenihan and the NPS-SRC have devoted a considerable amount of time producing books for the non-specialist, within which the value of submerged heritage is wisely presented in an array of different formats. These publications include children's books like *Looking Inside/Sunken Treasure*, on which, in a similar way to Manders' view, the *treasure* is presented not only as the monetary value of a cargo: "To some, this sunken booty is money in the pocket. To others, scientists and historians, these remains are pure, unpolluted pictures of the past, a part of our heritage, belonging to everyone" (Shultz 1993:42). Not only does the book encourage the children towards preservation by explaining the value of archaeological research,

but it presents images of sunken sites and even actual site plans presented in an attractive manner for the children, awakening their interest in maritime archaeology and science. Other publications are oriented towards divers in the USA's national parks (Lenihan & Brooks 1998), or they offer a personal account of archaeological practice presented in a pleasurable anecdotic style without losing professionalism (Lenihan 2002).

In a short story, *The man who stole the stars*, George Bass narrates a tale comparing astronomy to shipwrecks (Bass 2002). It is a good example of an argument he used when facing the people who asked him 'why should we support your work? Everything stays in Turkey, why do not the Turkish pay for it?' His answer is that people support astronomical observatories, and astronomers map and photograph and study the stars but they cannot have the stars. They want to learn about the stars, and maritime archaeologists want to learn about the past (Bass pers., comm., 2006).

To summarize, ethics in maritime archaeology are a matter of professional honesty. Ours is a profession in which ethics and honesty should not be considered a virtue, but an obligation. It is of course easy to set aside standards and ethics in favour of large cheques at the end of the month. When the task seems easy one must beware the hidden pitfalls of indolence, and often ends in farce. It is not only a matter of abstaining from these kinds of spurious practices. To remain passive and silent when facing them does us no honour.

The social value of archaeology

After arguing that archaeology exists for the benefit of people, we need to comment on what those benefits might be. The following sentences often

present themselves when an archaeologist is present in a meeting with people from several backgrounds: 'The value of archaeology cannot be compared with that of medicine or physics'. 'Archaeology and culture are a luxury when the priority of an underdeveloped nation is to increase productivity or feed its people'. 'A doctor saves lives, how can an archaeologist be compared in importance to a doctor?' We need to ask if that is the case. Does archaeology lack social importance when compared with other professions and necessities? Can archaeology be considered a necessity? What is the social benefit maritime archaeology offers, and why is it important that maritime archaeology exists?

Memory is a heritage that needs to be exercised. Access to culture is rightfully a social need, an entity for everyday life, and not a luxury that could be forgotten in times of material necessity. As much as it is important to have physical health, food, and housing, it is vital to have mental health, the latter not being synonymous with the absence of mental disorders. To act in any given context, people need to know and understand that context. Of course, vital necessities need to be fulfilled by the individual on a daily basis. However, it is when a social group is better prepared to take important decisions that the latter can influence the way in which those primary vital necessities can be accessed. It is therefore a virtuous circle: a well-educated individual influences the collective decision-making, and conversely, collective benefits will boon the individual. It is there where knowledge of past societies provides one of its values. Ignorance is a subtle form of slavery, and causes the imprisonment of opportunities. Someone who ignores his or her options rarely makes the best decision. The one who ignores that he or she is part owner of a heritage is rarely bothered when it is lost, and can seldom enjoy it.

Archaeology can be considered an exercise of memory, an act of giving back the knowledge of what was forgotten; a way to give voice to those who

rarely had it. This has been demonstrated by recent developments such as gender archaeology. A brilliant example is the study of mothering in slavery contexts (Wilkie 2003), in which the focus rests upon studying the midwifery practices of slaves or formerly slave women. What does maritime archaeology offer in this manner?

An excellent example is the work developed by Ships of Discovery. This organization focuses on vessels of exploration in American waters, and has a close relation with the isles of Turks & Caicos, mainly because of the site of the Molasses Reef wreck, a research which has been of immense benefit in understanding early transoceanic voyages. Ships of Discovery has also been involved in other projects in the isles. Recently there has been interest in locating and studying the wreck of the *Trouvadore*, a Spanish slaver ship lost in Turks & Caicos in 1841 (Keith *et al* 2006; Keith & Carrell 2007). If the remains are located the largest benefit will go directly to the people of the Turks & Caicos. The *Trouvadore* was carrying nearly 200 African captives en route for the slave markets of Cuba. By that time slavery had been prohibited in the Turks & Caicos. All the people who were onboard, with the exception of one person, survived. After the wreck the crew was sent to Nassau in chains and later imprisoned in Cuba. All the African captives were then apprenticed in local plantations and after a period of one year were freed. The descendents of these shipwreck survivors live in the Turks & Caicos today. There are family names which go back to this period, and because it is a relatively small population everybody is related. There are many traditions that relate back to the African influence from this group of people. In addition, at the time of the shipwreck there were in the isles other former African slaves that were freed. There were Africans who were slaves in the USA that were brought down, and after the prohibition they were freed. Therefore, there was an array of different conditions regarding African people and slavery: first generation Africans, who went there and were never slaves; descendants of

former slaves; and finally, former slaves. Those populations were mixed over time. With the *Trouvadore* case being such a pivotal section of history for Turks & Caicos' islanders those who would benefit most from the archaeology would be the population of the nation. Until fairly recently the grandmothers still told their children stories of their great-grand parents having been brought by a ship. Stories mingle and mix around, but the core substance is still present in the oral history tradition of today. It is in this regard that anything Ships of Discovery does has a direct and positive benefit for the Turks & Caicos (Carrell pers., comm., 2007; Keith *et al* 2006).

From the work Donald Keith and Ships of Discovery have done in the past in the Molasses Reef Wreck, a key benefit has been knowledge related to shipbuilding, ballast, armament, and studies of early 16th century material culture remains (Keith 1987; Keith *et al*, 1984; Keith & Simmons 1985; Lamb *et al* 1990). This has certainly been of great benefit for our profession. However, the most direct and greatest benefit for the people of the Turks & Caicos has come in the form of the museum they have now. If the *Trouvadore* is identified it will be of great importance. Every time Ships of Discovery's personnel work there people ask them in the streets about their progress, bearing witness to considerable levels of interest amongst the people, who perceive it very positively (Carrell pers. Comm., 2007).

According to Donald Keith, there are two main benefits Ships of Discovery are working on. One actively saves archaeological material culture, both in the act of recovery, and in the conservation and analysis stages. The second gain focuses on understanding the material and leaving behind usable information in the form of reports. Part of the work is for other archaeologists' consumption, such as new conservation techniques, or collating data on ordnance (a favourite topic for Keith's). They do not neglect the public sides of it either as they try to do make findings publicly

accessible. There is an acceptance, however, that the latter practice is harder to provide. In the Turks & Caicos there had previously been a minimum of archaeology carried out, and that was on land. It has been a place were treasure hunters have gone for decades, in this case not to pursue actual treasure but to scam investors (Keith pers., comm., 2007).

What the Molasses Reef Wreck project associates did with the remains was to create a National Museum (it being the first museum of any kind there), with the wreck material being the nuclear exhibit for it. It has run for 17 years now. Ships of Discovery also helped the local government to form their heritage legislation to the extent that the one they have now not only protects sites underwater but on land. The nation has today a whole series of requirements that people need to fulfil in order to apply for permission to do anything relative to historical or archaeological works in the Turks & Caicos. Ships of Discovery created the hoops, and then jumped through them to show the government how it works. Nonetheless, Ships of Discovery has had to start all over again many times because of the changes in government (*ibid*). The archaeology of the Turks & Caicos has been a story of starting from nothing, with no understanding or appreciation of the past at all, to one of constructing a National Museum devoted to a maritime archaeology experience.

There are also more 'tangible' benefits derived from the profession. In George Bass' opinion, from the works he and INA have conducted for more than 40 years in Turkey, the country has received benefits from archaeology, both in financial terms and for the good of the nation. They have now one of the finest museums of shipwreck archaeology in the world, and the most visited archaeological museum in the country. A quarter of million people walk in every year at an admission cost of $10 US, amounting to an income of some $2.5 million a year for the ministry of culture. It does not go directly to the museum, because it also used

supports ballet, art festivals, opera, the restoration of monuments and other related topics. It also directly benefits the people in the town of Bodrum, as the museum attracts tourism, which leaves an economic apportionment they will not have taken otherwise. "One can gain in that way and I wish that countries which allow treasure hunting will realize that splitting the finds to pay the national debt is just all stupid dreams, and they would make far more if they did properly like Turkey has done" (Bass pers., comm., 2006). Similarly perceptive comments on this issue with respect to Latin America have been made by Puerto Rican archaeologist Juan Vera (Vera 2001).

Back in Europe, Martijn Manders is interested in the possibilities for people in the Netherlands to have access to the results of archaeology, making information public to some extent. Anyone who wants to consult the information should be able to do it, providing a gain for all. In terms of infrastructure and construction, the possession and access to that knowledge is also important. By knowing where the sites are and where a projected pipeline might be lain, new works in harbours can be conducted with the least impact to archaeological remains. Allowing people to access archaeological information can also transform their perception of history and space:

> Imagine you are standing in a dyke. You are looking over the sea, and it is only water. But now we know that not far from you, a hundred meters, two hundred meters in that direction there is a shipwreck that went down in the 16th century, during a storm on Christmas night 1593. And suddenly you feel completely different. You feel far more attached [to that space] than before you knew that, because before you thought it was only water and now you think it is a big tragedy. And you look at the church, which is roughly the same time or maybe older and you think they were looking at it when they drowned or they

> jumped overboard. I am saying this because the information that we gain from shipwrecks and we disperse to the general public will make people think about their history and will make them imagine and it will become part of them. And that is one of our functions, to open up those boxes (Manders pers., comm., 2005).

The opening of these closed boxes can open the eyes of the people with the stories they contain. In many ways, a good archaeologist is similar to those Anasazi figurines, 'the story tellers', which are frozen in a speaking posture and are surrounded by other people gathering round to listen.

Because of the recent history in Latin America, where dreadful events happened both by the decisions of local politicians, as much as by foreign influence, we need to make particular intensive use of our aforementioned heritage memory. It cannot be stated highly enough that memory is a heritage that needs to be exercised regularly. Archaeology is not the sole solution for keeping us fit in the use of memory, but it goes some way towards serving that purpose. Argentine Damián Vainstub agrees with understanding memory as a form of heritage. For him, this is one of the most significant issues in Argentina, as memory is not only important for scientific research, but he has observed that in daily life the country is suffering a lack of memory. "To encourage people to reflect on issues related to the past can contribute in innumerable ways to construct a memory, to encourage people to think in what they do and what it happened and therefore they can decide what they want to happen in the future. Therefore, any scientific production involves a political and ethical matter of significant implications" (Vainstub pers., comm., 2003).

Latin American maritime archaeology needs to be an archaeology in action, not only by exercising the practicalities of our field, but in searching for a radical archaeology that enables social change (McGuire and Navarrete

1999). Such archaeology needs to incorporate three elements in its method: to understand the world, to criticize the world, and to act in the world (*ibid*). One needs to escape from the illusion that knowledge is good and worth amassing just for its own sake, or to believe it to be good just to please the researcher's self indulgence.

A key factor regarding ethics in Latin America is that the treasure hunters and those archaeologists at their service, who have opened the door for their apparent masters, cannot be stopped through discussions at a coffee table. Action is needed. Our ethical compromise is that, as Argentine Amaru Argüeso states, in order to make a critique we first need to demonstrate how maritime archaeology is to be conducted, and spread its results. For the people to be involved in our work, for this work to contribute to culture and society, it needs to reach wider audiences so they can understand it (Argüeso pers. comm., 2002).

This and the previous chapters have dealt with the questions posted by maritime archaeologists. The next chapters relate also to the ways in which maritime archaeology is linked to other research fields. How symbolic aspects are intertwined with the maritime aspects of culture is also explored. This will finish laying the necessary groundwork for theory so that, in combination with the elements of heritage management discussed in this chapter, and later concerning Uruguay, we can at last attempt to offer some practical options for further research. This will firmly establish the broad, holistic understanding of maritime archaeological theory entwined in this piece, within the dynamic, academic, cultural and political context that is modern Latin America.

CHAPTER VI

MARITIME ANTHROPOLOGY

Beyond boundaries

The interplay of several disciplines within maritime archaeology was initially discussed in chapter II, which stated that there was a desire to consider our work as a multidisciplinary or an interdisciplinary activity. The way in which these words are understood is nevertheless not discussed on a regular basis, so perhaps a degree of caution and scepticism should be applied when considering a unified way to apply them. But what does all this jargon stands for then? And what happens when we incorporate the more dramatic option of trans-discipline?

If one were asked to follow a set of ideas and working definitions regarding these concepts, I would endorse the vision of the French thinker Edgar Morin (1996). According to him, a discipline is an organizational category within the corpus of scientific knowledge; it institutes both the division and specialization of the work and responds to the diversity of domains covering the sciences. As practitioners of the discipline of archaeology and workers in its maritime subdivision, it is especially interesting to explore our place both within the profession and within the peculiarities of our specialized area of research.

Constructing a maritime anthropology

Maritime anthropology, an elusive research area?

The discussion in this chapter centres upon how to put maritime archaeology in the context of wider disciplines, and from there see where its developments are heading towards. Obviously, the two main related disciplines would seem to be those of anthropology and history. In the last five decades many authors have discussed both its general relationship to anthropology (Willey and Phillips 1958; Binford 1962; Bernal 1989, orig., 1979); but also to its many variations, such as setting it within certain specific frames as "behavioural science" (Schiffer 1975 and 1976). Others have as well discussed the importance of its relationship with history (Hodder 1986; Johnson 1999; Leone 1999; Leone and Potter 1999; Orser 1995, 1996, 2002). This phenomenon is also related to how universities and research institutes are organized. Whereas in America (America, the continent, remember the preface?) archaeology is usually embedded in a department of anthropology, in Europe in general and in Britain in particular, archaeology departments are more autonomous and are more likely to be closely linked to history departments, and have little research and administrative connections with anthropological units. This is not, however, a fixed rule, as in Oxford, Durham and Bristol, for example, archaeology is heavily connected to or incorporates anthropological teaching and research. In Latin America, the relationship to history has been more debated in terms of the role the so called 'historical archaeology' has played. Although the use of the term cannot deny the influence of English-spoken archaeology, its practical realities are discussed beyond the temporal frameworks of the aforesaid, and perhaps a more convenient way to describe it in most of the American continent would be as archaeology of colonialism in a capitalist framework (Fournier 1999). Others have even argued archaeology should be treated with total

independence of a major discipline like anthropology and should better be conceived as a technique on the basis that this would benefit its interdisciplinary capacities (Gummerman and Phillips 1978).

How then does maritime archaeology view itself in this respect? Is there something akin to a traditional *maritime anthropology* known as such? We have bits of it. The existence of a general proposition of how to approach humankind and its relation to the sea from anthropology needs to be discussed. We should define what we are researching within the maritime spirit of mankind, and from there re-evaluate our anthropological contributions.

Within maritime archaeology statements about a traditional maritime anthropology have been scarce, if existent at all. There is little evidence of archaeologists foreseeing this issue and formulating a body of research entitled maritime anthropology. This is interesting because maritime ethnology is referred to by Olof Hasslöf (Hasslöf 1972; Hasslöf *et al* 1972), and there is ongoing research into the area by the likes of British maritime archaeologist Seán McGrail (1984a; McGrail and Farrell 1979; Kentley *et al* 1999), Lucy Blue (Blue *et al* 1998) and Chilean Miguel Chapanoff (Chapanoff pers., comm., 2002). Some of the scarce published works which can be highlighted as explicitly speaking abouth this topic are the ones carried out by Lucy Blue, Eric Kentley and Seán McGrail about living boat building traditions in Southern Asia (Blue *et al* 1997; Blue *et al* 1998; Kentley *et al* 1999; Kentley *et al* 2000). For example, in one of their works they stated as an aim "to assess the potential of coastal Orissa for the archaeological and ethnographic studies of water transport and, in particular, to document an example of the *patia*, a coastal fishing boat of northern Orissa with reverse-clinker planking —a style of boatbuilding which is rare world wide, but which may be a relict from much earlier times" (Blue *et al* 1997:191)

Although we can put together elements and fragments of works driven by anthropological concerns, we still need to work in that broad spectrum of maritime considerations. So, if we do not have a largely consistent maritime anthropology, how can we put in place our maritime archaeology? There have been a few voices addressing this particular issue, particularly some of those involved in the *Shipwreck Anthropology* volume, back in 1983.

It is obvious that the famous dictum of *archaeology is anthropology or it is nothing* coined by Willey and Phillips in 1958, and taken up by Binford in 1962, has had an influence on maritime archaeology. Clear evidence is in the majority of works in the said *Shipwreck Anthropology*; where the only discordant voice was George Bass, as he dismissed this approach in favour of historical particularism, paradoxically an anthropological position in its origins.

Of course, where we situate archaeology implies a definitive orientation towards where the discipline is pointing to. This aspect is extremely relevant, as it is associated to how archaeology is conceived at different moments. Before going further in this aspect, it should be clarified that Willey and Phillips might be seen as the first persons to make such a statement about archaeology and anthropology in the USA, or more precisely the persons everyone seems to remember and quote. However, this idea was by no means new, and of course Binford has not been the last to advocate it.

It should be stated that not enough credit has been given in recent decades in this context to German Franz Boas, under whose tradition the archaeology of many countries has developed a strong relationship with anthropology. Different cases can be cited, such as the long established

tradition already mentioned in Mexico, mainly by the influence of Manuel Gamio and Boas himself. Other examples include the similar ways in which archaeology is conceptualised in Argentina and Uruguay, where undergraduate courses offer options from diverse anthropological perspectives, and where the students gain a professional qualification as anthropologists with a specialization in archaeology, a format that was also in use in Mexico until the 1980s. Since then, students go directly to archaeology, but they continue to have an integrated perspective and training as anthropologists, as they receive many courses in social anthropology, linguistics, physical anthropology, ethnology and ethno-history. These links to anthropology do not imply a divorce with a historical viewpoint, as lectures on theory of history are also an important component of the curricula.

Although not making a strong differentiation between anthropology and history with regard to their aims, Boas stated one about the scope of their research. For him, "the science of anthropology deals with the history of human society", and the difference from history is based "in the narrower sense of the term in that its inquiries are not confined to the period for which written records are available and to peoples who had developed the art of writing" (Boas 1938:1). This issue, as we have seen, is still controversial regarding the practice of maritime archaeology. Critiques have been made on this from the basis that excavation of post-medieval wrecks, and mainly submerged sites originating later than the 18th century, can offer little contribution to those literate societies supposedly well known and understood via documentary resources. This critique, however, lacks in-depth understanding of the three disciplines discussed: anthropology, history and archaeology.

Mexican historical archaeologist Patricia Fournier astutely observes that, "due to the technical aid provided by the use of documentary sources,

historical archaeology does not tend to make so many eminently subjective theoretical constructions and interpretations. By having different lines of evidence and contrasting them, broader and detailed perspectives are created as well as less distorted ones. Nonetheless, in historical archaeology, priority should be given to the interpretation of material correlation. This is in order to avoid the inferential determinism dictated by the document [...], which is, at the end of the day, the task of the specialist in history" (Fournier 1999:80). It is not only 'traditional' historical documentary sources that are there to be used, such as historical archives. Much is to be gained in archaeology from less explored manifestations of culture, such as literature, as long as a strict and well driven methodology is applied, which takes the involved subjective risks into account to minimize them (Herrera 2001a; Herrera in prep., *JMA*). This also leads to the requirement of archaeology to engage in a more global perspective in which, in order to reach a better local understanding, such as a particular site, a larger view of regional and international interaction is needed. Archaeological sites related to European exploration in America, their interaction with local societies and the influence of the latter back in Europe are better approached in this way. This is much better than a solely Anglo-speaking historical archaeology of capitalism, as discussed in chapter IV.

Boas also praises the broad scope of anthropology in the sense that its research extends over the whole of humanity regardless of time and space. His vision of the strong bonds with archaeology is clear from his perspective from which "archaeological and later remains, and survivals of early times that persist in modern culture, are utilized to extend the span of time and to fill in details for which written records are not available" (Boas *ibid*). There was, therefore, an understanding and epistemological grounding as early as 1930s for the constructive use of archaeology related to maritime aspects of culture, even for those "well known" societies with

extensive written records. We would need to be careful as this perspective could be interpreted as if it implicitly accepts the superiority of the written record, relegating archaeology to 'filling in the details', a position methodologically weak and logically unsustainable, and which few archaeologists would accept today.

Binford (1962:217), following Kroeber (1953a), assumes the aims of anthropology as to "explicate and explain the total range of physical and cultural similarities and differences characteristic of the entire spatial-temporal span of man's existence". This statement has two controversial ideas which have been reviewed throughout this volume; one related to the different cognitive objectives that maritime archaeologists have embraced, and the other to the extension of the range of interests in explaining culture via maritime related societies.

Returning back to discussing the importance of the research problems considered when we practice our trade, Boas underscored three concepts as the "great problems of anthropology": the reconstruction of human history; the determination of types of historical phenomena and their sequences; and the dynamics of change (Boas 1938:4). He suggested these problems should be investigated in the domains of biological and social phenomena, including language in the latter; and also emphasized aspects of culture given the relations "man and nature" and "man and man" (*ibid*). It seems that apart from the purely descriptive engagements of maritime archaeology, much of the work done so far could fall into his categories.

In this quest for a maritime anthropology there have even been opportune attempts at other completely different approaches, which have from various angles been tempted to fulfil some anthropological aims. One that should be highlighted exists in the films of Robert Flaherty, wherein he wished to reveal tradition and culture and, as pointed out by Barsam, even

to foster human understanding (Barsam 1988:58). Some of his 'anthropological' films, such as *Nanook of the North* (1922) or *Man of Aran* (1932) gave clear evidence of a silent and observational narrative of ways of life, subsistence -and even death-, so different to those of the 'modern' world. His films made detailed descriptions of 'the other'. The latter work is the more relevant for us, as it is a truly anthropological approach to the stressful way of life in the Isles of Aran, off western Ireland, where the relations between man and seascape developed in a dramatic and constant association. They comprised offshore fishing under constant savage seas, or living inland, where there was little soil on which to sow, requiring new soil to be made by smashing up stones and mixing the debris with seaweed. Although Flaherty was obviously not working as an anthropologist, his works still remain a prime source of images and analogies on ways of life and subsistence regarding mankind's relation with the environment. *Man of Aran* underlined issues that were to be of significance some seventy years later for archaeologists interested in maritime cultural landscapes and in the *maritorium* (both to be discussed in later in this chapter).

Regarding the relationship of maritime archaeology with history, we have seen that Gould now conceptualizes archaeology as a "historical science". McGrail seems more concerned with the characterization of the general field due to the analysis of material culture coming from an archaeological context, although he does not use exactly these terms. He is also very precise, although somewhat restrictive, about the nature of the knowledge production of archaeology, as for him "our distinctive contribution to knowledge is the study of material excavated or surveyed by ourselves and others" (McGrail 1984:11)

If it is not easy to define the research domain of maritime anthropology, if there is no direct evidence of a core research area, and if an emerging

working tradition is still a bit blurred, then we may be in a privileged position. What recently perhaps seemed to me a problem, and in a sense it is so, now seems to offer an attractive window of opportunity. If we do not have a global spectrum of reflection on maritime anthropology, then archaeology could perhaps be among the leading disciplines to pioneer this debate. Ethnologists, social anthropologists or ethno-historians could enter this sphere of knowledge, using our information, insights, interpretations, and theoretical debate for future constructions. Similarly it could be our discussions that construct the framework and basis for a global and complete perspective for maritime anthropology.

Certainly, I cannot be sure I am correct about this, as again this is a question for the wider community, not to be solved by any researcher in particular. However, we might be getting closer to start to tackle in maritime archaeology some of the general questions archaeology has been openly interested in for at least the last four decades. It could be done in a Kroeber-like style, with an interest in that famous "total range of physical and cultural similarities and differences characteristics, the entire spatial-temporal span of man's existence" (Kroeber 1953). It could be focused in a *Binfordean* manner, explaining, explicating and demonstrating those articulations of variables within a system (Binford 1962), such as advocated for in those intense initial years of processual archaeology. It could be done through any logical frame of research if we accomplish the essential aim of focussing on problems, having proper research questions and ways to answer them.

There are of course opposed positions, arguing that the relationship between archaeology and anthropology —having the latter as the mother discipline— could help and hinder the adherence to rigid disciplinary boundaries (Gumerman and Phillips 1978). Nonetheless, it can also be argued that this is not a conflict of the disciplines, but an issue related to

the level of dedication and/or skills of the researcher's involved. Anthropology is more a door and a bridge to interdiscipline than a barrier to it. The fact and problem is that you need to have the proper preparation to cross that bridge. Bringing and applying models from other disciplines, cross-cutting their barriers, does not imply in any way that the study itself cannot be a richly, anthropologically oriented archaeology with ample horizons for fertile and useful ideas. Nevertheless, we need to give a lot of credence to Gummerman and Phillips for spotting that the relationship might have become more an institutionalized form rather than a real theoretical and methodological one.

As for myself, I am interested in the elements of conduct that can be found in very different contexts and times, such as the study of fear and risk. However, my scope and tools for doing so are restricted to an archaeology following an integrated anthropological perspective. I am interested in understanding fear in risk situations at sea, and for that I primarily use archaeology, ethno-history and literature. Archaeology does not need to be subservient to social anthropology, but can be integrated with the entire anthropological world. This can be a source of confusion, as this distinction between anthropology and social anthropology is not always clear. Social anthropology is a branch of anthropology, such as physical anthropology, ethnology, archaeology or ethno-history. Therefore there is no need to suppose that anthropological archaeology means a step down from one to the other.

On the other hand, the concept of archaeology being closer to history than it is to anthropology or to the natural sciences is not new. Not new at all. In his *Scienza Nuova* (1725) Giambattista Vico was arguing for the need to recognize a new form of scientific knowledge. He disagreed with the empiricists, on the issue that the study of man should have different methods and goals from those pursued by the natural sciences. Vico's

position anticipated a very similar debate between processual and postprocessual archaeologists.

Maybe maritime anthropology is not that elusive at all

Surveying the field of maritime archaeology there are few (if any) concrete references to a sub-discipline called maritime anthropology. That seems to speak more about some archaeologists' penchant for living in mirrored houses (where they only see each others work rather than those of other disciplines) than it does about an academic reality, as there is indeed a history of research in a field named as such.

There are at least two main different approaches to what maritime anthropology is related to. One refers to the practices of fishing, and therefore a number of authors prefer the denomination of "fishing anthropology". I do not find any conflict with this term, only that it does not embrace what an all-encompassing maritime anthropology should. Anthropology of fishing should be a sub-area of a larger scope, such as the relationship of nautical archaeology to maritime archaeology. Fishing anthropologists are interested in studying the exploitation of the natural fishing resources without a restriction of the environment where this production may happen (maritime, lacustrine, fluvial, fish farming, etc) (Alegret 1988:51).

The second viewpoint is driven by other authors, who prefer the notion of maritime anthropology as an area that should not be restricted to the concrete exploitation of natural resources such as fisheries, but to embrace wider perspectives, such as the inherent complexities of the relations between the resource exploitation and the socio-political and cultural structures of the societies making a productive use of it (*ibid*).

This second approach, however, does not yet completely satisfy, as it omits from the definition many relevant elements of human activities related to the sea.

Some of the followers of the second perspective appear truly to be in search of an inclusive research area. One of these broad perspectives was given by Casteel & Quimby in their introduction to the volume *Maritime Adaptations of the Pacific* (1975:1):

> Maritime anthropology may be considered to be the study of maritime cultures, societies, and subcultures in the context of anthropology. In the United States, anthropology generally encompasses a number of sub-disciplines among which are ethnology, archaeology, social anthropology, linguistics, and physical anthropology. The study of any maritime culture, society, or subculture in the context of any of the above-mentioned sub-disciplines could then be considered maritime anthropology.
>
> Maritime is an adjective which means of or pertaining to the sea. Thus, those cultures, societies, and subcultures that are of the sea or pertaining to the sea are the subject matter of maritime anthropology and consequently, maritime anthropology subsumes a broad spectrum of cultural and physical phenomena.

Many have discussed the inadequacy of the word "maritime", as fishing can occur in different aquatic spaces, and not only at sea. Those anthropologists prefer the first viewpoint commented upon. This critique appears to be more environmental-based than theoretical. Mexican Delfín Quezada attacks this solely-maritime vision in the opening article of the collective volume *Antropología Marítima: Pesca y Actores Sociales* (Quezada and Breton 1996). For him, the problem with this definition lies in ignoring fishing populations from rivers and lakes, and in including all groups whose subsistence may depend on the sea, not from fishing but from commerce upon it. Quezada prefers to remain closer to anthropology of

fishing, using them almost as synonyms. Also, he only admits in maritime anthropology those studies coming from social or cultural anthropology. Nonetheless, in the same volume he published an article about coastal communities in the Yucatán Peninsula... openly written from an ethnohistorical perspective! (Quezada 1996b). It seems as if this area has similar problems with terminology as occurs in maritime archaeology. Maybe maritime anthropologists could be benefited if they embrace either McGrail's approach to the *waterfront* or Chapanoff's concept of *maritorium*. However, before delving deeper into this discussion, it is useful to draw a panoramic of what maritime anthropology has been focusing on and then highlight those points that interface with what we have been doing in archaeology.

The controversy surrounding this research area has been highlighted by James Acheson, from the University of Maine, according to whom it seems there are already some exclusive 'clubs' formed amongst maritime anthropology practitioners, and which have little communication between them. These grouped around three categories of interest: modern fisheries, shipboard life, and prehistoric marine adaptations (Acheson 1981). Anthropologists Yvan Breton (1981 and 1996), from the Université Laval, in Canada, and Juan Luis Alegret (1996), from the Universidad de Girona, Spain, both agree to the existence of three stages in the development of a field of maritime anthropology. These periods are related to the theoretical development of social anthropology.

The first phase steered attention towards the description of technological elements of fishing in those cultures studied by people, such as Boas, Kroeber and Wissler, all of whom provided detailed descriptions of the exertion of fishing activity. Although, those studies did not explore how these were related to general social organization. Malinowski and Firth were the persons who started to afford more importance to it. Malinowski

(1999, orig., 1922) did it about the fishing societies of the Trobriand Islands in the 1920s (*Argonauts of the Western Pacific*) and Firth about the Malaysian fishermen in the 1940s (*Malay Fishermen: Their Peasant economy*). From a functionalist perspective, both highlighted the adaptive value of the fishing techniques (Alegret *op cit*: 57). It is clear that this first wave of maritime anthropology was not understood as such. It was seen by those seminal researchers simply as anthropology, and there was no need to emphasize that their studies were related to maritime and island societies. It is curious that the area of maritime anthropology has not been pursued with more enthusiasm, considering that these initial studies by Malinowski and others had such an effect in the genesis of the discipline of anthropology itself.

In the *Argonauts of the Western Pacific* Malinowski was already interested in several aspects that were going to be crucial for the later development of functionalist anthropology, and did this through the medium of studying a maritime society. His interests covered significant issues such as fieldwork methodology; the notion of totality and function; normativity and reciprocity; the genesis of religion, magic, totemism and myth; psychoanalysis and genesis of culture; and the study of culture (Tejera 1988). Some of these interests, key for the development and discussions related to functionalist anthropology, were the subject of particular analysis during his work with Trobriand islanders in New Guinea.

One example was his insistence on the long periods an anthropologist should devote to fieldwork, so as to be able to study the society in 'normal conditions', without altering its regular functional operations. There are several meaningful passages in the *Argonauts* showing how Malinowski tried to get closer to some elements of what could be called as the nautical side of the Trobriand society, both in its technical and emotional aspects:

> And it is this emotional attitude of the natives towards their canoes that I see the deepest ethnographic reality, which must guide us right through the study of other aspects —the customs and technicalities of construction and use; the economic conditions and the associated beliefs and traditions. Ethnology or Anthropology, the Science of Man, must shun him from his innermost self, in his instinctive and emotional life (1999:106).

This shows that maritime anthropology was in its first wave mainstream anthropology, with no distinction. Why then should one afford maritime archaeology separate status from the rest of the studies of the profession? Many times we can find references of "maritime archaeology" as a complement or differentiation to "mainstream archaeology". That approach lacks both self respect and logic. We might have particular research concerns, but maritime archaeology is part of mainstream archaeology! Also, however, conversely it could be interpreted as arrogant, something special within archaeology! It needs to be understood that it is not one thing or the other. It is just as important as prehistoric, Bronze Age or any other field of research within archaeology. No more important, but no less as well.

A second stage seemed to be characterized by a critique of the functionalistic approach based on the information generated by studying fishing societies in the North Atlantic. People like Barnes (*Class and Committee in a Norwegian Island Parish*, 1954), Blehr (*Action Groups in a Society with Bilateral Kinship: A Case Study from the Faroe Islands*, 1963), and Barth (*Models of Social Organization*, 1966), began to criticise the functionalistic perspective, although some of them were initially inspired by this viewpoint. During this phase there was interest in pointing out the flexibility of the bilateral kinship system, and there were other studies about fishing communities outside of the Atlantic (Alegret *ibid*).

According to this chronology, during the 1970s, maritime anthropology started to follow two paths that had little shared ground, one inspired by ecology and political economic liberalism, and the other one related to Marxism. In the first one, there is an incorporation of theoretical ideas derived from cultural ecology in the line initially proposed by Steward, and that was particularly developed in maritime anthropology by Acheson (*Anthropology of Fishing*, 1981) (Alegret *ibid*). Examples of this approach are some of the works edited by Castell & Quimby in *Maritime Adaptations of the Pacific* (1975). One of the most important components of the Castell & Quimby compilation was the idea of putting together research results of several areas of anthropology, and not only from social anthropology.

An interesting point of view from different maritime anthropologists is that, perhaps due to the lack of their own theoretical construction, the framework of analysis for fishing societies was borrowed from that developed for agricultural groups (Firth, Alegret, Breton). It was Firth the first to point out some similarities with the peasantry, like the equal importance between short-term and long-term planning, that allowed him to conduct his analysis.

Nonetheless, the fact of having a set of studies labelled as maritime anthropology should not make us overly optimistic. The perspective, foreseen by these authors from social anthropology, is not yet inclusive of the research needs of its sibling disciplines, and this must be examined.

The main problem of the approaches discussed above is that many of them concentrated on fishing as an industry of subsistence and later as an industry incorporated into larger economic systems, or they were interested in kinship relations in fishing groups. Few gave importance to the social dynamics that are related not only to the fishing practicalities, but to the ideological conception of space and the incorporation of the

"landscape" into the group's own self-identity via a "maritime cosmology" or their self conception of being waterfront inhabitants. The consideration of avoiding the dichotomy between seamen and landsmen does not seem to be a priority for the researchers, although is highly possible that the communities do not have this separation that the researchers (as landsfolk most of us are) will be carrying inside their world.

Nevertheless, this does not seem to be a major conflict. However, if "maritime anthropology" is to be truly related to the maritime aspects of culture and the maritime spirit of mankind, then it should also be addressing subjects far beyond the mere practicalities of fishing. There is a clear scarcity of research regarding maritime-related groups whose main subsistence or ideological necessities are not acquired from the sea. An easy example to take into account could be the Mayan societies, both present and past. Coastal societies have as many questions to be addressed as any other, but it seems fishing has prevailed as a must-do topic, leaving little space for other interests. The social environment of coastal societies should be addressed with as equal an intensity as the natural environment where it happens. This particularly insidious obstacle should be tackled.

We can illustrate with the case of modern fishing communities in Chile. Sea-related mythology is a very important influence in the behaviour of fishermen when in stressful situations. It is also part of the interpretation their families construct in dealing with their loss at sea. Through the long Chilean coast, fisheries generate considerable levels of activity. Traditions and mythology run all along the shore and are deeply rooted in the way coastal societies picture themselves. One interesting myth is that of *El Caleuche*, a ship commanded by sorcerers which sails particularly in the southern regions, near to Chiloé Island. During the night it is ablaze with light, its sails are red and music plays, but by day it generates a heavy

mist and cannot be seen. The sorcerers' power robs sailors of their memory who then become idiots so that they cannot spread the secrets of what happens on board. The ship collects the bodies of those who have drowned and brings them on board, making them crew members for eternity. As the ship can sail underwater at great speed, it can appear whenever a shipwreck occurs. About the meaning of the ship's name, 'Caleuche', Rodolfo Lenz stated that it possibly comes from the Mapuche words *calentun* (to become transformed) and *che* (people). Therefore, *caleuche* would mean 'the transformed people'. According to Oreste Plath, Manuel Antonio Román believes it also comes from Mapuche, but from the word *calul* (human body) and *che* as well. And Oreste Plath recalls that the ship commanded by the Dutch Vincent van Eucht was called *Calanche* (Plath 1994:331). The curious reader can go to the work in question: Lenz, Rodolfo, *Diccionario Etimológico de las Voces Chilenas Derivadas de Lenguas Indígenas Americanas*, Santiago, 1905-1910.

The influence of the myth can be so strong that for the fishing families the drama of a lost fishing vessel is not limited to the death of the men and the ruin associated with losing the vessel. It becomes greater if a body is not found, as this means that it was retrieved by *El Caleuche*. This fear even adds pressure to the reactions of seamen during storms. For some of them, when fearing they might die, it is a preferable option to tie themselves to the boat, in the hope that the family will have a better chance of finding their body, rather than run the risk of *El Caleuche*. This behaviour has been testified to by members of the Chilean life saving group, when finding capsized boats. When the family of a lost fisherman suddenly has a good season of economic profit it is said that it is because the lost seaman is sending the benefits of being onboard the ship. Forfeiting better chances of survival rather than risking the perceived outcome is not a rare human reaction. How many anthropological

concerns are there to be studied arising from such responses to maritime myths!

Nautical archaeology has attracted most of the attention in maritime archaeology, leaving a sizeable space between it and the archaeologists working on fishing communities, while in contrast anthropologists have been doing exactly the opposite. They have concentrated on the fisheries and largely left aside studies about life on board. Some balance should be brought to both areas.

Maritime anthropology, therefore, with all its variants, and with maritime archaeology playing one of the protagonist roles, should be referred to the research of how humanity has constructed the needed skills to live and survive in a marine environment, both by the waterfront as well as on the high seas. Obviously in many cases there will be a close relationship between both situations, as would be the case in seafaring societies. At other times only one will dominate, as with coastal fishing groups or societies in corridors of prehistoric marine adaptation; or with studies of onboard life, either from the past or the present. The problems a group must face to secure physical and ideological subsistence in marine environments will have similarities, again through time and across the planet. The existence of a research field devoted to all these human situations is not only worthy but needed. Though, so far it has been rather disorganized and its very different practitioners have established few channels of communication. Our isolation, leaving us distant to other areas of maritime studies, is not an exception.

Making a difference between studies which focus on the phenomena of onboard societies, regarding only to what happens at sea, and shore-based communities might bring similar dilemmas to those we can have if we

want to study what happens onboard a man-of-war without taking into consideration the situational matrix to which that ship corresponds.

The field is also interested in behaviour, social dynamics, social transformations, ritual and magic (perhaps to be seen in shipwreck archaeology through a future study of *figas* and crucifixes), water transportation technology as a complex and all important element of social dynamics, as well as the symbolic side of religion and myth.

'Navigation Anthropology' might well be a more preferable term for what was referred to in the early 1980s as 'shipwreck anthropology'. The former term would be devoted to understanding navigation as a social enterprise and phenomena, and would not be limited to only one of its possible outcomes, alas the most dramatic. That there need to be an insistence in researching the particular events surrounding the processes of wrecking is undeniable. My perspective on demonstrating the importance of this is that —although I am looking for the construction of an integrated maritime anthropology— my practical work has been devoted both to research behaviour involved in wrecking or near wrecking situations, but also to the understanding of maritime regional contexts unified by the presence and study of the whole archaeological remains in certain regions on which shipwreck abound.

Perceptions of the Maritime Space

As has been briefly pointed out in chapter II, the scope of maritime archaeology has been changing and expanded beyond what Muckelroy considered as part of our subjects of study, namely into the realm of coastal communities, which he explicitly ruled out. He excluded them on the basis of expecting that their material culture would be more closely

related to other terrestrial settlements, and that the maritime connections would be expressed only marginally (Muckelroy 1978:6). This and the following section discuss the ways in which current theory and practice indicate that this relationship is not marginal, and how its expressions are being incorporated as prerequisite in studying the dynamics of maritime cultures.

Maritime archaeology engages today in a constructive and constant effort to understand how people might have made use of the maritime, coastal, riverine and lacustrine spaces, not only from environmental or practical perspectives but regarding the perceptions attached to these spaces. Until recently, when most of maritime archaeology was preoccupied with shipwrecks, it was perhaps in a state of isolation, appearing not to be deeply interested in the dynamics of how the sites happened to be where they are, apart from the interest in wrecking processes in general.

This relatively young topic, the maritime space is rooted in the effort to understand and study both shipwrecks and societies within the maritime component of the spaces they are involved with. It involves the unravelling of shipwrecks and waterfront societies involved in densely concentrated regional and contextual environments. Different proposals have appeared in recent years regarding how to approach the landscape and the seascape by taking into account their interconnected complexity. One example of the recent spate of growing interest in this subject looks at Neolithic cairns in the isles of Orkney and mainland Scotland, studying their visual relation to the landscape and the sea (Phillips 2003). Another looks at the interest in creating a synergy between maritime and landscape archaeology in relation to seafaring in the early Bronze Age, by analyzing the landscape contexts of the Ferriby and Kilnsea boats (Van de Noort 2003). Although it could hardly be stated this way of integrating sea and land is a firmly settled perspective within the profession, progress has been influential

enough so to draw optimistic views to affirm that: "One of the great achievements of maritime archaeology over recent years has been in demonstrating that the contexts of coastal and inland sites are maritime as well as terrestrial, that to look landward and not seaward is a fundamental mistake, and the criteria which allow such sites to be understood can be either wet, or dry, or both in various proportions" (Hunter 1994:261).

The concepts produced by these kind of endeavours have been characterized in Scandinavia as *maritime cultural landscapes* (Westerdahl 1992 and 1997); as *regional maritime contexts* in Mexico (Herrera 2001a); and as *maritorium* in Chile (Chapanoff pers., comm., 2002). Although the three notions arose totally independently of each other, all are closely related and share an interest in perceiving the human activities related to marine and waterfront (sea and land) environments within the broadest perspective, including not only the environment but the social responses to human interaction within them. In short, they attend to the fact that navigation and waterfront communities do not operate in a vacuum nor are disconnected, they are part of many larger interrelated phenomena, both in their social and geographical implications.

Maritime cultural landscapes

This concept was developed by Christer Westerdahl to provide a scientific term under which the surviving elements of maritime and land based culture could be considered a unity. The term seeks to define "human utilization (economy) of maritime space by boat: settlement, fishing, hunting, shipping and its attendant sub-cultures, such as pilotage, lighthouse, and sea-mark maintenance" (Westerdahl 1992:5). This notion also searches for the use and integration of ethnological mapping of

spaces, particularly the maritime. It is deeply associated with what has been coined as cognitive landscapes, defined as "the mapping and imprinting of the functional aspects of the surroundings in the human mind. Man in landscape, landscape in mind" (Lofgren 1981, quoted in Westerdahl *op cit*). There are severe limitations imposed by dissecting the archaeological remains of maritime cultures by studying them as separate entities, some resting underwater and some in the waterfront or inland, as if they were not part of the same culture. For Westerdahl (2000:11):

> Sea and Land are elements inextricably bound up with each other. The one delimits the other. At the same time, they *are* opposites and they thus contradict each other. Both on land, on the waterfront, and underwater the remains of a maritime cultural landscape can be discerned. Neither can be understood without reference to the other. However, the combination of this two is most uncommon in archaeology.

The landscape is considered both from its cognitive and archaeological implications, and the two perspectives deemed of immense importance for an understanding of maritime cultures of the past (Westerdahl 1994). Other important elements that this approach takes into account are inland elements, such as rivers and lakes, whose existence can be of importance for transportation. On deeper reflection, the inland waterways are not only considered as passages for transport of goods but as sites where contact can be exercised between coastal and inland communities.

Regional maritime contexts

The need to have a conceptual framework to understand an array of sites indicating nautical activities and accidents within a region was the starting

point for developing the concept of *regional maritime contexts*. This notion was introduced by the present author in the late 1990s, as an alternative to perceiving sites in the SMRs as isolated units, as discrete entities denoted only by their historical value within particularistic approaches. It emerged within the milieu of the 500 years of high seas navigation in the Bay of Campeche (Gulf of Mexico), focusing on the archaeological record formed by numerous naval accidents in a series of Keys. Attempting to interpret the sites in the region solely as discrete historical entities was considered as inappropriate and limited. The latter was deemed as an incomplete approach because the aim was to study colonial navigation as a complex adaptive system in which the observation of the surrounding phenomena were regarded as a crucial element in an anthropologically-oriented research. The concept aims to study maritime culture as a reflection of activity, behaviour and the human condition (Herrera 2001b:178).

This perspective was developed for and driven by field research. It encompasses comprehensive seabed surveys, followed by analysis of the archaeological record on a site by site scale, as well as understanding it at a regional level. A regional approach to nautical accidents, be they shipwrecks or not, is linked to questions regarding the wide spectra of motivations guiding the ships to those waters. What were the stimuli impelling the maritime societies that crossed a zone of high risk? Is it possible to structure a general explanation for the ships being wrecked in that area? Are there any detectable schemas in the complex adaptive system of the region? Can it be applied as a model to other maritime regions with the same conditions?

In other words, it is a means to inspect the reasons for the ongoing formation of archaeological remains in extended seabed areas. Without assuming that the land-based concept of settlement patterning is

appropriate for maritime events (for they respond to a whole different reality from the ones impelling a group to settle, whereas largely no one decides where to wreck) it draws attention to the necessity of understanding the existence of large areas where evidence of nautical casualties abound, and the presence of interrelated ship-trap areas.

There are, of course, different circumstances under which it is possible that a captain intentionally decides to loose a ship. One might be vessels that are sunk on purpose so that their remains can serve in the creation of a dike or to protect a passage or channel. This would be the case of the five Viking ships found in Roskilde Fjord, Denmark, sunken intentionally by filling their hulls with stones in order to block a narrow sailing channel (Evans 1980:74). Another option would be 'intentional groundings' (Herrera 2001a:267); this refers to a captain or pilot who decides to run aground the ship on a nearby coast or shallows when the vessel is about to be lost, attempting with this action to save cargo and passengers. This conduct is even discussed in navigational manuals from the 16th century, such as the *Itinerario de Navegación*, by Juan de Escalante de Mendoza (1985, orig. 1575), and the *Regimiento de Navegación* by Pedro de Medina (1964, orig. 1563). Another example can be found in Alvar Núñez Cabeza de Vaca's *Naufragios*, an account of a Spanish exploration voyage to Florida under the leadership of Pánfilo de Narváez. On it, Núñez recalls how in 1527 he gave order to the pilots to run aground their ships if the wind was so strong that it could endanger the crews' lives (Núñez 1984:7). A different kind of an intentional wreck is the well known case of the German *Graf Spee*, scuttled off Montevideo in 1939 by the captain, Hans Langsdorff. Knowing the imminent defeat of his ship against British opposition, he sent his crew ashore and sank the vessel to avoid her capture.

We know in archaeology that materials and sites are not randomly distributed, and it is part of the archaeological task to explain the reasons behind these distributions. Therefore, the importance of studying regional maritime contexts —on the high seas or near to the coastline— resides in understanding common attributes and characteristics, both in the type of accidents suffered and in their locations within the whole region. It is also interested in the dynamics and relations to the collective whole of all of the sites. Characterising the nature of maritime regional contexts in this way assists in understanding behaviour occurring in risk situations at sea, along with the associated cultural contexts the sites are linked with, as units and as a whole (Herrera 2001a:265-71).

The idea of regional maritime contexts does not stop at the sites resting on the seabed. It extends to the structures and activities on land facilitating the existence of a shipping system, such as harbours, guiding lights and ports. The regional perspective also takes into account elements of the landscape-seascape that are used as a means for orientation and safety, such as mountains, hills, bays and inlets. It is also concerned with any changes in how the space was represented in the past and how these might have influenced shipping patterns, and vice versa, in a mutually engaging dynamic of exploration, and use of the maritime environment. It also conveys the interest in observing the material associations of the sites' locations regarding the configuration of the seascape, looking for explanations of the patterning of nautical accidents in the studied region; the differences among the sites according to location and material evidence in terms of understanding the kind of casualty involved, and the possible behaviours associated with them.

The maritorium

The concept of *maritorium* was developed from a visual motif and ethnographical experience by Chilean anthropologist Miguel Chapanoff. It originates from the critique of a number of dichotomies regarding how the sea space is conceived. The first one is that in maps we find the *territory*, the land areas of the map, all covered with signifiers as visual elements: colours, lines distinguishing areas, zones, cities, different kinds of tracks and routes. In contrast, further away from the black line of the coast there is nothing, it is a blank space of paper.

Initially Chapanoff contrasted this form of representation with ethnographical experience, rather than archaeology. Having worked with maritime communities and onboard societies, he saw that there is another way to perceive the sea, namely that what is portrayed in maps is different to what is seen within those communities. For the maritime communities the sea contains as many significant factors and details as the land, therefore their sea is as 'drawn' as their land. It has routes, areas, sectors, and colours; *landscapes* that are read by the people who are used to that environment. Therefore, if it has symbolisms, it has meanings.

The concept of *maritorium* deals fundamentally with giving value and significance to everything that still appears blank when observed from a terrestrial viewpoint. It aims to signify that the sea is a meaningful space; and therefore the subject of cognitive construction and reading through the centuries.

It is also related to research perceptions. Chapanoff has been associated for many years with archaeologists who study maritime adaptations. He saw that they tend to privilege understanding from a pedestrian and terrestrial perspective. As if in constructing the notion of a maritime

spatiality the most important factor for them would come from being situated at the waterfront; as if the fact of being a physical entity at the seaside implies solely interpreting the sea from the beach. Chapanoff and his associate, archaeologist Diego Carabias, observed that regarding maritime adaptations the usual procedure is to tackle this problem from a terrestrial perspective. Hence the common effort would be to attempt a construction of the maritime space from the physical fact of interpreting the sea from the land or the beach, and not on an inverse basis (Chapanoff pers., comm., 2002; Carabias pers., comm., 2002).

Since land people possess their own spatial codes, a first reaction to this concept might be to believe that as we have tended to interpret the sea from the land, we should now better attempt to do it in an inverse way; to reverse the code and read the sea from a seafaring perspective. But the concept of *maritorium* does not attempt to read the sea. The proposal is to read the sea and the land. For the navigator, sea and land are a unity. There is no room for the terrestrial inhabitant's sea and land dichotomy.

This idea also prompts a critique, for the dominant approach within the wider discipline so far has been functionalist: the sea as supplier of foodstuff resources, the sea as a communication way or passage, and so on. There is another possible condition of the sea; actually not of the sea in relation to itself, but of the lifestyles associated with the maritime: conceiving the sea as a vital space, or as the space where a lifestyle can be sustained (Chapanoff pers., comm., 2002).

From a disciplinary perspective, the sea has been understood in functionalist terms of the condition of the terrestrial inhabitant, and not as a habitable space in its own right. We need to understand the sea not as a body of water, but the sea in relation to the land; as a space on its own, a liveable space. The concept of *maritorium* proposes a transversal

understanding of the sea. The sea is not just the sea, and the land is not just the land, they are a continuum of both environments. In other words, though physically different, they are continuous in the ways in which navigators conceive and use them. For the inhabitants of the waters, the sea is converted into a place and a location: an inhabited *maritorium* (*ibid*).

Uruguayan archaeologist Alejo Cordero pointed out to me that a culture such as the Guaraní, a *canoera* culture (deriving from canoes), bases much of its spatial conceptions from a migration they perform to the south through different rivers. The *maritorium* concept applies here in equal measure, as the effort required is to understand cultures linked to aquatic spaces. Their schemes in life and culture come through using aquatic spaces, and do not perceive the water as a frontier, as in the modern-occidental way (Cordero pers., comm., 2002).

To conclude this section, we should admit that the three concepts discussed may well provide the grounds for an epistemological argument that should be seriously considered: from what place and stance do we understand reality when speaking about maritime societies?

Coastal maritime adaptations

Until recent years the study of coastal sites was partially neglected as part of the scope of maritime archaeology. There are perhaps two main reasons, both with theoretical implications. Firstly, due to how this field developed, there has been an overemphasis on submerged remains and the selection of sites has been repeatedly driven by the environmental distinctiveness of 'underwater archaeology', with all its discussed limitations. The other reason is that for a number of years it was considered that the differences

between the archaeological manifestations of onboard societies and their coastal counterparts were too great to provide meaningful comparison; therefore, the effort of exploring the latter within maritime archaeology was not considered as a fruitful possibility. Nevertheless, considerable time has passed since Muckelroy's perspectives were unveiled, and since the archaeology of today has somewhat broadened its scope over the years, this topic would seem to warrant a degree of re-examination.

It is not possible to have a complete perspective of the relationships between humankind and the sea if one leaves aside coastal realities and their material expressions. That the material culture of coastal infrastructures might be rather different to that to be found on board ships and that it is greatly distinct from the boat in relation to itself, is not a conflict. I would say that the problem with this division is, once again, the recurrent dichotomy of seeing what happens on the coast and at sea as opposite poles, rather than as complements. In addition, coastal communities which might not have been 'sailing societies' need to be researched in terms of their relations to the waterfront environment to understand what is implied in the adaptation to the coastline at different levels. One important question that arises is what effect on social patterns and religious elements occurs when peoples occupy a linear space of coastline, and not one that has access to spread over an extensive mainland? The room for researching coastal adaptation and coastal settlements is great. It ranges from hunter gatherers to highly complex empires.

A prehistoric example is in Tierra del Fuego, deep in the American south. It was historically supposed that southern *canoeros* cultures, the Yámana and pre-Yámana were very recent, from 1000 years AD, and that they represented the earliest settlements in Patagonia. It was through regional coastal archaeology that they were reinterpreted, as being 6,000-6,500

years old with continuous habitation as late as just a century ago (Piana 2003 pers., comm.). The study of coastal societies and their adaptation to a marine environment has triggered an array of possibilities for better understanding the early settlements in the south of the continent. Archaeological studies regarding strategies of maritime adaptation are of great significance in understanding the mechanisms and responses of subsistence economies to littoral environments (Piana *et al* 1991); or the relation between inland and coast, exploitation of the marine environment, diet, temporality, and the interaction and differences between continental and insular settlements (Gómez Ortero *et al* 1998).

Another fundamental aspect of the study of coastal settlements is of course directly related to societies deeply involved with navigation. Studying coastal supporting facilities, such as harbours, quays, ports, shipyards, and what they incorporate in terms of mooring, beaching, lodging, providing food and water and shelter, clearly broadens the possibilities of understanding local and regional dynamics.

Excavating harbours is like digging at the touching edge of communicating cultures; it is an interface. People might come to the harbour from all directions, and from many different cultural groups. This implies that the mechanisms of exchange and the dynamics of the harbour town are closely linked but have their uniqueness. The cultural exchange occurring in a harbour site is like a mixing and re-forging process among the different societies represented, and among the particular guilds from within each intertwined society. Understanding this highly complex theatre of people is as complicated as it is challenging.

In researching harbours a wide and comprehensive view of society is required. Perhaps even wider than is needed to excavate a wreck, a palace or a temple, because it is a key cultural part of the landscape, and that

makes it unique. Harbours change cities, societies and landscapes. Working with waterfront sites such as harbours, villages, whaling stations, dockyards, and so on, presents so many challenges in terms of the dynamics to be observed, and therefore it should also offer highly interesting results. It is then important to remain focused upon looking at a broader landscape. If that landscape is the coastline it has to be reflected into the land and out to the sea (Blue pers., comm., 2007).

Therefore, the *maritorium* is not only the seaspace inhabited by one culture, and it is not limited to a seafront view. One has to look at where people are coming from over the sea, and then analyse the connections across the sea and across the mainland. The scale of that landscape changes in the implications for both the people living in that space and, if we are careful observers, it also changes our perception as researchers. It is desirable to avoid looking at processes and sites in isolation and in order to avoid that we need to be aware of the dynamics.

Under this line of thought, these interests in landscape dynamics can be exemplified by Lucy Blue's concern in comprehending not only cultural changes but also physical changes of the space used by coastal societies. She is specifically interested in how we identify coastal sites which may or may not have been subject to the changes in landscape. Because of her background, initially studying geography in conjunction with archaeology, she applies a geographical perspective to archaeology in looking at landscapes. She also applies a knowledge of sedimentology when recognising and analysing these landscape interfaces and changes. The application of this approach can be found in the current research of the 1st-century AD port of Quseir al-Qadim in the Egyptian coast at the Red Sea, a port site now landlocked by landscape change (Blue 2007).

The other side of this topic means trying to work out the dynamics of moving across the seascape. This involves literally analysing the abilities of boats in terms of their performance in the range of possible prevailing conditions, which might be subject to considerable change. There is also the need to see navigation in terms of landscape, using features on land as points for visual reference, or using particular natural phenomena, such as stars, clouds, or headlands to navigate your way around in the landscape. It is also important to consider other aids that are supplied to the navigator, intentionally or not, that affect the landscape but are of cultural origin, such as funerary monuments, beacons, bonfires and church spires, obviously depending upon the period we are interested in. There are other less evident and more elusive options to detect in terms of the knowledge that the seafarer can acquire. When working in the Gulf of Mexico I was always interested in the unique perception the fishermen employed when finding their way from the coast to particular locations, such as a reef or a shoal, when more than an hour of navigation away from any visible coastline. They used elements of the environment which were extremely difficult to represent or draw upon a map for a westernized landsman. These included elements that employed different human senses, often barely registering in the visual dimension, such as the direction and character of the wind hitting their face, or the angle of a current in relation to the bow. These elements may not be easily expressed by these mariners and therefore when being researched may not be passed on. The use of the *maritorium* is, therefore, not necessarily dominated solely by visual aids. Many of my personal research interests in Mexico between 1995 and 2000, and more recently in Uruguay, have been deeply influenced by trying to understand the seascape, and how that environment can be perceived as regional maritime contexts. In 2002 and 2003, when working with Diego Carabias and Miguel Chapanoff in Valparaíso and Chiloé, I was able to perceive some deep and meaningful coincidences between our perspectives. Since then, it has been evident to

me that many other colleagues are similarly interested in understanding the sea environment as something more than simply the place wherein a shipwreck rests, in other words, thinking of the shipwreck and the coastal societies within the *maritorium*.

This knowledge can be linked to the reasons for undertaking a sea voyage, whether short or long. Lucy Blue has also been interested in what the purpose might be for being at sea in the first place, whether to go fishing or whatever objective which might dictate the route that you choose. This might dictate whether you are going close the land because you are stopping to sell something, or you are going out to fish and then coming back, or perhaps have been engaged in some directional trade (Blue pers., comm., 2007). She also acknowledges how the perception of this topic has changed in the recent years:

> I thought it was so simplistic and obvious that I did not realize that people really were not thinking about it that much if at all at the time. Now there is more engagement with those ideas and approaches to seascapes, maritime cultural landscape, and island archaeology. People are more aware of the practicalities and the fact that there is a landscape or a seascape out there, and trying to understand the perceptions of people of the past. I think when I started there was very little [written or spoken] about it. Most maritime archaeology, with the exception of some of the Scandinavians, was looking at shipwrecks in isolation, and I am not being derogatory: They may fit into understanding about Bronze Age trade, but they were not looking at the dynamics of how the ship got there, other than site formation processes (*ibid*).

The seascape, the *maritorium*, the region, are physical challenges for the explorers of any coast. They are also powerful entities of cultural dynamic

integrating physical and cognitive elements for the seafarers and for inhabitants of coastal settlements, which can easily be the same. Therefore, there is no reason to artificially disconnect them.

CHAPTER VII

THE SHIP AS SYMBOL

The transformation of the archaeological concept of ships has been visited in previous chapters. Within the many different ways in which the ship has been treated by archaeologists, we discussed its initial absence within the interests of the first "excavations" done underwater. And from there, how it has been transformed as a unique piece of deeply specialized research in itself, and its more balanced place as it has been understood as material culture. One of the most interesting perspectives and perhaps one which contains much room both for controversies and constructive applications is that of *the ship as symbol.*

Although this is one of the most thought provoking perspectives from which we can look at ships, thorough debates around the concept have appeared only in few countries. It has indeed produced several pieces of good work, particularly in Scandinavia and it is now becoming a current topic in Great Britain. Some similar perspectives, although scarce, have been proposed from Latin America, of course with very different theoretical and contextual tastes to those originated in Europe.

In order to contextualize an adequate picture of these perspectives it is necessary first to ask what does "symbol" stands for in archaeology and related areas of study, and the way in which the concept grew in relevance. From there it will be possible to see these ideas in operation within maritime aspects of culture, and the particular archaeological approaches.

Therefore, in order to discuss the substantive contents around the idea of *ship as symbol*, we need to visit the general treatments regarding symbolic anthropology and the place of symbolism in recent archaeological practice.

Symbols in anthropology

Symbolic anthropology derives from the wider attempt to construct an interpretive anthropology. Symbolic anthropology configured the first stage of this interpretive direction which, continuing in the phenomenological proposals of the 1970s, winds up to the emergence of post-modern anthropology, particularly in the USA. Rather than an anthropological theory, symbolic anthropology might better be characterized as a redefinition of the anthropological object of study and its method; it is clearly opposed to positivism and scientism and it confers an important weight to the study of to symbols (Reynoso 1998:211). It is not difficult then to see some similarities with what was later to be presented by postprocessual archaeology, particularly in its interpretative line of thought.

Symbols of many forms such as icons, written text, speech, ritual, objects, do include a great variety of meaning to the members of the society to which the symbol is part; and this can relate to prestige, religion, nobility, fear, purity, wealth, quality, power, duality, etc. Any discussion about them is necessarily related to whether these can be approached by an external observer as well as to how they relate and are understood by members of the group, how they are perceived from within the society. Any symbol is part of a language, part of a contextual framework of communication. The challenges are how to distinguish its existence and then how to interpret its meanings.

We can picture this challenge as a particularly hard one if we consider that the meaning and the symbol might not even have a separation from within the original society producing them. The cross and the nails, the wine and the bread, in Catholicism, are not only a representation of a god, they are metaphors of such. An even more complex and eloquent example is how the same symbols can trigger many hidden meanings to the societies in which they operate.

In 16th century America, the Spaniard priests made every possible effort to eradicate ancient religions and impose their own. They were at ease with using the bible and the sword. After erecting large numbers of catholic churches, many of them on top of the ruins and foundations of American temples, and after an intense process of evangelization, the priests started to believe Americans were actually worshiping the newly arrived Christian symbols. When they saw local populations attending their masses with religious fervour and to exercise devotion to their icons they mistakenly considered the spiritual conquest was achieved. Although it is true conversions were made by the thousands, for decades the Amerindians were not worshiping the virgin Mary's images, they worshiped the snake at her feet. They did not adore Saint George, they adored the dragon. Jesus was not an object of devotion necessarily because they believed he was a true god. They felt close to his image because of seeing in his story a parallel with their own, because they were told he was punished unjustly (Galeano, 1987b:54, 2000:48). It was not rare to find out that hidden below atrium crosses there were sculptures of Amerindian gods. So, by appearing to revere the Spanish-imposed icons, they were still venerating their own. Ambiguity, concealment and multiple meanings are also part of symbols.

Symbols can and have been historically mixed. And in between such complex processes it can be hard to perceive their meaning even for their

contemporaries. The use of material culture encompassing symbols implies social strategies and tactics. In the example above, the barbaric destruction of Amerindian cultures by Europeans was understood in rather different ways, both expressed by material culture and strategies surrounding them.

The difficulties and complexities of approaching meaning, and how to do it, are related in anthropology to the long discussed concepts of *emic* and *etic*. These are two ways to approach anthropological research which were originally proposed in the 1950s, by Kenneth Pike. Challenging and polemic, his ideas fired some of the most virulent discussions in anthropological thought. These different "points of view" correspond to opposing modalities of research. The terms come from linguistics where the phon*etic* is related to the objective study of the sounds of language. Phon*emic* is related to the analysis of how the sounds are subjectively used to distinguish significations. *Etic* studies conduct in a given system from outside; whilst *emic* does it from the inside.

Apart from the initial leadership of David Schneider in symbolic anthropology, its key figure is Clifford Geertz. He perceived the *emic* and *etic* topic from a different angle. In 'From the native's point of view' (1975), he prefers to draw attention to the contrast between the concepts of *experience-near* and *experience-far*. He was interested in producing interpretations of the way in which people live, but without being imprisoned by mental horizons. In a later work, Geertz defined himself as a meaning-and-symbols ethnographer. His text about the Balinese cockfight, included in *The Interpretation of Cultures* (1973) is a practical synthesis of most of his approaches for interpretive principles.

In *Works and Lives. The Anthropologist as Author* (1988), Geertz arrives to one of the most radical postures in recent times in all the anthropological

branches by stating, along with postmodern anthropologists of the time like Dick Cushman, George Marcus, and James Clifford (Marcus and Cushmam 1991; Clifford 1991), that more than an attempt to understand other cultures, anthropology is a fiction genre. He had already touched that issue in *Thick Description* (1993b, orig., 1973:15) by saying that anthropological writings are interpretations. Although such a radical posture has lost its initial influence, what is important is that it fiercely criticized the methodologies in use to be able "to know" through anthropological research. This posture had interesting effects being such a declaration formulated by an anthropologist with sound field experience.

As shown by Reynoso (1998), the different varieties of symbolic anthropology were some sort of response against a dominant scientist or positivist way to practice anthropology: in the USA the reaction was against cognitive anthropology's formalism; in France against structuralist rationalism; and in Britain against the synchronic models of structural-functionalism.

On these opposing stands, another main character was Victor Turner (1920-1983) who was initially interested in symbols, their organization within rituals, and in the social references they incarnate. He moved later to study issues of processual anthropology interest, such as anti-structure and social drama; essentially collective phenomena which do not affect the whole social structure (*op cit* 248). These last elements of his vision would be almost impossible to be related to observable material remains, so are not necessary to discuss here. Nevertheless, one of the topics of research to which he mainly contributed was related to rituals, particularly ritual symbols. This is an issue of particular relevance as he was interested in defining *ritual symbols* as the minimum unit in a ritual which still retains the properties of *ritual conduct*, being the last unit with specific structure in a *ritual context*.

This issue is epistemologicaly close to the search for the minimum analytic units in ship archaeology that was mentioned previously (chapter III), as it is searching for the minimum unit possible to be reached and studied coherently. Challenging Turner, James Fernandez proposed metaphors, not symbols, as the basic analytic unit of ritual, because ritual and ritual symbols spring from metaphors. For him, "the study of metaphor, much more than the study of symbols, relates to theories of image and identity formation, which are fundamental to the study of behaviour. Studies of symbols have tended to have little relation to major developments in the behavioural sciences" (Fernandez and Turner 1973). That they are concerned with the ritual in this part of the discussion is not as important as signalling the lack of attention or influence of the study of symbols in other related areas. How then can archaeology fit in here?

Victor Turner's schema for studying symbols had three main possible routes, only one of which could be legitimately taken from a pragmatically archaeological viewpoint, for obvious methodological reasons. "Observers may find 'positional meaning' in spatial and temporal relations among symbol 'vehicles' (the sensorily perceptible objects and acts held by the actor-observer to be meaningful). Positional meaning also operates in the relationship between vehicle and symbol" (Fernandez and Turner 1973:1367). The other two ways are related to symbolic aspects completely dependent on the presence of an anthropologist in the field, inside the studied society. One implies cultural actors being asked what their 'meanings' are. The other involves the anthropologist focusing in the observation of how symbols are manipulated and who is manipulating them, and how the social actors interrelate as they manipulate. All three options are originally devised to study ritual symbolism, which should not be regarded as the only kind of symbol to be researched. If we accept Turner's perspectives, then accessing symbols through material culture

and how archaeology deals with spatial relationships (via our own tools like site formation process, observational theories and middle range theories, etc.) could run parallel to Turner's positional meaning and symbol vehicles. Broad archaeological questions are sometimes as well regarded to some of these interests. The manipulation of symbols and who uses them are part of the archaeological interests, as we see visiting the example of Henry VIII in subsequent pages.

Starting with an example of positional meaning, we can see that the different ways in which religious iconography might be understood and how its spatial position varies is significant. What might be taken as respectful and a matter of worship in a culture might mean exactly the opposite for other. In 1496 a new burning place was inaugurated in La Concepción, Haiti. Six men were punished, burned alive because they buried the images of Christ and the Virgin given to them by Fray Ramón Pané. Might it have been possible they expected the new gods were going to fertilize the soil and the sown field (Galeano 1987: 60). Did having a different positional meaning towards the same objects cost these Amerindians their lives.

The *Vasa* is an exemplary maritime case to illustrate positional meaning in archaeology. The most obvious could be to speak about the grand representations at the stern, but even a couple of more modest sculptures in the bow area, under the catheads, can do the trick just as effectively. These are two male figures, each crouching under what seems to be a bench in an awfully uncomfortable confined position. On their knees, bending forward, these gentlemen are dressing long sleeved coats apparently reaching down to their knees and are wearing boots. Their faces are coarse, both of them have a well grown extended moustache, no beard and crude in style noses. What is the meaning of these two sculptures, what or who do they symbolize? And, is there any 'positional

symbolism' involved? In his very detailed work on the wood carvings of the *Vasa*, Hans Soop (1992) gave a remarkably neat iconographic analysis of these figures. They seem to represent Polish men, as their garments resemble a *zjuba*, a particular kind of Polish coat, and their round faces and features were at the time long regarded as typically Polish. Their restrained positions in a cramped space are as well related to a Polish expression and an old customary form of punishment. According to Soop's investigation, a Polish way to castigate misbehaviour during the time of the *Vasa* was to make the guilty man crouch under a bench and be forced to *bark off*, as a dog, implying he should confess his misdemeanour, make an act of contrition and apologize. Although the practice is long gone, it was in use in Poland during the 17th century and must have been well known in Sweden (*ibid*). By locating these unfortunate Poles under the catheads, the Swedes are not only in a symbolic way continuously punishing their enemy with their own castigation, but making them to carry their anchors for all time. Moreover, by their positioning, so close to the ship's area where the sailors would relieve themselves or 'take their ease' they did not confer much dignity on the enemy by this symbolically offensive message. This is a symbolic language which would have been read and understood by contemporary Swedish viewers, it is part of the messages ships carried by projecting power. It is likely that most viewers could understand the message. In times when literate people were the minority, symbols to be carried by ships were an effective media by projecting power and legitimacy, in this case of the Vasa dynasty.

Methodologicaly, analysis of symbols, as many other topics in anthropology, can be elicited by researchers from texts, direct observations and interviews. We do not have most of those luxuries in archaeology. But we have the interest. How then can we extract them? Arguably, if the notion of observational theory is accepted by a maritime archaeological research, and if this same research has interest in symbols, an important

step should be to refer to ethnographic and social anthropological studies of symbol. This discussion underscores what was exposed in the previous chapter, the importance of gaining research richness by looking for an integrated maritime anthropology. In other words, is not easy to reach some aspects of the world of ideas of a past society by the study of archaeological material, but those are pertinent to an anthropological comprehension of the maritime aspects of culture.

Social processes leave impressions, not necessarily as an exact replicated vision or sensorial image. We do not have the direct access to all forms of evidence and there are limitations and constrains, but we believe we can approach those processes.

Symbols in archaeology

Perhaps no other topic in this work can better illustrate the differences between idealist and materialist standpoints within archaeology, and how it is pictured on its maritime side. The discussion of archaeology being capable or not of identifying elements of the world of ideas of past human societies through its material remains is old and uneasy, particularly regarding prehistory.

Warning about the risk of oversimplification, Robb has suggested that perhaps an adequate summarized depiction of the relation between symbols and archaeologists, is that colleagues "from a processual tradition tend to view symbols as representing social realities, while postprocessualists and other structuralism-influenced archaeologists generally view symbols as constituting social realities" (Robb 1998: 332).

Considering utilitarian functions as part of meaning and distinguishing between types of meaning have both been suggested as possible ways to minimize the separation between a number of dichotomies: *materials, adaptation and objective science* opposing a view favouring *symbolism, history and interpretive approaches* (Preucel and Hodder 1996b). This perspective might be more than practical when we see the process of design, construction, use and discard of seagoing vessels by taking Preucel and Hodder's approach of understanding utilitarian functions as to the 'use of an artifact in exchanges of matter and energy' and a social function as 'the use of an artifact in exchanges of information' (*ibid*).

Ship and shipbuilding, as the *Vasa* example, encompasses such a large mix of utilitarian and symbolic elements that it might be even harder to separate them rather than to identify them. Along with this are the scopes described by Adams as important to be taken under consideration while archaeologically 'reading ships', such as the purpose of the vessel, its intended function; the level of technology available to construct the vessel; the tradition inside which the vessel was constructed; the material resources available for its construction; the resources, the economical reality, needed to produced it; the operating environment of the vessel; and the ideational concepts to which the vessel is referred to, both in relation to what they are and how they are to be used (Adams 2003:26-30).

Nevertheless, as happened with symbolic anthropology, there is still a shadow of methodological emptiness surrounding the efforts of symbolic approaches from archaeology. In an issue of *American Ethnologist*, dedicated to symbolism and cognition, Colby, Fernandez and Kronenfeld (Colby *et al* 1981) predicted the convergence of cognitive and symbolic anthropology in the years to come. The prediction was never fulfilled. Cognitive anthropology lacked methodological content and symbolic anthropology was guilty of empty formalism (Reynoso 1988:212). Whether

the archaeological counterpart of symbolism develops a strong methodological framework is still to be seen. And, at least if we judge from Preucel and Hodder's (1996b) opinions related to cognitive archaeology, we could well believe such a convergence will not happen in archaeology either.

Commenting about Kent Flannery and Joyce Marcus' article "Cognitive Archaeology" (1996), Preucel and Hodder seem to understand that applications of cognitive archaeology to the study of symbols are synonymous with going back to the use of archaeology as history's maidservant, and a route to go back to historical particularism.

Are we condemned to an eclectic approach interested in symbolic aspects, but with a lack of methodological substance? If within the sub-disciple we want to answer "no" to that query, then we need to answer the next two other questions. Which symbolic aspects could be present in a society relative to its maritime condition? And which of them could be "seen" through the archaeological record? The answer to any of them seems yet to come, but it is unquestionable some interesting progress have been made.

By excavating ships with the express and unique interest in technology we are researching the pragmatic action of the ship; of the 'ship as a machine'. But in trying to understand the ship as a social product not only pragmatic action is interesting. Symbolic anthropology has largely hold attention in the studies of symbolic action, and in the possibilities of reconciliation of both symbolic and pragmatic views (Turner 1975). There is pragmatic action in society as well as symbolic action, and one single object, such as a ship, can exemplify both. It might actually be difficult to find examples on which any action can ever be entirely one or the other. Pragmatically we know the ship is the synthesis of craft, skills, and possibly hundreds of years of technological traditions condensed in that

vessel. Large ships are as well the results of hundreds of pairs of hands working at their best to construct it. Not only large vessels, but smaller craft necessarily imply the investment of energy, material resources and time from the constructing community. At the same time, constructing a ship integrates a great amount of symbolic content, as it is for example the case of figureheads in the Modern Epoch in Europe, in Viking shipping and even in the Asian Pathias. The same hands fastening the beams are positioning the iconic carvings at the stern. In the case of the *Vasa*, and similar vessels, although these sculptures were carved by specialists contracted by the shipbuilder or prospective owner, ultimately they were meant to be placed in position by the same group of people constructing the whole vessel. They were meant to be part of the same enterprise. Can we really distinguish between the symbolic and the practical side of the ship in terms of its role in society? This would be the difficulty of disentangling pragmatic action from ideological and symbolic action of the whole process of, to put it in Adams' terms, going from conceiving, designing, constructing, using and disposing of the watercraft (Adams 2003:2).

Comparatively, there is a large proportion of work conducted in maritime archaeology related to the practicalities of building and sailing a ship, than the scarcity that there has been about the symbolic elements of building and sailing a ship. There are some of the latter, as are being discussed in this chapter, but the relation is clearly unbalanced. Why should it be such a massive difference when you can not actually separate both aspects within society? On the one hand because of the inherent difficulties in studying symbols, and on the other because the explicit interest in the symbolic profile of ships and shipboard societies goes back to just as recently as the mid 90s. Ethnographers have been looking at boats and coastal societies including their symbolic aspects for a long time, which makes stronger the need of looking closer what ethnographers and social

anthropologists have been working on. I would say then that as it is important to search for Muckelroy's ship as a machine, we should as well search for the *ship as a symbol* and for the *ship as a vehicle of perception* something which will be discussed below.

The myth, the symbol and the ship

One way to perceive the symbolic value of the ship is when elements of it, away from its pragmatic reality, are found in other circumstances different to that of their use as a transportation vehicle. Another route is exactly the other way around, when we find elements on the boat or ship which are not designed to be part of the technical requirements for the ship to perform, but are designed to be read by its viewers under certain codes. That is, iconic elements absorbed and integrated on its construction, or adornments incorporated on top of the structural components of it. It could be argued that in such a case, the ship is not the symbol, but only the carrier of it. But, as we have stated before, the possibility to divorce the symbol from its 'sensorily perceptible object' is almost impossible to achieve, therefore the ship as well as being a carrier, will be immediately transformed as part of the symbol it is carrying. A third route will be the ship being a carrier of meaning in itself, and a constructor of a *mythical eucumene* at the same time as constructing a cartographic one.

How is it that a ship is a symbol? An obvious answer, although not a complete one, is that transportation carries elements of power. In our day, for some people the possession of certain cars implies financial prestige, as if the possession of it allows its owner a place in a selective club or guild. It might also be a symbol of physical decadence apparently substituted by material possession, as it is common to see in North-Western societies, where middle-age is seen as a nostalgic event in life and an interesting

proportion of middle-aged men compensate for their physical decay by possessing icons of youth, strength and revelry, like a motorbike, a sports car or even an electric guitar they are incapable of playing. That is symbolism at an individual level. The space race also implied prestige, power and nationalism during the Cold War, and its symbols were rockets and spacecraft. The possession of a horse was in many societies and times a symbol of power and wealth, as it was restricted to some castes and ranks. A ship implies basic components of symbolic value as much as more sophisticated ones. As has been already stated, maritime archaeology does not study ships, cannon or fastenings, but people, cultures and processes. If this statement is correct, then studying cultural actors is part of our job. With them comes the inextricable bond with their symbolic roles within society.

In an American context, the efforts to perceive the ship as a symbol might be of double value. It is obvious, by reviewing the literature, that the meaning of navigation has been almost entirely seen from a European perspective: as colonization, exploration, discovery, control, commerce, etc. Questions and research have been ethnocentrically driven; it has mostly been a form of intellectual colonialism following the residues of the political one. Intercultural interaction between Europeans and local American communities is a particularly interesting, rather unexplored topic. In most cases the questions arising are solely regarding from European perspectives. But in the time of *contact* the symbolic character is not only the one being carried by the sailing culture. It is extremely important to raise questions about how a coastal community might perceive and react to an inhabited object arriving from beyond the 'known' limits of both their physical and cognitive frontiers, in this case a ship coming from the open ocean. It is also important to stress that the contact is not restricted to the 16th century. Though much of it occurred in the

16th and 17th centuries, it still happened later and the intensities of such intercultural engages were extremely variable.

An interesting case presently under archaeological investigation is the loss of the Manila galleon *San Agustín*, off Point Reyes National Seashore, in Northern California. The ship was lost in 1594 during its returning voyage to Acapulco from the Philippines. The shipwreck led to a very interesting intercultural engagement between the Coast Miwok, a Californian society, and the Spaniard seafarers. The contact was not prolonged, about four or five weeks of direct interaction. But more interesting to Mathew Russell —archaeologist from the National Park Service's Submerged Resources Unit, who is working on the subject— is that the Spaniards abandoned the whole ship and cargo in Point Reyes, and when they left the Coast Miwok salvaged and exploited the wreck. They removed items from the vessel or perhaps collected items from the beach. It is still unclear whether they directly salvaged the wreck or rather more opportunistically collected materials as they were washed ashore. It is possible they had the capability of directly salvaging the wreck as it was in shallow water, close to shore, and the Coast Miwok were a culture having small reed boats to collect coastal resources (Russell pers., comm., 2007).

So, one of Russell's interests goes to the choices they made in terms of removing material from the wreck, bringing it back to its coastal villages and how they incorporated that material into their daily life and daily practice. How they re-contextualized the material from a European use and conception of it to an indigenous use and conception of it. At different levels, maritime archaeology needs to start incorporating what Mexican historian Miguel León Portilla called 'the vision of the vanquished' (1991).

Other route of intercultural exchange to be followed with regard to this wreck is much more technical, but equally intriguing on its human side.

The *San Agustín* was constructed in the Philippines. There has been no archaeological research which has had the opportunity to study which technical challenges Spanish shipbuilders faced and solved in order to construct a seagoing vessel without the facilities of an old infrastructure of shipyards and shipwrights at hand to construct the vessels. Which challenges they faced due to the different species of trees they had at hand in Asia, different to those they had in Europe and how did this affect the ship? How did Asian shipbuilding and craftsmen influence the construction of the ship? Also, the ship was heading to the New Spain, which at that time was the geopolitical centre of the Spanish Empire, the largest and most influential at its time. The New Spain administrated and conducted the communication of goods and ideas between Spain and Asia, therefore having a commanding participation and receiving this mix of European and Asian realities within its own American condition. When excavated, the *San Agustín*'s remains will provide many interesting answers and new questions about this intercultural interaction with the same vessel and four cultures: Spanish, Coast Miwok, Philippine and Mexican. Leaving aside a Eurocentric perspective of seafaring cannot be but synonymous of archaeological, historical and anthropological enrichment.

Sometimes archaeologists tend to characterize elements of material culture as 'symbolic', cultic or ritual when its significance and context of use are not clear. At other times the tendency to do it is when it is discovered out of its 'natural context', a risk to be noted in relation of the danger of our built-in expectations regarding the symbolic value we see in an object (Crumlin-Pedersen *et al* 1995:7). This is particularly true when archaeologists study pre-historical societies. Even so, it should not be implied that working with literate societies will bring us the opportunity to 'see' the symbolic aspect of them without demanding efforts.

There are some advantages to be taken, though. Observing the ship as symbol in Hispanic societies, for example, offers the chance to take a more direct contact with religion and the way in which ships and navigation were linked to it. The importance of Catholicism in Hispanic navigation is undeniable, in the same way as navigation offered inestimable services to the aim of expanding Catholicism through the vast and varied societies in America. The ship was implemental both in the exploration and military dominance as it was in the spiritual conquest of almost all the continent.

At the beginning of this section, three options to perceive the symbolic value of a ship were pointed out. A fourth one is not necessarily perceptible in a sensorial way, but rooted in the values the ship was encompassing by divine invocation, by sailing under the protection of a guarding deity. The way in which this protection was looked for was by invoking a particular saint or virgin by giving his or her name to the vessel. The religiousness of Hispanic sailors and officers in times of the *Carrera de Indias* (the fleet system running between Spain and its American colonies) was put to the challenge each time the ship faced major risks at sea, therefore living and dying in fear of god's fury was a common perception. To sail was largely and properly understood as a notable danger, as pointed out in 1539 by Fray Antonio de Guevara in his *Arte de Marear* :

> ...many times I make a pause to think how abhor must have been the first man who, standing most safe in land, committed himself to the great dangers of sea, for there is no truly safe sailing on which in between life and death there is solely no more than a plank (Guevara 1984:324)

For the men engaged in the *Carrera* the possibility of finding death at sea was also the possibility of loosing ways for spiritual salvation. Therefore, captains were recommended to confess to a priest and receive communion

while at port, and to order their crews to do the same. In this way they would set sail "in a state of grace" (Escalante 1985, orig., 1575:52).

It was not a coincidence that a large number of ships in the *Carrera* were named after saints whose attributions were related to the sea as protectors, and that the most popular name reference was associated to Mary as the greatest protector of all (Sánchez 2003:163). By carrying the symbol in the ship's name, they carried the belief on the protective ability of that divinity. The religious character of the ship's name and icons is there to assist in the aid of spiritual needs of the people on board. The saints' patronage was looked as a mean of divine protection during the voyages 5.

In the catholic tradition, Virgin Mary is regarded as the great intercessor and as queen and mother of humankind. Being her designation as *Nuestra Señora* (our lady), catholics recognize themselves as vassals of Christ's mother. In the Middle Ages she was related to the Latin word *mare*, for sea, regarded as *Domina Maris* (lady of the sea) and *Stella Maris* (sea star); these denominations made her protector of sailors and fishermen, as it is easy to find coastal churches and chapels where she is venerated (*ibid*). Entire neighborhoods and cities were given maritime names related to her, such as *Santa María de los Buenos Aires* (Our Lady of the Good Winds), in Argentina, with the old quarter of *San Telmo* (Saint Elm) where its church is still today loaded with seafaring symbols. Examples of desperate devotion to Mary can be found among Spanish sailors when a ship was near to being lost. This is the case of Gonzalo Fernández de Oviedo's account of Alonso de Suazo's prayers when, in 1524, his ship was about to be lost between Cuba and the New Spain:

> As this cavalier was a catholic and devoted Christian, with good character and prudence, he called God and his glorious mother, as in

such necessity should true faithful ones do. He did not cease to encourage his crew to pray (Suazo 2000:200).

Names such as *Nuestra Señora de la Pura y Limpia Concepción* (Our Lady of the Pure and Clean Conception), *Nuestra Señora del Juncal* (Our Lady of the Reed Place), *Nuestra Señora de los Remedios* (Our Lady of the Remedies), and many others, were given to guarantee this Marian safeguard. The particular Marian invocation could be related to some place, as it was with the 1631's *Juncal*, built in the Basque region of Guipúzcoa, and whose owner was from the also Basque city of Irún from which *Nuestra Señora del Juncal* is the patron saint (Sánchez *op cit*).

The ships were charged with symbolic elements in order to offer protection to the people onboard them. Albeit it is common to find ship names in the *Carrera* denoting a geographical character, these were a sort of 'toponymic nicknames' like *La Gallega*, or *La Vizcaína*. Even if sometimes it is easy to find these names in historical archives, it is needed to try to find and link their religious name, as interesting information is contained in them. These names were related to patronages related various elements of seafaring depending on the martyrdom the saints suffered. Even gunnery had its symbolic protection under Santa Bárbara; whose head was cut off by her father because she refused to abjure christianity and a thunderbolt struck him immediately. Not only was Santa Bárbara the protector of gunners, but the powder and shot storeroom in Spanish ships was called *la santabárbara*.

The symbolism of ships, both in its iconography and nomenclature projects national power and prestige. As much as the naming in the *Carrera* was most centred in divine protection and geographic naval centres, in Tudor England the flavour might have been slightly different, at least to royal ships. The fact that Henry VIII's favourite ship was *Mary*

Rose implies a useful combination of meanings. Mary was also the name of Henry's favourite sister (Rule 1982:15), but it includes a noticeable Marian character, and it also implies the rose, dynastic icon of the Tudors'. About a century before, Henry V's *Grace Dieu* (currently archaeologically investigated by Southampton University) had an obvious and direct religious importance. Henry VIII also had a *Grace Dieu*, but in his case it was called *The Henri Grace à Dieu*, considered a symbol of the king's prestige (Rodger 1998:204). Therefore this 'Henry by the grace of god' passed the solely religious value to a monarchical one. Shifting the orientation of nomenclature was not a case of only one or two favourite ships. While in early 15th century Henry V's ships were receiving names such as *Holy Ghost*, *Jesus* or *Trinity*, a century afterwards vessels of the Tudor house were being called *Regent* or *Sovergein* (Adams 2003:97). Passing from ecclesiastical to dynastical preferences in ships names perhaps also emphasizes the triumph of dynasty and Crown's desires over religious establishment and divinity, as it was particularly noticeable in the reign of Henry VIII. But not only had this change of naming orientation appeared in England, as Spanish ship names also started to change in 18th century. They left the religious dominance behind, and opened room for more mythological and attitude-descriptive denominations, such as *El Bizarro* (The Corageous), *Neptuno*, *La Flor del Mar* (The Flower of the Sea), *El Águila* (The Eagle), *Hércules* or *La Indomable* (The Indomitable) started to appear (Sánchez *op cit*:162)

The use of religion on ships and the control imposed by religion are clearly linked. Therefore symbolism in seafaring was also very convenient for constructing a religious justification for the atrocities perpetrated in America "in the name of god". The fact that the man crossing the ocean under royal investiture to claim possession of distant lands for Spain was a certain Cristóbal, Christopher or Christophoros (Χριστόφορος) —a name which on its Greek origin means 'the one who carries Christ'— was

convenient in all angles. For Spain, Columbus carried religion to America through the ocean as much as in hagiography imaging Saint Christopher is a giant carrying a child Christ through the waters.

The fact that to illustrate religious symbolic importance related to shipping I prefer the use of post medieval examples is only a reflection of my limitations and interests, as it is the subject on which I have worked most. Obviously, it does not imply that similar attempts could not be made with different times and cultures.

Allegedly, the only communal piece of work regarding these topics is the excellent volume titled exactly *The Ship as Symbol* (Crumlin-Pedersen and Munch Thye 1995), which is the edited product of an international research seminar held in Copenhagen in 1994 at which archaeologists and historians of religion met to exchange works and ideas about the ship as symbol in Scandinavian Prehistory and Middle Ages. That volume also shows how different scholarly perceptions are debating around these topics, with varied degrees of optimism and various theoretical perspectives arising even from diverse disciplinary spectra.

Going back to the debate of how and when we could speak about having the ship as a symbolic presence, Zbigniew Kobyliński arrived to a set of conditions (derived from archaeological observations in prehistory and early medieval Northern Europe, with emphasis in Scandinavia) from which we can recognize the 'disturbances of the original pragmatics of the boat or ship':

> -the occurrence of a boat or ship in a burial ritual, in the form of boat-like graves in which the presence of the boat is simulated by the shape of a stone setting on the surface; real boat-or ship-burials in which one can find the presence of a real boat or parts of one; stelae

and carved tombstones with boat images, burials in urns with boat representations, or those furnished with a miniature model of a boat;
-finds of boats or their parts in bogs, in a context suggesting that they were sunk on purpose and with an aim that was not a technical or utilitarian one;
-miniature wooden or metal boats;
-houses built in the shape of boats turned up-side down;
-boats and ships shown in Stone Age and Bronze Age rock carvings;
-images of boats and ships used as decoration of various artefacts, especially of Bronze Age razors, knives, spear heads, drinking horns or bracelets (Kobyliński 1995:11).

It would be difficult to deny the importance of the ship as a symbol in the boat-burial traditions in Northern Europe. Even if the boats are still being used as a means of transportation —by carrying the death— they are not doing it on their 'natural' media, across water. They are symbolizing a pragmatic duty, but not actually executing it. The boat-mound tradition, with sites like Oseberg, Gokstad and Ladby; the boat-cremation graves with rivets and burned bones; the boat-grave fields of the Vendel period in Sweden (Merovingean in continental Europe) (Varenius 1995), the Roman Iron Age boat-burials at Slusegaard, in the Danish isle of Bornholm (Crumlin-Pedersen 1995), they all speak about an after-life use of the vessels. The Bronze-Age stone ship settings in Gotland, the more than 2,000 still remaining in Northern Europe (Capelle 1995), although not necessarily containing burials are, along the others, the pragmatic via of a symbolic journey.

Can we reach the symbol without the aid of texts?

As it should be expected, not all scholars who so far have discussed the ship as symbol agree that it is possible to reach its meaning from an archaeological context without the use of written text. This of course leads to the discussion about how to analyze symbols in prehistoric societies. By using several examples of Nordic mythology, all referred to ships, Jens Peter Schjødt (1995:22) shows his scepticism by stating that "in investigating the symbolism of ships in Scandinavia we must look to the mythic framework in order to see the relation between form and content. This [...] implies that we must look at the texts. Archaeological artefacts cannot tell us anything about this relation, unless they can be supplied by textual evidence. By looking at the ships of the Bronze-Age rock carvings we cannot say anything of what they 'meant', unless we can render it probable that the religious ideology of the Bronze-Age Scandinavians was very much like that of the Viking Age, which we know from texts". By using texts on where myth meets ships, Schjødt also raises questions on how appropriate is it actually to characterize the ship as a symbol on its own. His main critique is that in a number of cases of Nordic mythology, the use of the ship is restricted to that of a form of transport. The fact of knowing of ships being used as the way to transport the dead to *Hel* or *Valhal*, or that the ship *skiðblaðnir*, owed by gods Odin or Freyr, has magical proprieties —like the capability to be folded like a piece of cloth or having the quality to go wherever it was wanted—, does not change its utilitarian employ. According to his interpretation, in these cases there is no hidden meaning behind the ship. He asks therefore, where is the symbol to be 'decoded'?. "There is no such thing as 'a symbolic essence behind the form ship'. If we do not know the context in which we meet the ship, there is no possibility to 'interpret' the ship" (Schjødt *op cit*, 23).

But, a question must be raised then. Does this mean that 'only' when found outside of its utilitarian function can a ship posses symbolic value? I would rather say no, and that it is even possible to discuss it in Scandinavian contexts. In *Gautrek's Saga*, due to a gift debt, sea-king Olaf asks the former ash-boy Ref what he desires as present. He asks, by cunning recommendation of his advisor, Earl Neri, to use Olaf's mighty fleet for some days. As granted, he borrows the whole fleet and sails and displays it off the coasts of king Gautrek's realm. Frightened, and trying to avoid an invasion, Gautrek offers Ref an earldom and even his only daughter's hand, which he is happy to accept (Lincoln 1995:26-30). It was the visual power of a massive fleet and the peril it represents what granted Ref's such remarkable returns.

Also, the technical major difference between rowing and sailing ships might also convey strategy and symbolism. As suggested by Christer Westerdahl (1995) when discussing the introduction of the sail in Scandinavia, rowing boats might give some undisputed advantages to an aggressor, as they would be independent of the wind's strength and direction, easier to be kept together and particularly less noticeable from inland than sailed crafts. Therefore, the use of sailed vessels would imply a desire to be seen, a resolute display of power. It could, also display legitimacy as intentions would be exhibited ostentatiously. Myth and technical issues coincide here, where a set of sails off the coast could be a symbol for power, threat and purpose.

Ships as carriers of meaning

As discussed, implicit in the poly-semantic value of material culture is the difficulty —or rather the impossibility— of separating the object from its cultural significance. What is implicit and what is explicit in the meaning

of an object cannot be separated by untying its physical reality from its ideational value. Not only objects, even spaces onboard need to be analyzed in terms of their symbolic content. It is known, at least for the modern era, that ranks marked sectors of a ship and infringing its limits could be punishable. But there is more to the nature of using space onboard than only hierarchies.

Of course it can be extremely complicated to archaeologically distinguish 'ritual' spaces onboard, particularly when there are no iconic representations to guide us. Following Thomas (1996), Robb reminds us that "meaning does not reside in artefacts or in people, but in the moment of interaction between the two" (Robb 1998:10). An instance that illustrates such a case, understanding the ship as symbol and its internal spaces being used alike, can be found in attitudes towards fear. During the last moments prior to the sinking of the *Nuestra Señora del Juncal*, flagship of the 1631 New Spain's Fleet, lost in the Gulf of Mexico, the attitude taken by the crew in terms of use of space brings out elements of this unification between material culture, space and conduct. On the event of wrecking the vessel spaces can convey particularly symbolic use. When all resources to save ship and life were exhausted, officers in the *Carrera* used to retreat to the captain's cabin to execute *el bien morir*, a way to prepare themselves to death by praying and lamenting, but only in the company of their peers, away from the view of the ordinary sailors and rest of the crew (Herrera 2001a and 2003).

The costly effort of constructing a ship's stern with as almost as much decoration as a contemporary altarpiece needs to be visited. Ships such as the *Sovereign of the Seas*, *Vasa*, or the *Kronan*, with vast quantities of laborious wooden sculpture at their stern castles were powerful projections of symbolic meaning. At the same time as being vehicles of transportation, weapons, cargo carriers, etc, they are also vehicles of symbols and

perception. Following anthropologist Firth, symbols are "instruments of expression, communication, of knowledge and control" (Firth 1973:77) and we should also emphasize the "significance of political symbols in power relations" (Firth *op cit*:84). It is useful to attempt understanding the ship as a carrier of accumulated meanings, a product which is to be used in various contexts.

We can take again a ship such as the *Vasa* (Soop 1992) as an example of the difference between analyzing the ship as a symbol and as a fighting platform. We could of course solely concentrate the effort in studying the weapons that were taken into the battle and how a warship was designed and used as a fighting and transport tool. However, that would be a limited way to see it. By the time a major fighting vessel finds the end of its functional life, it will have spent a significantly greater amount of time resting in docks and harbours than in combat. In sitting in the harbour it would have been observed and admired by significant numbers of people, Swedes, their allies, and foes. Its decoration, as a metaphor of its context, is actually as much if not more about what that ship was than the fact that it carried guns.

By being a fighting machine, the ship had the potential to exert power over other people. But it also carried messages about identity and legitimization of that same power. The realization of the role of the ship's carvings as a symbolic language is the medium which can take us to a better understanding of what the ship was as a social product, as a thing, and as material culture. Ultimately, that realization invigorates the power of the archaeological study.

That is a concrete example of the benefits of not only recognizing the symbolic context, but through understanding how it worked as a language, how it actually carried meaning to the people of the time, we can better

understand why the Vasa dynasty invested so much resources and energy in ships (Adams 2003:74). We could only perceive the *Vasa* as a battle ship. We could only admire how amazingly decorated it was, and how un-functional it was because all that decoration was not part of the function of the ship. We could even fall in the trap of concluding that the decoration was more an exuberant and gallant burden than part of the real function of the ship as an action and war tool. However, by analyzing it in detail, we see that such a perception might be utterly incomplete. The messages carried and the iconic expressions of the *Vasa* were as much of the function of the ship as the guns.

Ships as vehicles of perception

When I started to work on the symbolic and cognitive implications of seafaring, back in the late 90s, I was not aware of the Scandinavian directions towards a meaningful appreciation of the ship as a symbol. I was not calling it exactly like that. The concept I was working on was 'navigation anthropology', which I now believe is preferable to include as only one aspect of the more comprehensive approaches of maritime anthropology. Nevertheless, as part of that navigation anthropology I had a profound interest in understanding the use of symbolic representations in the construction of an expanding world to both Europeans and Americans through naval communication from the late 15th century onwards. An approach I have been working on since the 1990s, the *ship as a vehicle of perception*, (Herrera 2001a) is related not only to the cartographic perception of the sea, but also the fears and beliefs related to it. How did elements of different mythologies converge in the effort of charting the perception of the seas? And how competing ideas where shaping and filling empty spaces in that effort? In that sense, it would be better to speak of the construction of an expanding and changing *ecumene*. It might be

necessary to explain that it is not the concept of *ecumene* in its religious form (referring to the representation of the total extent of a body of churches), but its original meaning, from the Greek *oikumene* (οικουμένη), meaning 'inhabited'; that is, the part of the earth which is known to be inhabited and it is therefore part of the known world.

Not only transoceanic vessels and voyages are useful to analyze the value and utility of this concept. It has been discussed that the ecumene of the Scandinavian environment might be perceived as an ecosystem of sea coasts, on which social practices were directly related to the exploitation of this ecosystem on which the boat as a techno-utilitarian artefact was playing a main role (Kobyliński 1995:17).

This is related to an extended use of symbols, not necessarily restricted to a ritual and religious framework. Mobility enhances both the dispersion and reinforcement of myths through its geographic idealization. The mapped world is not static, for it is a construction based on geographic perception and geographic imagination. Both of these change through time and not necessarily in a progressive way. Mobility also contributes not only to the dispersion but to the creation of symbols and myths.

The conversion of geographical knowledge into power came dressed with multiple symbolic attires onboard fragile vessels. The expanded spatial mobility of myths through the seas transformed the pragmatic effort of exploration into a haze of convergence between the crews, the environment and the ship, creating a *maritorium*. The ship, therefore, was not only a carrier of goods and people, a mover or exporter of an established culture, but a carrier of allegories, myths which metamorphosed the concepts of land and sea, of overseas societies, ideas and reality, into a unique world of facts and imagination, of maps and symbols. Practical dealings like charting the coasts and establishing colonies were transformed into

companions of maritime imagination. During the exploration centuries a new *ecumene* was constructed by means of navigation: it was as ideational as it was real.

The American coast is covered by toponyms which speak loud about the construction of a geographical interpretation through myths and a physical reality. Brazil received that name from Portuguese explorer and seafarer Pedro Álvarez de Cabral, who in his expedition in 1500 though he had arrived to the mythical Island of *Brasil.* That was an imaginary island supposed to be covered by fabulous quantities of *palo brasil*, or *palo de tinte*, a tree from which wood it is possible to produce dye. Cabral did not understand he was on the coast of a large continental mass, he thought he was on an island. And he found a tree with the same characteristics of that from the legend. Therefore, he called it *Terra de Sanctae Crucis o Brasil* and claimed it (Rojas Mix 1992:16-17; Vargas 2004:55-56).

But Brazil remained as an imaginary isle still for a number of decades for European cartographers. This can be seen in figure 7.1, where the Isle of Brasil is depicted in the 1570 map *Septentrionalium Regionum Descriptio* of famous cartographer Abraham Ortelius. The island is drawn in the middle of the North Atlantic, southwest from Ireland (Hibernia), not in South América. And it is surrounded by other mythical elements, such as a merman and the isles of Saint Brandan, Frisland, Estotiland, Icaria and Drogeo, among others. There is an Isla Verde (Green Isle), as the one just off the old port of *La Villa Rica de la Verdadera Cruz*, the modern Veracruz harbour in the Gulf of Mexico. It is important to understand that the symbolic content of a map affects its use; and how the symbolic transference, from a myth to space, also affects its geographic comprehension. The way in which maps were produced was a mix between a race for geographical power and the myths of the age, particularly those common to the sailors.

In 1540, Spaniard explorer Francisco de Orellana was part of an expedition commanded by Gonzalo Pizarro to find the mythical 'City of the Cinammon' in South America. Lost, frustrated and desperate, the expedition divided. Orellana and his men, trying to find food, constructed a ship to navigate downstream in a series of rivers they found (Pizarro 2005: 63). They met and fought the Coniapayara people, including their brave female warriors. The Dominican friar Gaspar de Carvajal travelled with the expedition and left detailed descriptions of the journey: "These women are very white and tall. They have very long hair, braided and turned around the head. And they are very muscular and go around naked, with their privy parts covered, with their bows and arrows in their hands, making as much war as ten Indians. It is true that there were some of these women who were able to insert an arrow as far as a *palmo* [eight inches] through the brigantines, and others a bit less, so that our brigantines looked as a porcupine"(Carvajal 1894: 32). Therefore, Orellana called the river where he was as *Amazonas*, as he thought the legendary combatant women were these American ladies.

We shall better say things as they are. Francisco de Orellana did not 'gave its name to the Amazonas river', as European authors like to say. He robbed the original name and changed it for one coming from his mythical background. What we normally find in the literature about him is something like this: "Orellana, Spanish explorer and conquistador, discoverer of the Amazon jungle and first navigator of the most plentiful

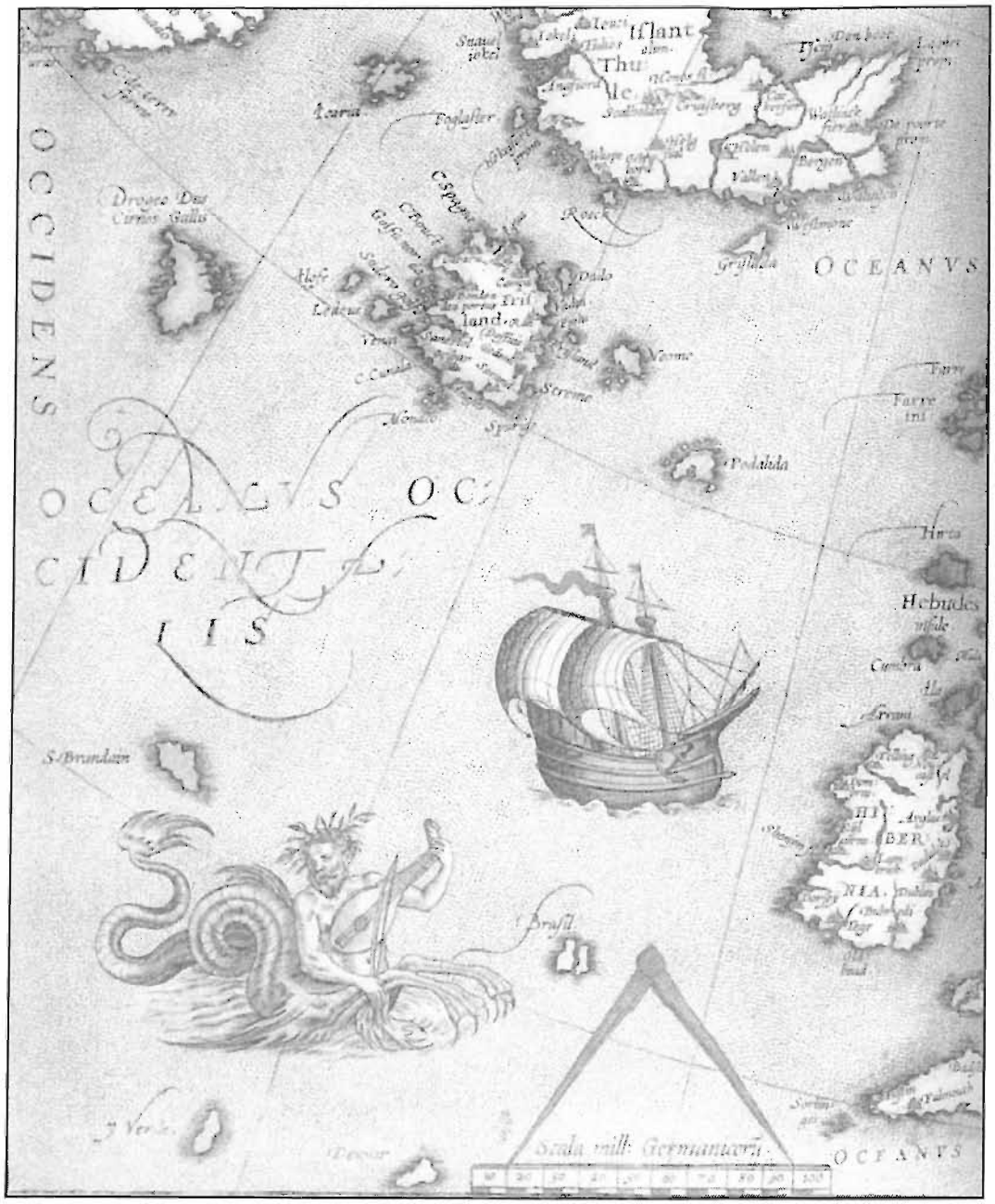


Figure 7.1. Detail from the illustrious cartographer Abraham Ortelius' 1570 map, *Septentrionalium Regionum Descriptio*. From Ortelius *Theatrum Orbis Terrarum*, Antwerp, 1570-1612. In Baynton-Williams & Baynton-Williams, p. 30-31.

river in the world". As it seems, no one cared to ask the Coniapayara —or any of the hundreds of societies living by its waterfront— how they called their river. Also, Orellana and his Spaniards might have been drunk or blind, as they fought the locals, but did not see the boats on which they were navigating the river during the confrontation. So, ships can also carry and symbolize arrogance, ethnocentrism and plain falsehood. Exploration, seafaring and mapping cannot be stripped out from the social practices they reflect, both pragmatic and symbolically.

The use of exploration and mapping was many times employed as "an instrument through which power was exercised to destroy an indigenous population", just as commented by J. B. Harley for the North American coast of Virginia, (Harley 2001:170). Harley analyzed the ways in which English cartographers took advantage of local populations' spatial knowledge to incorporate it on their own maps and later use that information to progressively edge the locals their land. The history of map construction, particularly that of maritime spaces, does not show a history of linear cumulative progress and better understanding of the space. It is a history of symbols as walking comrades of spatial perceptions and power purposes.

A complex and more pleasant mix can be seen in navigation iconography of the same centuries. It is an engraving from Johannes Stradanus (1605), printed by Théodore de Bry (fig. 7.2). On it, Ferdinand Magellan's circumnavigation expedition (1519-22) is presented in and allegorical manner. It is an image carrying many symbolic types of apparel related to sailing and to the period, all accompanying Magellan. From the pragmatic side of it —the material culture we normally find in contemporary shipwreck sites—, we can see the gunnery, from which two swivel guns appear at port side, attached to the gunwale by their 'Y' yokes. We can also see the extension posts, a breech chamber and some shot. At the

starboard side, underneath a piece of the broken mainmast, we can see a *bombardeta* on its carriage. It also has the space to receive its own breech chamber. In addition to the interesting artillery, nautical orientation techniques are shown, as Magellan is studying an armillary sphere and taking measurements with his dividers. Several rings are arranged to represent the tropics, equator and the celestial bodies that in the universe are surrounding a smaller sphere, the Earth, which with no movement occupies the centre of the universe, as corresponds to the geocentric conception sailors of that era had.

Figure 7.2. Johannes Stradanus' 1605 engraving, an allegorical depiction of Magellan's circumnavigation voyage. (c) National Maritime Museum, Greenwich, London.

The image is linking the two sides of the navigators' world, the pragmatic and the mythic. Magellan is girdled by symbols; some of them inherited from previous centuries, others particular to his times and voyage, representing practical, geographical and ideational imaginary circumstances. It also depicts his departure place, the very event of crossing the Magellan strait and the continuation of the voyage. We see Apollo, an allegory of the expedition's achievement of circumnavigation, for him as well as the sun goes around the world. He guides the vessel with his own hand. Two images also speak about this circularity in the form of infinitude, a siren holding her tail and a giant Patagón eating his own arrow. A Roc, or Rukh comes into sight from the distance. This is a fantastic bird which appears in the second and fifth Voyages of Sinbad the Seaman in *The Book of the Thousand Nights and a Night* (following Burton's translation from 1885). In the 13th century, Marco Polo describes it to live in southern Madagascar as resembling an eagle but "incomparably greater in size; being so large and strong as to seize an elephant with its talons, and to lift it into the air, from whence it lets it fall to the ground in order that when dead it may prey upon the carcase" (Polo 1927:393). It has been discussed by grave researchers that the Roc is the only element which symbolically does not belong to Magellan's crossing of the strait (Wittkower 1977:98). But it firmly does, as not only it is recorded in Antonio Pigafetta's diary of the Magellan's expedition as he say they saw it in Chinese seas, but 14th century Muslim traveller Ibn Batuta also declares to have seen the *rukhkh* while crossing the Chinese seas between Quanzhoe and Samudra (Battuta 2003:273; Dunn 2005:288; Yule 1967 orig., 1916, vol. 4: 146) (perhaps modern Guangzhoe and Sumatra?). In the image the Roc is also an element of the voyage as it is indicating not where Magellan is coming from, or where he is, but where he will head later to: further to the east.

Likewise, the engraving depicts the origin of the expedition and, perhaps more importantly, the idea Spain had of itself at that time, as hanging from the foremast is a banner with the house of Habsburg's coat of arms. It has two columns, Hercules columns. Underneath the columns we should normally find the monarch's emblem, *Plus Ultra*, which we can not see because the banner is twisted by the wind. These pillars represent the columns where Hercules marked the limit of the world accessible to humankind and recognized by Spaniard traditions as both extremes of the Gibraltar Strait. Therefore it is 16th century Spain bragging to be the nation which reached *Plus Ultra* "further more" of Hercules' columns; further more from what are the expected limits of humanity by the sake of their seafaring deeds (Herrera 2001a:58). The ship is pictured precisely in one of the highlights of Iberian seafaring achievements, as he is crossing the Magellan Strait, with Patagonia on the north and Tierra del Fuego (Fire's Land) on the south.

Expressing the links among symbols, construction of geographical knowledge and seafaring is the case of Abraham Ortelius' 1589 map *Maris Pacifici*, (fig. 7.3) and the wreck of a small Dutch vessel in Argentine Patagonia. The knowledge expressed in the map is part of the process on shaping the interpretation of space. The map allegorically celebrates Magellan crossing of the strait with the ship depiction on the left. Onboard, a sailor in the stern castle inspects his astrolabe. But at the same time a 'winged victory' is guiding the vessel, which was also named *Victoria*. The map shows America's southernmost point still on transformation. It is depicting the continent and a strait between it and Tierra del Fuego, the latter being part of the polar cap. It was not until 1615 that Tierra del Fuego was understood as an intermediate piece of land in between both, when a Dutch vessel passed what we call today *Cabo de Hornos*, in Spanish; which translates as 'Cape of Kilns'. But there are no kilns there.

In English it is called Cape Horn; but there were no horned animals around to justify the name.

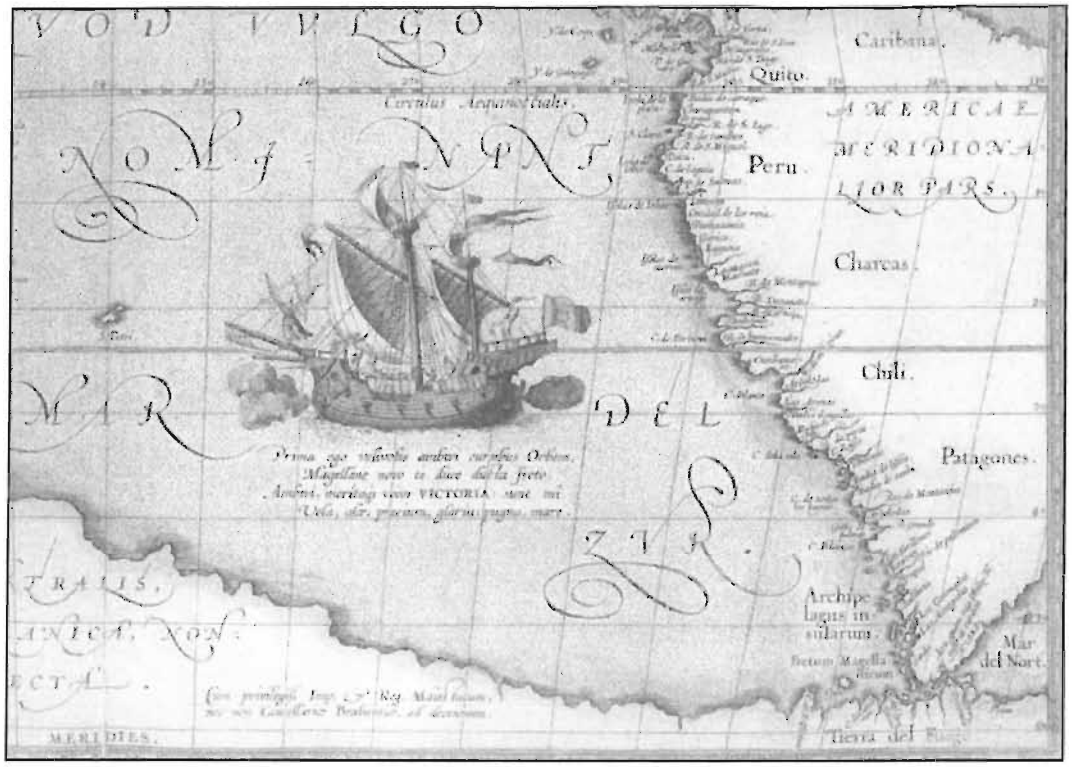


Figure 7.3. Detail from Abraham Ortelius' 1589 map, *Maris Pacifici (Quod Vulgo Mar del Zur) Cum Regionibus Circumiacentibus.* From Ortelius *Theatrum Orbis Terrarum*, Antwerp, 1589. In Baynton-Williams & Baynton-Williams, p. 44-45.

Two ships engaged in a commercial enterprise, travelling to Indonesia to bring spices back to Europe are responsible for the naming of the cape and of its charting, one of which is presently the subject of archaeological investigation. The cape was named after the Dutch city of Hoorn, as it was called as well one of the vessels of the expedition, a small jacht with a crew of 22 men. The *Hoorn* was a of unfortunate faith, as it was burned while

being careened in *Ría Deseado*, the same estuary where *HMS Swift* wrecked in 1770. The remains are today under archaeological investigation by Argentine Damián Vainstub, Christian Murray and Amaru Argüeso, also with Dutch collaboration like Martjin Manderns (Murray pers., comm., 2007). After the lost of the *Hoorn* the leaders of the expedition, Isaäc Le Maire and Willem Cornelisz Schouten, decided to continue their voyage in the surviving ship, the *Eendratch*. Not long after, they passed and named the now famous headland as Cape Hoorn.

This sequence of connections discussed in this chapter shows that both aspects of ships and seafaring, the pragmatic and the symbolic, cannot be easily separated. Efforts to consider them together, rather than dichotomized, will prove to be of stature in studying maritime aspects of culture. As important as it is to attend to what we can learn through archaeological material, the benefits of understanding the social meaning of navigation in transforming and shaping a modern world are powerfully benefited by attending to the symbolic aspect of the ship.

We shall not forget that material culture is entangled with meaning. To understand the different cognitive objectives pursued in maritime archaeology, we search for that symbolism through archaeological remains by pursuing comprehension. The question here is related to what do the maritime materials, events and processes mean, what symbolic meanings do the materials transmit. Similarly to the way in which we discussed the need to study discrete sites within the larger environmental and social contexts —the site within a *maritorium* and the site within its situational matrix—, we must explore the symbolism intertwined in the use of watercraft and the social motivations involved in that symbolism.

CHAPTER VIII

THEORY AND PRACTICE: THE URUGUAYAN CHALLENGE

Archaeological theory, method and practice from scratch

In the previous chapters we have visited a large number of ideas about how knowledge is constructed in maritime archaeology, and discussed how many practitioners have conceived various theoretical concepts. The present chapter relates to two main concerns aired in those discussions.

Firstly, it is not uncommon to find arguments about the separation made between theory and field work. This problem troubles many students and scholars, as there are no courses in how to merge the practicalities of field work and techniques with the theories they read and learn about. Therefore, this chapter aims to fuse both elements in the way I believe most suitable for the archaeological and sociopolitical contexts where I have been able to drive research. I will present how my standpoints have arisen from both the fieldwork I have been involved in, which has evolved alongside following the tenets of complexity theory within the social sciences. Secondly, it discusses the process and results of undertaking for the last three years a serious effort to combine research with heritage management in an adverse environment for both of them, namely the Uruguayan project described next.

The *Uruguayan Maritime Archaeology Programme* (UMAP) was born in a stressful and critical context both for research and for heritage management. As has been discussed in the previous chapters, the

emergence of Latin American maritime archaeology is both a metaphor for development of the sub-discipline in other regions and a particularly challenging task because of the intense depredation of submerged sites by treasure hunting companies.

From the way in which we have gone about constructing the field in our region, namely through a multinational archaeological collaboration, and through depending more on academic and ethical concordance of individual researchers rather than through formal institutional links, all the archaeologists involved (perhaps as few as 20 in the whole sub-continent) are aware of each other's research and of the conflicts they face. Of all our countries, Uruguay has been more heavily targeted by professional looters, taking advantage of a non-protective legal system towards submerged archaeological sites. Through this ad hoc collaboration scheme, despite being Mexican, I have been involved with Uruguayan archaeologists for over 10 years in trying to reverse this situation, joining an effort that they have sustained admirably in many different ways for about 15-20 years. Some advances were achieved, but still of little significance in preventing treasure hunting activities and in generating research to promote international professional standards in Uruguay.

During the first year of this author's PhD programme the situation became more critical month by month. With an alarming number of pleas for assistance from the Uruguayan Heritage Commission, it was obvious the situation was untenable. The treasure hunting community gained great strength, both politically and with the media. We reasoned that the only way to resolve this situation was to try something so far impossible in Uruguay, to start proper archaeological research, thereby undermining the deeply rooted belief that maritime archaeology was impracticable and unnecessary in Uruguayan waters. This was a counterattack, not just by polemic but through proactive demonstration.

Discussing the situation with my supervisor, Dr. J. Adams, we decided to explore the possibilities of initiating a research program which should serve two purposes at the same time. On one hand, it would serve as a practical scenario to apply several of the theoretical concepts discussed in this volume. That is, to construct a living bridge between theory and practice. On the other hand it would generate a change in perception and mentality towards heritage protection through research at different levels. These levels would include the governmental institutions, the media, the general audiences and the academic community (the latter being of prime importance, as a number of local and international archaeologists were already working for treasure hunters). If these goals were achieved, not only would the concern to apply the theoretical perspectives be attained. More importantly, we could give our colleagues the elements with which they could demonstrate the viability, importance and real possibilities to develop the discipline in the country, and to slow the inappropriate razing of submerged archaeological deposits.

A project and a programme were formulated, to which the Centre for Maritime Archaeology could then apply its attention. Both programme and project were designed by the present author and enriched by the suggestions made by Uruguayan archaeologists Valerio Buffa and Alejo Cordero, as well as by Dr. Adams. From the outset we were well aware that if we were successful we might be able to influence decisions both in research and heritage management. However, it was also possible that we might be successful but yet nothing would change. There was a large risk that if we were unsuccessful we could add a greater burden to future progress, as we knew that a large number of companies and individuals would be watching, and waiting for the smallest pretext to argue once more against maritime archaeology. Leading a multinational group of research units and institutions, we assumed the risk and, with funding from the British Academy, launched the project in April 2005, knowing

that this was probably the only real opportunity Uruguay had to change its direction for the foreseeable future.

Today, after three years of preparation, fund-raising, research and fieldwork, we are starting to see the results. The application of a research design, with strong theoretical orientation, geared both to investigation as well as to heritage management, has been fruitful. The challenge was twofold, due to the difficulty of starting the discipline in a country with no experience of it, and more so because the environment was completely antagonistic towards real maritime archaeology and anyone related to it.

Complexity theory and maritime archaeology

The theoretical position from which the UMAP was designed and is executed is called the complexity theory. Certainly, a complete assessment and critical review of its potential for applications in maritime archaeology would require another volume. What is presented in this section shows only glimpses of this. In other places I have presented a more comprehensive analysis of it, and its application to maritime archaeology, (Herrera 2001a) and in an article focused on regionality and SMRs (Herrera 2001b). The so called "complexity theory", otherwise called "dissipative structures theory", "complex adaptive systems theory" or "nonlinear-dynamics theory", has been described as a contribution capable of explaining virtually any complex system by means of a few rules, or as able to tackle some previously unapproachable problems in social sciences, and even as a "new science". However, it has also been described as a passing fashion receiving more attention than it really deserves; marketed as fashionable science, it has been seen as a place in science for people more interested in success than in ideas (Reynoso 2006).

It is not one or the other. It is a strong theoretical position, an extremely exciting approach that deserves attention but which needs to be treated carefully, so as not to fall into extremes of being a new science or just passing fashion. This position has an explicit commitment to a multidisciplinary approach, emphasising the study of phenomena that involve complex interactions among their constituent parts. It also studies the behaviour and mutual influence of elements or "agents" inside a given open system and how this system also interacts with neighbouring systems on a wider scale. It also represents a direct challenge to some traditional concepts, such as the linear programme in science, and the restrictive boundaries within scientific knowledge. It supports the idea that systems have emergent properties that cannot be understood by reductionist analysis into the sum of its parts.

It has not been uncommon for archaeological communities to believe that a particularly piece of work is "more" scientific than another because of the application of new and more sophisticated techniques, and to believe that the power of explanation is more related to the tools used rather than the questions asked and the strategies for answering them. A classic example was the longstanding confusion in some who could not differentiate the New Archaeology from archaeology that used computers and more or less sophisticated statistical techniques.

Without applying caution, the use of complexity theory could easily fall victim in the same way. Originally rooted in physics, chemistry and mathematics, the position has been constructed by a truly multidisciplinary array of researchers. Its main precursors, practitioners and theoreticians, includes David Bohm (1957 and 1992; Bohm and Peat 1988), the author of the theory of 'implicate order', a researcher interested in the limits of causality as conceived in physics. There is also Murray Gell-Mann (1994, 1995a and 1995b), the discoverer of the subatomic

particles called quarks. James Lovelock should be mentioned, the creator of *Gaia* theory. It should be noted that he cannot be held responsible for the misappropriation of his concept by popular culture and the misinterpretations of the New Age, which has taken *Gaia* as a banner. Others include Tom Ray (1992; Lewin 1995) an evolutionary biologist and creator of TIERRA, an advanced platform for the study of evolution of artificial organisms at the level of a computational "genome". There are also Stuart Kauffman (1992, 1995a and 1995b), and Chris Langton (1989 and 1992), both theoretical biologists, and leaders in the studies of artificial life and the principles of self-organization. Their applications of artificial life have also been useful in theoretical biology, tackling questions about change and the emergence of species in drastic biological events, such as the explosion of life diversity in the Cambrian.

Some of the most striking developments of these scientists were devoted to analyzing how systems change and behave when observed as a totality, when they are understood as more than the sums of their parts. In order to study the complexity among large scale phenomena, some of these scholars started to work with the concept of cellular automata, and began to develop computation simulations to study them. Cellular automata are a series of elements, "creatures" or "agents" which interact with the surrounding similar elements, according to certain rules of behaviour, just as a group of cells, viruses, and even humans do. One must not think this is an oversimplified vision, as it is far more than that. Of course, any real life community will be phenomenologically more complex than these simulations. The interesting feature is the way in which, from these systems, patterns and sometimes unexpected behaviours, emerge in similar ways they do happens in the real world (Ray 1992).

A life system, an organism, a society or a group of interconnected societies, are composed of countless smaller systems that all contribute to the

operation of the larger system. Each portion in itself, however, is not capable of the functions of the whole. The entire organism becomes more than the sum of its parts. When all of the parts are in place and interacting, the entity functions in a very complex manner. When it shows emergent properties, when it becomes more than the sum of its parts, then it is the right time to try to use this powerful metaphor to understand how some complex aspects of the real world work.

What do these ideas have to do with archaeology? Complexity theoreticians started to work with archaeologists in the early 1990s, and an exciting and encouraging application was undertaken by modelling with these techniques some characteristics of the Anasazi in North America (Gummerman and Dean 2000). The idea was to generate an artificial environment, replicating key features of the actual environment of the palaeo-climate in which the Anazasi of Chaco Canyon lived between the 1st and the 14th centuries. This would readdress the question of why they disappeared, testing the traditional working hypothesis that the valley where they lived was no longer capable of sustaining their subsistence needs.

In order to do this, this virtual Anasazi world was created following the archaeological knowledge of the valley, and setting a number of rules related to territorial movements, kinship, and use of natural resources, depending on settlement sizes and maximum number of individuals per settlement. In other words, they were giving to the agents, the virtual Anasazi, a set of conduct rules, in the same sense as the rules of the computational cellular automata. A number of simulations were carried out. Each of them was contrasted against the archaeological evidence for the historical period of the simulation. All the results of the simulation appeared very close to the archaeological facts. The only serious difference arose for the abandonment sites. For the model, the valley was still

capable of fulfilling the subsistence necessities of the population living in it. Therefore the traditional hypothesis needed to be revisited, allowing the option to explain matters in terms of religious or other social decisions, and not necessarily environmental causes.

It is as important to understand the mechanisms of change in the Anasazi as it is to explain the sudden biological diversity in the Cambrian period or the massive extinctions in the Permian period (Lewin 1995). These moments of change that the archaeologists of the Anasazi are interested in are being studied parallel to what evolutionary biologists called punctuated equilibrium, or the physicists, phase transitions.

One must ask why that is. All these subjects of research I have been speaking about are Complex Adaptive Systems (CAS), a key concept in complexity theory which I will shortly explain. It is also because they are all interested in the internal complexity of change. Simulations can be seen as just technological extravaganza, or as a means of naïve fetishism if they are not linked by means of logical consistency, realistic caution and theoretical coherence. The same, of course should be applied to simulations related to complexity sciences. Some of the most successful computational models and metaphors are related to non-linear mathematics, fractals and cellular automata.

I hope that by briefly explaining some of the principal elements of what CAS are, the use of the simulations will be understood not only as a descriptive tool but also as an interpretative one. In order to expose them in terms of maritime archaeology, I will explain these concepts as they were applied in a piece of long-term research I carried out in Mexico.

The application of this form of investigation is a disciplinary hybridization, and a trans-disciplinary perspective (Morin 1998:79). It is related to a

mindset change in how to do science. It arises as an explicit opposition to neo-positive models about science unification, since it focuses on the complexity of real systems (Terrazas 1998:116), such as in problems that account for the complexity of these systems in social sciences (Herrera 2001c:176).

One aim is to identify what might be considered as cultural DNA (Gell-Mann 1994:292), which in this case would mean actions taken by navigators in risk situations, or those close to wrecking, or even at the time of the ship's loss (Herrera 2001b:272 and 2001c:177). However, it also deals with behavioural patterns, schemes by which institutions are ruled, myths, traditions, fears, everyday life expressions or artistic expressions, many of which show some of the aforementioned characteristics and which react with the navigation world in the colonial era.

Navigation is here considered as a CAS. This is an open system which learns or evolves using information previously acquired, identifies regularities perceived in a stream of data and may express these regularities in concise packages called schemes (Gummerman *et al* 1994:3; Gell-Mann 1994:16-17). In terms of culture, these schemes are the institutions, traditions, myths, symbols, conducts, and so on that here for example underpin the practices of shipbuilding and seafaring and which are manifested by them. Parts of these schemes were revealed in the Mexican project, through the analysis of the implied order, initially hidden in the apparent disorder of the wreck site distributions.

Other aspects show the merging of the historical analysis and context of the naval cultures we were approaching. Describing elements is not enough, it is necessary to advance towards their comprehension, since a CAS is a network of elements that interact and co-evolve together and

which exhibit a dynamic behaviour. These kinds of systems cannot be reduced to the sum of their parts (Yoffee 1994:345).

A CAS derives environmental influence (cultural and natural), in its development in two ways. Firstly, in this case from the maritime environment that influences how ships are built, depending on the needs of the crew and where they will navigate. This was shown in the wide range of ships represented in the archaeological record of the surveyed keys in the Campeche Bay, in the Gulf of Mexico. Secondly, from the cultural influence of the society owning the ships (marine store dealers, officials, cartographers, ship builders, chronicle writers, painters, writers, scriveners, passengers, court members, etcetera), as well as from other maritime societies with which it is in close contact, whether in times of peace or military conflict (Herrera 2001c:177)

Interactions in a dynamic system produce a global emergent order with fascinating properties. In figure 8.1 we see the system's components interacting locally, represented by the lower dots interacting with each other. Consequently, a global property emerges, represented by the upper cloud. This property might be hard to predict. This global property then acts back on the behaviour of the elements that produced it. The elements taken into account also include those suggested by Adams (2001 and 2006) as encompassing maritime needs and aspirations within society, such as the purpose and intended goals, the technology at hand and used to construct the vessels, tradition, economy, ideology, environment and the materials used for vessel construction. All these elements might be studied individually, but only by trying to see the whole picture is when we can see the large scale of their mutual influences, as those generate the global emergence structure which will influence all of them. This model about emergence in complex systems was initially developed by Chris Langton (Lewin 1995:26), and adapted here to show how these systems might be interpreted within interacting maritime societies.

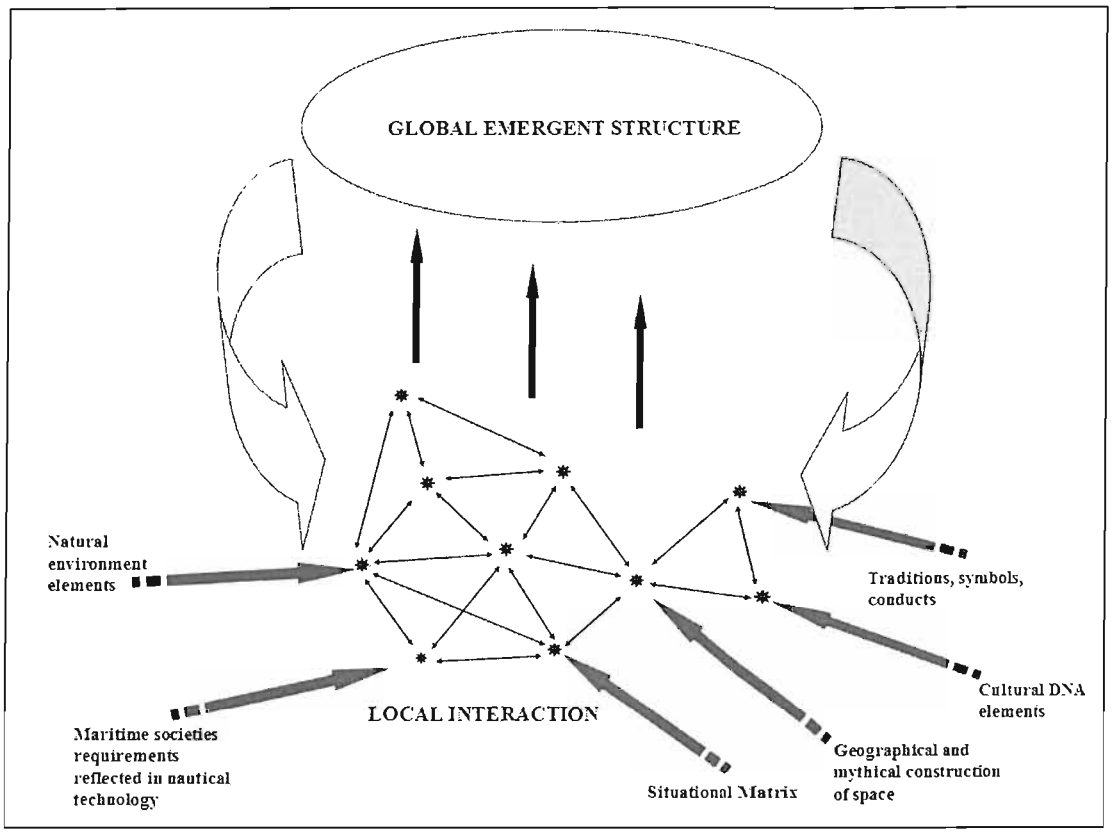


Fig. 8.1. A maritime complex adaptive system showing local dynamic interaction and a global emergent order which will influence back into the system (modified from Lewin 1995:26).

To these considerations was added the observations arising from studying navigation around a group of keys in the Bay of Campeche. This included the maritime casualties that occurred there as part of a major and highly complex system, in which natural as well as cultural facts deal in an ample spectrum of time. This approach began with the premise that sites are not distributed randomly around the keys, that they are a social non-random product. In this system, factors both natural (geographical and maritime), and cultural (stimuli to navigate in areas of naval danger), are part of the system's behaviour, while the casualties which are manifested by the archaeological remains are precisely the effects of the same system.

For example, and bearing in mind previous comments about co-evolution, the Spanish and English navies were co-evolving together, through their constant confrontations and rivalry in 16th and 17th centuries. They were interacting in the same way as is known in biology as the 'red queen effect', a reference to Lewis Carroll's *Alice Through the Looking Glass.* In this effect, predator and prey always try to stay ahead of the other, and both need to run in order to stay in the same evolutionary place. Therefore, in order to keep pace with each other they are locked together by mutual influence, consisting of technical, commercial, tactical and, in general, maritime co-evolution (Herrera 2001).

Of course, those individual components which interact locally in figure 8.1, can constitute a complex adaptive system on their own, but at another scale. This could be, for example, the reactions to fear within a crew. These will be influenced by their rank and role on board. A captain or a ship's owner will react in the event of a storm by trying to save the ship. The sailor will tend to act in a more individual way, either appealing to supernatural forces to save his soul, or by trying to save his own life, but he would not normally be interested in saving a cargo whose commercial benefits he will not enjoy. The possible conduct reactions under stress will be related to many other personal, environmental, practical and religious factors, each being an individual component of the terrified crew. The result of successful or disastrous performances of ships and crews will produce different patterns through the centuries, and so they might be seen as another agent on a larger scale CAS.

Using the archaeological, geophysical and geographic information, both a GIS and a digital model were constructed to illustrate the keys, the reef and the sea bottom. This was not done to produce a nice looking computer model, but mainly to simulate possible routes for ships sailing with different variables, and see to what degree the conceptualized models for

sailing in risk situations fitted with the archaeological reality. This model was created to permit a form of virtual experimental archaeology. Maritime archaeology is sadly limited in its options in regards to experimentation, as it would be rather impractical to go to the keys and wreck several boats to see if the conceptual models matched reality.

Due to the regional approach taken, the sites are not conceived as discrete historical entities, nor as solely individual units of analysis. They are visualized inside the framework of the whole within which they integrate with the other sites, and with the seascape at a regional scale. This viewpoint was pictured in order to generate different approaches to the complexity of some sites in particular, as well as to the implied complexity of all, tracing in this way a perspective on the 'regional maritime context'.

These elements can now brought back to be tested again in the Uruguayan context, but now in a slight but significantly different way to that used in Mexico. In the Mexico study, the research area was far away from the coast, in an area west of the Yucatan Peninsula and full of nautical casualties. These areas were a physical reference within important routes between Mexico's colonial main port, Veracruz, and Cuba and Florida. For the Uruguayan project the situation is different in the sense that now these ideas will be tested against coastal navigation and coastal nautical hazards.

Researching exploration

Regarding ontological perspectives concerning discovery and exploration the approaches are extremely different, for most research is normally done within an 'archaeology of the other' perspective, rather than from an "archaeology of us". If we reflect about our subject of study, these visions

are enormously dissimilar. Take for example just the title of a very interesting SHA session from 1984: "The Potential Contribution of Nautical Archaeology to Understanding Voyages of Exploration and Discovery in the New World" (Smith 1984). How different this Europeanized view is from an American perspective. In America we are uneasy in calling it "discovery" and "new world", as the two terms pour out of historical and intellectual colonialism.

Plenty of archaeology in the USA is "archaeology of the others", as those directing the research are rarely culturally related to the cultures being dug up, including Iberian shipwreck sites. On the other hand sits British archaeology done in the British Isles, which tends to be an "archaeology of us". Even when it is related to Roman sites, it is undeniable that because of the times of Roman domination, the historical and cultural shape of what later became Great Britain was significantly influenced by those Roman settlers and soldiers. In most areas which were under the influence of the Portuguese and Spanish crowns in America the perception is that it is also an exercise in producing an "archaeology of us". This is based on the reality that our countries are today the sum of both American and European cultures. I can feel as close to Lope de Vega's sonnets as to the poems of Netzahualcóyotl.

To incorporate or non-critically accept the concept of discovery among Latin American archaeology would only be a self denial. The archaeology of a Spanish settlement or a Portuguese wreck is as much an archaeology of us as an excavation in the Aztec's *Templo Mayo*r, or as one in the Inca capital of Cuzco, or of a Mayan village in Honduras. Similarly, the notion of *new world* can only work from a Eurocentric point of view. These concepts do not properly fit in a Latin American context, as they make no sense for cultures with a pre-European history in the continent. This needs to be understood not as plain political partisanship, but as a very important

ontological issue. It is a way to understand the structures of knowledge as spheres of power, and how important it is to escape from them in the construction of a self-guided theoretical development in Latin American maritime archaeology.

The voice of Uruguayan Eduardo Galeano clearly exemplifies the vision from within America:

> The official history says that Vasco Núñez de Balboa was the first man who, from a mount in Panama, saw the two oceans. The people living there, where they blind? [...] They told us, and they still do, that the Mayflower pilgrims went to inhabit America. Was America empty? (Galeano 2005)

In this respect, maritime archaeology can legitimately be an outstanding source for studies in *Amerística*. This is a subject of research which studies broad aspects of the philosophy, history, archaeology and cultural understanding of the American space. It studies the changing notions of America from the other continents, and the consciousness and history of American identity. It is even interested in the construction of an American lexicography. An archaeology of the exploration of the continent, a process which changed the face, economy and fate of both America and Europe, can not be anything but an immensely rich and complex field with deep and meaningful links to Amerística.

The project considers that exploration voyages did not stop in the 16th century, as many areas along the continent were still being explored as late as the second half of 18th century, such as the Californias or Amazonia. A cartographic understanding of major regions was not even achieved by the late 18th century, as it is evident in many maps that California was still being represented as an isle. Exploration is therefore

considered as the effort to exercise geographical dominance of a region through its initial charting with state of the art techniques of the day, establishing nautical routes, and the later efforts to establish beach-heads, semi-permanent and permanent settlements.

Some vessels of the early 16th century are historically known to have been wrecked in our research area, among them two Portuguese ships of an expedition commanded by Pero Lopez de Souza in 1531, and possibly one fly-boat abandoned by Francis Drake in May 18th 1578, during his circumnavigation voyage. Should these sites be detected, they will add invaluable information to the list of early exploration wrecks in America, alongside the *San Esteban* in Texas (Arnold and Weddle 1978), the Molasses Reef wreck in the Turks and Caicos (Keith 1984, 1987 and 1988; Simmons 1988), the Highborn Cay wreck in the Bahamas (Smith *et al* 1985; Keith 1988; Simmons 1988), the Western Ledge Reef Wreck in Bermuda (Watts 1983), the Emmanuel Point shipwreck in Florida (Smith 1994, 1995 and 1998), and the CTCSEAN053 site in the Arrecife Triángulos in the Bay of Campeche, Mexico (Herrera 2000, 2001a, 2001b and 2001c).

Due to the characteristics of the waters in which most of these sites have been found, where preservation of large quantities of organic material is almost impossible, it is needed to study seafaring exploration in America as the construction of a fascinating piecemeal puzzle. At the moment, we can only hope that some of these sites will be discovered in the near future by the project. However, we do not want to understand just the voyage, but the voyage within a global context and its consequences. We are interested in understand the global emerging structures of America during the exploration processes. We are interested in the resulting interactions between European powers and local societies within a historical archaeology of colonialism.

The *Uruguayan Maritime Archaeology Programme* at work

Constructing research frameworks

This segment summarizes the activities executed during the first field season of the Maritime Archaeology Programme in Uruguay, particularly the research component relative to exploration vessels. The proposed goals for this campaign were fulfilled. We feel confident that foundations have been laid for a highly productive development in future tasks with the same scientific orientation.

Uruguayan waters (fig. 8.2) contain numerous valuable archaeological and historical sites, many of them shipwrecks dating from the early 16th century. The ships that sailed these waters belonged mainly to Spain, Portugal and England, but up to now their importance as a key component of Uruguay's heritage has been greatly underappreciated. Many of these sites have been worked on, but this has mainly been commercial exploitation and of little or no scientific value. This project is the first phase of a long-term research programme that seeks to initiate a change of direction through solely scientific work linked to heritage conservation. It will also raise awareness of this archaeological heritage in both academic and general audiences throughout countries in the region.

As a country with such a prodigious maritime cultural resource, many of its academics and curators within its national institutions have been working towards a more coherent system of management, protection and investigation. This is envisaged in line with current international standards for heritage management, in particular the ICOMOS Charter (ICOMOS 1996) and the UNESCO *Convention on the Protection of the Underwater Cultural Heritage* (UNESCO 2001).

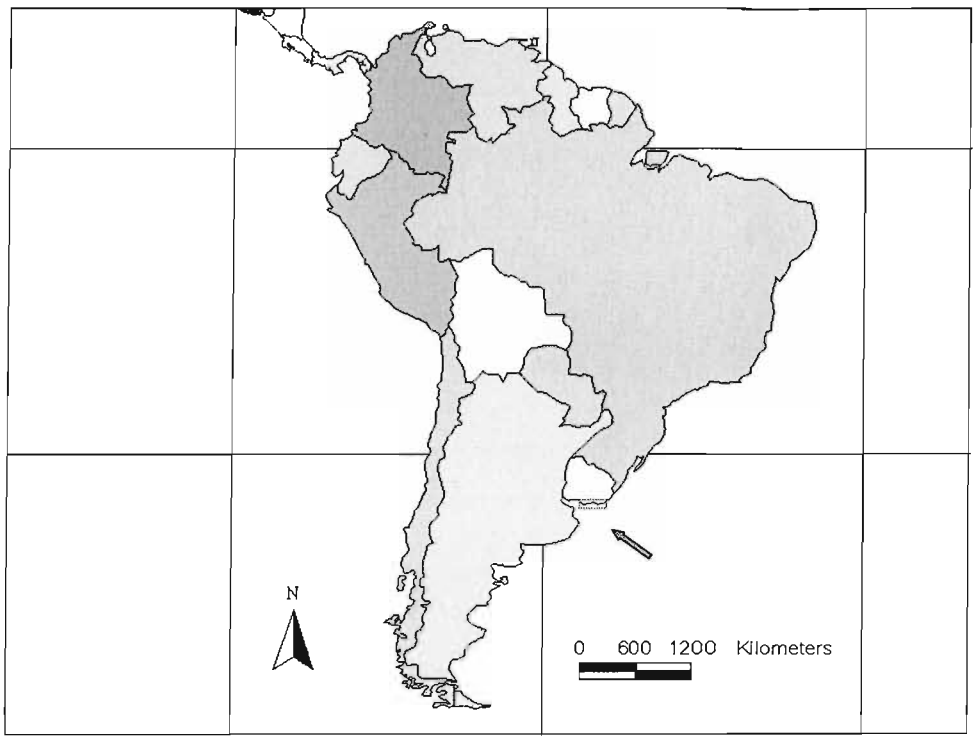


Fig. 8.2. Location of Uruguay in Latin America.

The 2005 April-May field season resulted from the conjunction of several factors which had been put in motion years before and as part of the design of this Maritime Archaeology programme. In the first instance, this corresponds to the support offered by the Centre for Maritime Archaeology, at the University of Southampton, according to its scientific and academic objectives. In the second instance, this effort relates to a number of Uruguay's State institutions, such as the Nation's Cultural Heritage Commission and the National Museum of Anthropology. Finally, it is linked to the serious interest of two exploration permit holders in the adequate study and preservation of Uruguayan submerged heritage. These three fundamental pillars coincided with the objectives and practices of submerged cultural heritage management established by the UNESCO *Convention for the Protection of the Underwater Cultural Heritage.*

The campaign was carried out in the area awarded for survey to the permit holders Hugo Charbonier and Alfredo Konquë, both of whom are committed to the full investigation of maritime archaeology. The aforesaid area is located by the north bank of the Río de la Plata, east of the port of Piriápolis, and stretching approximately up to San Luis, and from the coast out to an imaginary line passing through Solís Shoals (fig. 8.3).

Fieldwork was conducted in two phases: the first consisting of surveying and mapping the area with marine geophysical instrumentation, carrying out remote sensing transects via acoustic methods, and positioning via satellite navigation data streams. The second consisted of initial inspection of archaeological remains by means of diving operations, and archaeological recording and photography. The operational headquarters was established in the village of Cuchilla Alta, 71 kilometres away from Montevideo.

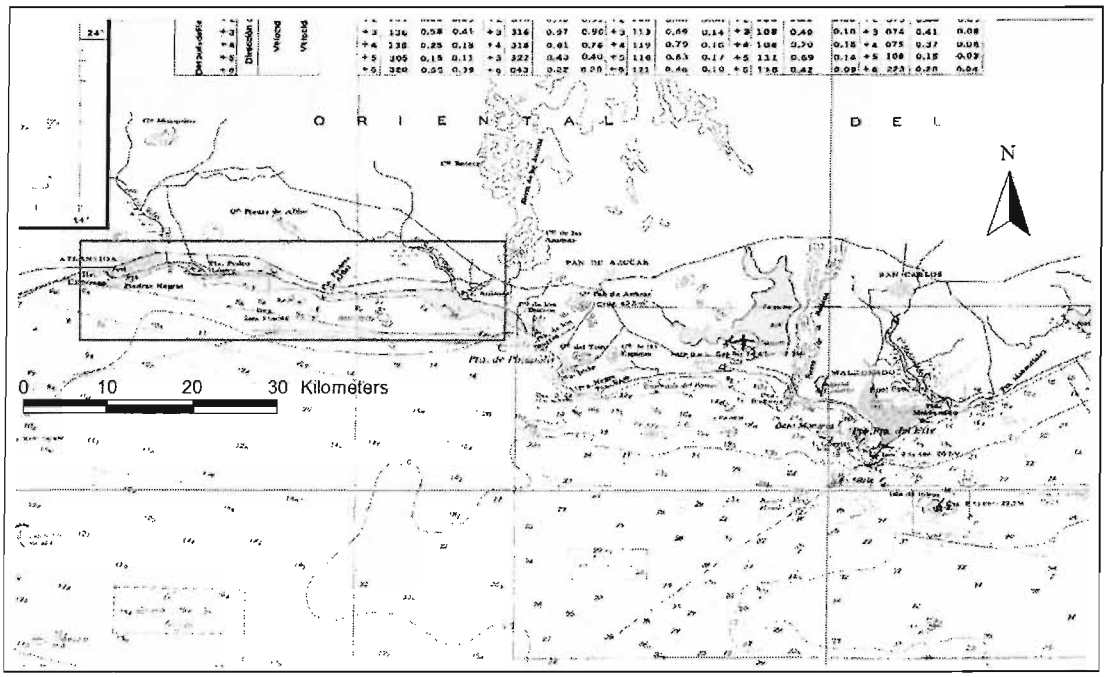


Fig. 8.3. UMAP's research area.

The working team comprised ten archaeology professionals from five different nations; nine of them specialized in the particular area of maritime archaeology. This research crew also meant the presence of five Nautical Archaeology Society's tutors, an exceptional case for the region.

The team included Jonathan Adams, Director of the Centre for Maritime Archaeology at Southampton University; the present author, also from the same research centre; and Valerio Buffa, Uruguayan maritime archaeologist. These three archaeologists are the principal investigators of the research. The rest of the team comprised Michael Jablonowski, from Sonoma University, USA; Gabriel Francia, from the National School for Anthropology and History, Mexico; Alejo Cordero from the Nation's Cultural Heritage Commission, Uruguay; archaeologist Amaru Argüeso and naval architect Cristian Murray, members of the Argentinean Underwater Archaeology Programme, from the National Institute of Anthropology and Latin American Thinking; Stuart Heath, former student of Southampton University's CMA; and Irina Capdepont, from the Uruguayan National Museum of Anthropology.

It can be highlighted that none of the participant professionals received any payment for their work on the shared understanding that what is important in this seminal moment of the programme is to impel the development of these studies in Uruguay. As a matter of fact, an important proportion of international travelling expenses of the professionals was covered by themselves. This situation occurred under the shared agreement of assigning the greatest possible part of the funding to pay for equipment transportation and working infrastructure costs (vessel, fuel, accommodation, etcetera), in order to intensify the work which could be paid for with these resources.

There were researchers associated with the project who were not present in the field, but whose collaboration was fundamental. We were fortunate to have archaeologists Larry Murphy, Director of the Submerged Resources Center, National Parks Service, USA; and Matthew Russell, from the same institution; Donald Keith, President of Ships of Discovery and Tony Carrell, as well from Ships of Discovery; Ian Oxley, Head of Maritime Archaeology, as part of English Heritage; geologist Justin Dix and geophysicist John Davies, from the National Oceanography Centre, and associated with Southampton University; Félix Frías, from the National Institute of Statistics, Geography and informatics, Mexico; and Manuel Gándara, from the National School of Anthropology and History, Mexico. All these people and institutions share the same objectives of scientific research, adequate conservation, preservation, and correct public dissemination of the nation's submerged heritage under strict ethical norms. Collaboration with these organizations is better contextualized considering the precept of the UNESCO's Convention (2001), which suggests international and inter-institutional alliances for developing submerged heritage's protective projects.

Research questions

One of the fundamental aspects in the development of the modern world is the nature of the change from a medieval to a modern mentality, in which the sea has become central to international relations in every sphere of politics, economics, the arts and the emerging sciences. The greater power blocks, the future nation states of Europe, found themselves necessarily competing across bodies of water in ways that many of the smaller regions of the medieval world had not. Exploration, navigation and seafaring now became important to society in far deeper ways. The world started to be connected through exploration and colonial enterprise, with nations

intensively interacting with one another, including the extremely different civilizations populating America. This interaction led many times to painful processes of marginalization and inequality throughout America and also through the other continents where colonialism was increasingly intensified. The centrality of the sea is something that has not been sufficiently considered in our attempts at understanding those aspects often cited as being of central importance to the modern world (e.g. Orser's colonialism, Eurocentrism, capitalism, and modernity (Orser 1996)). Largely because these mechanisms and their variants were as much as anything maritime mechanisms, a modern global world is a maritime world. However, this has figured little in the theoretical writings of historical archaeology. This research focuses on specific aspects of this period of social change, its thesis being that it can be revealed in a new light through analysing exploration and its associated seafaring practice from the following starting points:

1) Are there differences in the concept of 'exploration' between the English, Spanish and Portuguese between the 16th and 18th centuries, and were these manifested in the shipping and seafaring practices of the time? If so, can cultural differences in strategy and behaviour be detected, observed and interpreted in the archaeological record, and can we detect such change over time? We not only suggest that is this possible but that changes in patterning over time would provide new insights into the development of maritime exploration and enterprises of those powers who were forging the modern world in a new global context.

2) Implicit in this process was the interplay between colonial exploration and domination with maritime infrastructure, which would include shipbuilding and local communities. These processes are in turn related to the behaviour of people and cultures involved in maritime traditions; principally expressed through the ship, not only as an extremely complex

artefact, but as a focus of great cultural meaning and significance. This second axis of interest is defined by the next problem: Are there constants in maritime accidents that can be unified through behaviour patterns in risk situations? If so, do these patterns manifest themselves further afield from their locally specific condition, thereby creating regional maritime contexts?

3) What is the extent of the submerged cultural resources in Uruguayan waters, and how can it be understood and protected once known?

From these questions, the project set out a series of primary objectives to be addressed in a first phase of fieldwork.

Objectives

1) To create an inventory of the submerged cultural resource in the areas included within this research (the Atlantic coast of Maldonado Province). In collaboration with the Uruguayan Heritage Commission, this will also initiate the creation of an inventory for all Uruguay's maritime archaeological resources, and facilitate its better protection and understanding.

2) To create an analytical GIS platform able to incorporate geographical, geophysical, archaeological and historical data for the research areas.

3) To collect initial information leading to identify the competing maritime strategies of British and Iberian traditions in their exploration of the Southern Atlantic.

4) In a wider context, to refine and test models of human behaviour in risk situations at sea.

5) In a regional context, to initiate the identification and analysis of constants and similarities in nautical casualties off significant exploration coasts.

Fieldwork

Preliminary actions were taken in order to have the required equipment and conditions to develop the programme. These included obtaining funds to run the programme; materialize institutional support to execute the research within the specific legal frameworks that apply to Uruguay; presenting the programme to the Uruguayan Navy authorities and making a request for physical access to the research area; the coordination and development of agreements with the permit holders Charbonier and Konquë to carry on the research in their permitted area; and finally obtaining the necessary equipment for the programme's infrastructure.

Contact was established with the British Embassy in Montevideo, which offered collaboration with the programme, both with logistics and connections with institutional offices in Uruguay. At the National Oceanographic Centre (UK) we integrated a hydrographic system based on geophysical techniques. The Submerged Resources Unit (National Parks Service, USA) offered to lend us navigational, data collection and analysis software. With all these tools the full system was assembled in Uruguay.

Methodology

Field methodology was divided up into the following stages:

- A detailed survey of the area's cartography.
- Remote sensing testing within the geological characteristics of the area.
- A survey of the sea bed with the remote sensing equipment.
- Verification of diving strategies for ground-truthing of anomalies.
- Archaeological recording of the detected sites.
- Familiarization with the sea bed from biological and geological viewpoints, and with the marine dynamics.
- Incorporation of resulting data into a GIS.
- Assessment of the archaeological potential of the study area.
- Generation of an analysis instrument through GIS.

Following the general objectives, the coast was visited in order to find capable vessels in which to install the computers and remote sensing instrumental. A fishing boat from the small port of Cuchilla Alta was selected as ideal for remote sensing. It also had the advantage that its skipper and crew were very knowledgeable of the area.

The diving infrastructure was not free of conflicts, as our adherence to strict ethical standards meant that any companies linked with treasure hunters would not be used. This situation left us needing to rent diving gear as far away as Colonia del Sacramento, 300 kilometres away.

It was fundamental for this field season to compile the required data to shape a digital cartography. This was done by mapping any relevant features in the seascape in order to build a cartographic picture of the

area, with the scale made appropriate to the detailed needs of the remote sensing and archaeological programme in general. This work produced a scaled digital chart representing the shallows and other geographic features which did not appear in the official cartography, due to its scale resolution. The importance of this work lies in the practicalities it provides for the later design of remote sensing survey lines, and for the correct understanding of the area's geological dynamics. It also serves to contextualize any archaeological material in an environment with navigational hazards zones as well as protective areas.

Archaeological computing

As part of the steps for the construction of a GIS fit for archaeological purposes, the project (with the support of Geo-Data Laboratories, Southampton University) digitized the available cartographic information from Uruguay's southern coast nautical chart (from Faro del Chuy to Puerto Sauce and Cabo San Antonio). As an extra product of the digitalizing processes, we obtained a CAD file with geo-referenced information on UTM coordinates of a total of 421 strategic points.

The organized data, named *Contour Uruguay Soundings*, was made subject to the following post-processing steps:

1. Analysis of the research area proposed for geophysical surveying.
2. Analysis and comparison of the digital nautical chart against the printed chart, in order to corroborate the accuracy of the bathymetric data within the UTM grid.

This process resulted in the editing of the CAD file and producing the following cartographic tools:

a) Digital charts to be used within a real-time navigation system. These would serve as an aid to plan trajectories, courses and distances to be covered by the survey lines.

b) A significant amount of coastal information was added to the cartographic data. This GPS collected data allowed us to draw a more detailed coast line than the one existing in the available data.

c) By adding bathymetric information to each of the 421 selected points, a digital elevation model of the sea bed was produced (fig. 8.4).

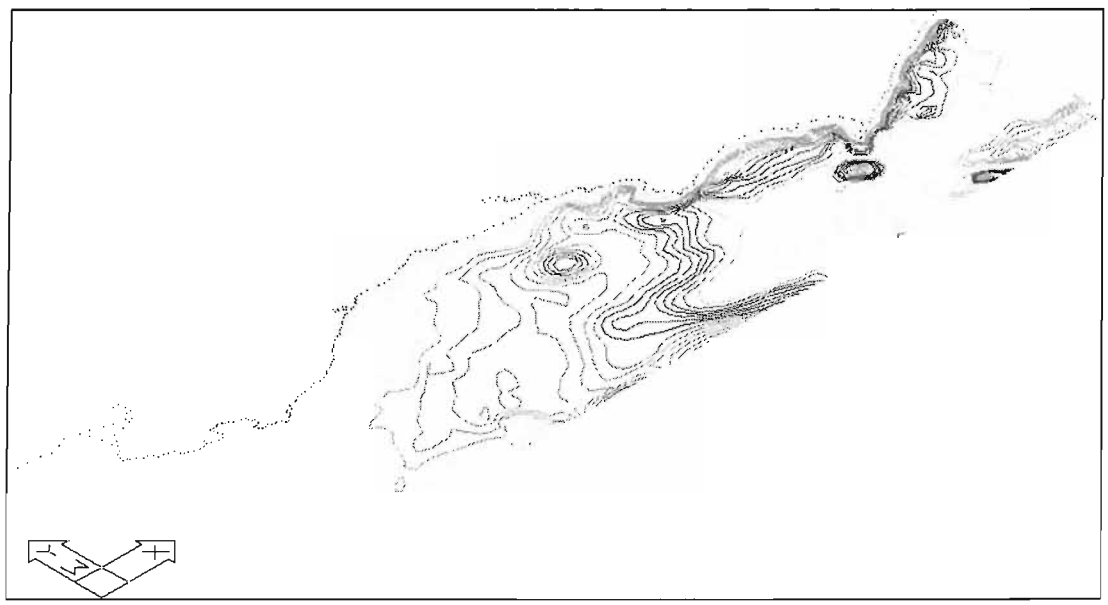


Fig. 8.4. Digital elevation model of the bathymetric context of our research area.

Surface surveys at a regional scale

A systematic survey was completed in several sectors of the research area primarily through the use of marine geophysical tools, particularly a Geo-Acoustics double frequency (100 (114)/500 (410) kHz ±1%) SS942 side scan sonar. The double objective of the survey was, firstly, to initiate the process of detecting sites of potential archaeological value at the same time as starting an assessment of cultural variability in the area; secondly, to collect a body of geological information to assist us in the selection of the most adequate geophysical techniques for the different marine conditions of the area for the forthcoming research seasons.

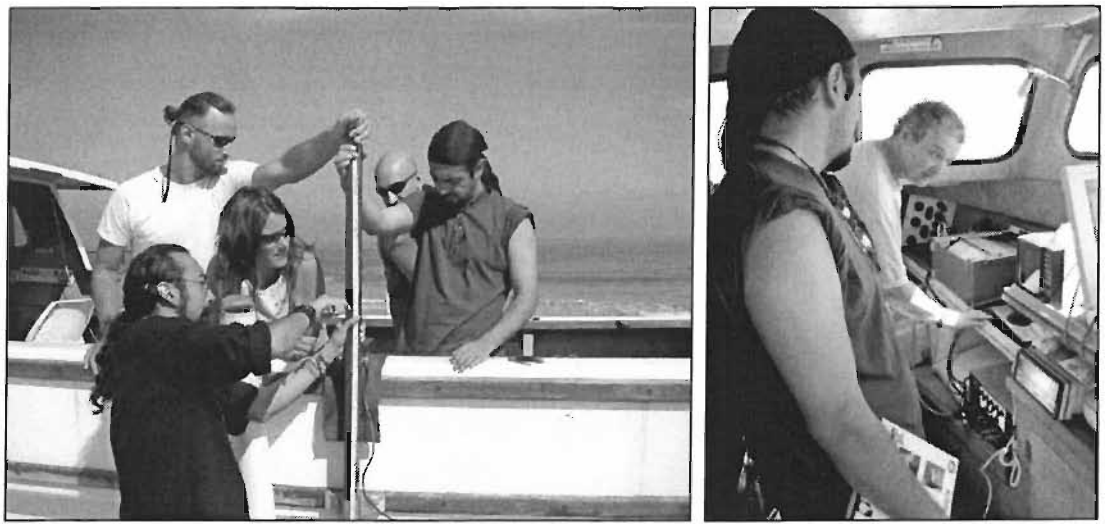
The digital cartography already underway was expanded to include both the coastline and relevant attributes of the seascape, particularly significant features which could signify navigational hazards and coastal attractors, such as hidden shallows, potential sheltered anchorage areas and rivers. This work was carried out through hydrographic techniques for maritime survey, as well as by charting the coast line through generating dynamic satellite positioning digital files.

The identification and charting of these elements are expected to be significant in the latter stages of the research. Acquiring a comprehensive image of the environment and a complete picture of the archaeological remains is essential in order to identify distribution patterning of site locations. Only through this comprehensive recording of archaeological and environmental information can a proper assessment of the *maritorium* and its archaeological consequences be made and considered to be complete.

One should remember, as discussed in chapter VI, that the *maritorum* concept means a reading of land and sea from the navigator's condition.

Therefore, by perceiving the landscape and seascape as a unity we are ruling out a solely terrestrial inhabitant's perspective which might establish a dichotomy between sea and land. Consequently, the waterfront and water ways are seen as part of a continuum with the sea, hence the logic of our efforts to detect archaeological remains in the rivers of our region.

The surface surveys made with geophysical techniques allowed us to share experiences, and to start the training of some team members whose expertise areas were perhaps different to the technical skills required there (fig. 8.5a and 8.5b). The generated acoustic images (fig. 8.6) are not only part of a proper archaeological survey but part of diverse elements for a further assessment to define new sea bed sweeps in the areas of interest.



Figs. 8.5a and 8.5b. Training of local and regional archaeologists in marine geophysics techniques.

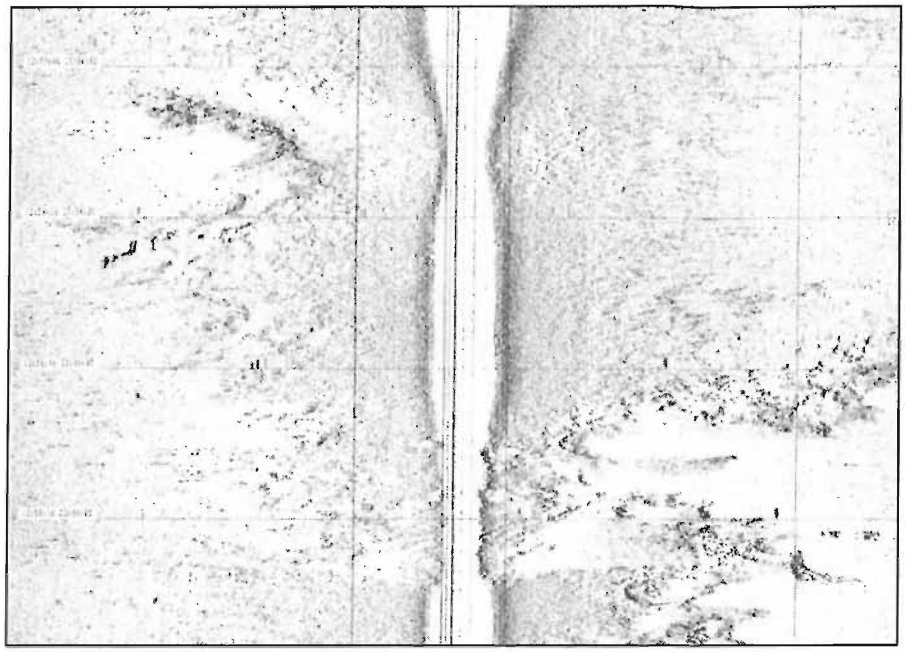


Fig. 8.6. Example of an echogram generated by the side scan sonar.

Surface Surveys at a Site Scale

The working procedures for the archaeological sites detected are intended to generate the necessary data for the research questions previously identified. These are focused upon the interest in colonial maritime casualties, vessels characteristics, accident processes and the crews' attempts to save their ships which can be detected in the archaeological record.

We applied a regime consisting of an initial reconnaissance of materials lying on or protruding above the sea bed using traditional archaeological diving techniques (figs. 8.7a and 8.7b). Recording of the archaeological context and sea bed conditions followed, along with retrieval of the site's biological information and an evaluation of the current and swell. The recording work was exemplified here with a site detected in the western

side of the *Camelia* reef, at a depth of 3 meters, and 700 meters from the coast. The site was named the *Oveja Negra* (Black Sheep).

Fig. 8.7a and 8.7b. Scientific diving operations in sites of archaeological interest.

Oveja Negra site

This name was selected due to the tough realities facing the project at that time. Because of the seriously negative environment for real maritime archaeology in the country, many times members of our research crew, particularly the Uruguayans, were confronted as if they were indeed the black sheep of the sea, for not surrendering their archaeological ethics to a powerful treasure hunting community and to the individuals influenced by it at different levels and institutions. Therefore we all agreed it was a good name for the first site to be recorded by an archaeological project in Uruguayan waters in which only fully professionally trained maritime archaeologists were working, with no intervention of treasure hunters, and in which all people involved had a clean sheet with respect to their ethical commitment to heritage protection and to the rest of our community.

Once a site had been detected, a new geographical positioning was obtained and a systematic visual inspection undertaken. In this way the first definition of the extent of the site, certainly in visual terms, was attained. Afterwards, a more complete archaeological recording of the site's components was conducted. The most adequate recording technique was decided according to the site's characteristics. Any recording done needed to be fully compatible with digital options for spatial data management, such as DSM, CAD or a GIS.

On the Oveja Negra site, the most relevant initial element was an iron anchor (fig. 8.8), heavily covered by a layer of lamellibranch molluscs, mainly mussels (*Mytilus platensis*). Due to this covering, most of the details required to make an archaeological identification were hidden. In order to enable a detailed recording (fig. 8.9) that layer was removed in some diagnostic areas for its identification against other historical anchors. This action was safe for the material, as mussels do not produce

Fig. 8.8. Anchor at the "Oveja Negra" site.

Fig. 8.9. The anchor's archaeological recording.

a chemical layer that physically seals, such as the calcium carbonate produced by coral reefs. Therefore, there is no change in the chemical conditions between the metallic material and its context, and there is no risk of initiating an ionic interchange which could adversely affect the future of the anchor. In other words, it is a safe procedure which does not even imply the need to use sacrificial anodes, as the concretion layer of ferrous corrosion surrounding the material remains unaltered.

The collection of recording data generated was combined to produce images of the site plan and materials in digital formats, both in vector and raster formats. The data retrieved from the sea bed was processed by CAD (fig. 8.10) in GIS compatible formats as first products. Virtual reality models in 3D were later generated (fig. 8.11a and 8.11b). The sum of each new recording would strengthen the contextual understanding both for more general audiences as well as our own analysis, primarily at a site level but also at a regional scale. Among the research team, we continue to have a specialist in these kinds of technologies, Mexican archaeologist Gabriel Francia, who is well versed in disseminating information to general audiences. The techniques used could help generate computerized reproductions of full sites, in the style of a maritime virtual museum.

From this first non-intrusive survey, the site was seen as composed of two anchors and a lead scupper. One of the anchors can be dated tentatively to between the mid-18th and 19th centuries, and the other appears to be from a 20th century small boat. The scupper seems to be contemporary with the large anchor and is clearly compacted by pressure from a large weight or force. The presence of this artefact allows us to believe we are in the presence of the wreck of a ship of medium to large size. Both elements suggest chronological as well as spatial coherence. It would be unlikely for a ship to suffer the loss of its scuppers and remain afloat. The absolute compressed state of the artefact also supports this idea, as the only way in

which it could have reached such a state was either by being crushed against the shallow rocks of Camelia reef, or by being squashed between the rocks of the sea bed and the weight of the same hull of which it was part of. It needs to be said that this is an initial working hypothesis, as the great abundance of the aforesaid molluscs lying in dense layers significantly obscures the remains even to the trained eye. A magnetometric survey of the shoal would be the best way to have a state of the art evaluation of the extent of the site (at least regarding its ferrous components), as in this way it would be possible to detect materials not yet seen.

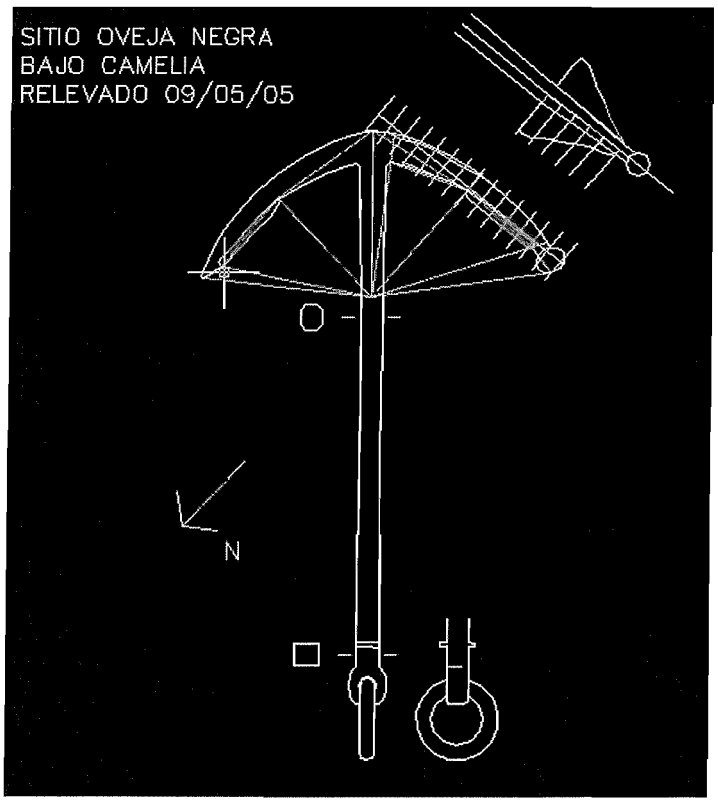
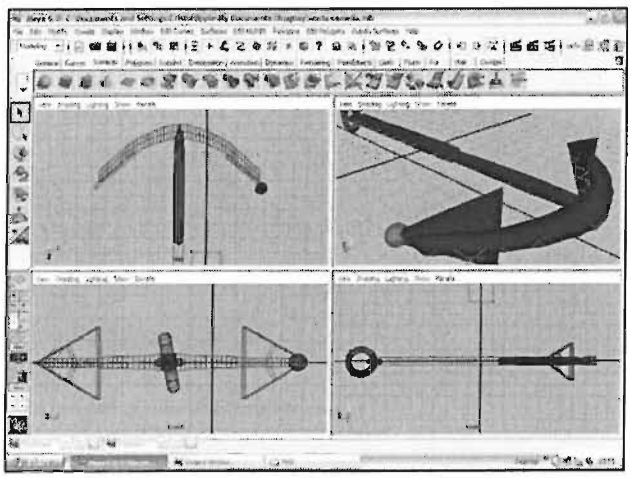


Fig. 8.10. Archaeological recording through computing assisted drawing.



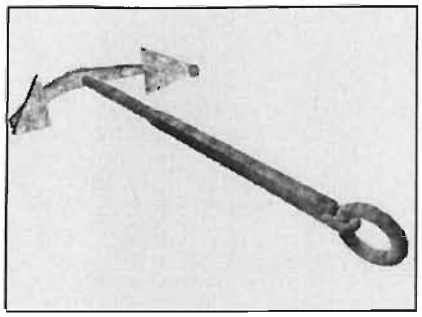


Fig. 8.11a and 8.11b. Use of spatial technologies to generate virtual reality archaeological elements.

Bagre site

Another site discovered and recorded was a wooden structure submerged in the Bagre stream (fig. 8.12). It must be remembered that this programme seeks for an integrated view of the maritime system. This implies that we consider the navigable waterways as part of the same nautical and cognitive environment. This perspective extends the understanding of transportation and influence of past nautical activities. It is a wooden structure whose function has not yet been fully identified, since in spite of having constructional elements common to ship building, it also has other elements which are not consistent.

The Bagre is a cold water stream. Its visibility is easily influenced by the precipitation regime, as it carries a heavy sediment load. It is also not easily accessible. Local stories speak about a "galleon", and one of the Uruguayan archaeologists involved in the project, who is from a

neighbouring village, confirmed that it was part of the oral tradition of the region. Therefore, a painstaking search was undertaken upstream and the site was located 450m from the Bagre's mouth. Unfortunately, because of the extremely poor visibility, only an initial recording of the structure was possible. Although we kept visiting the area searching for better conditions it remains a task to be completed in future field seasons. Nevertheless, the initial objective of detection and integration into the databases of the submerged cultural resources for that area was fulfilled.

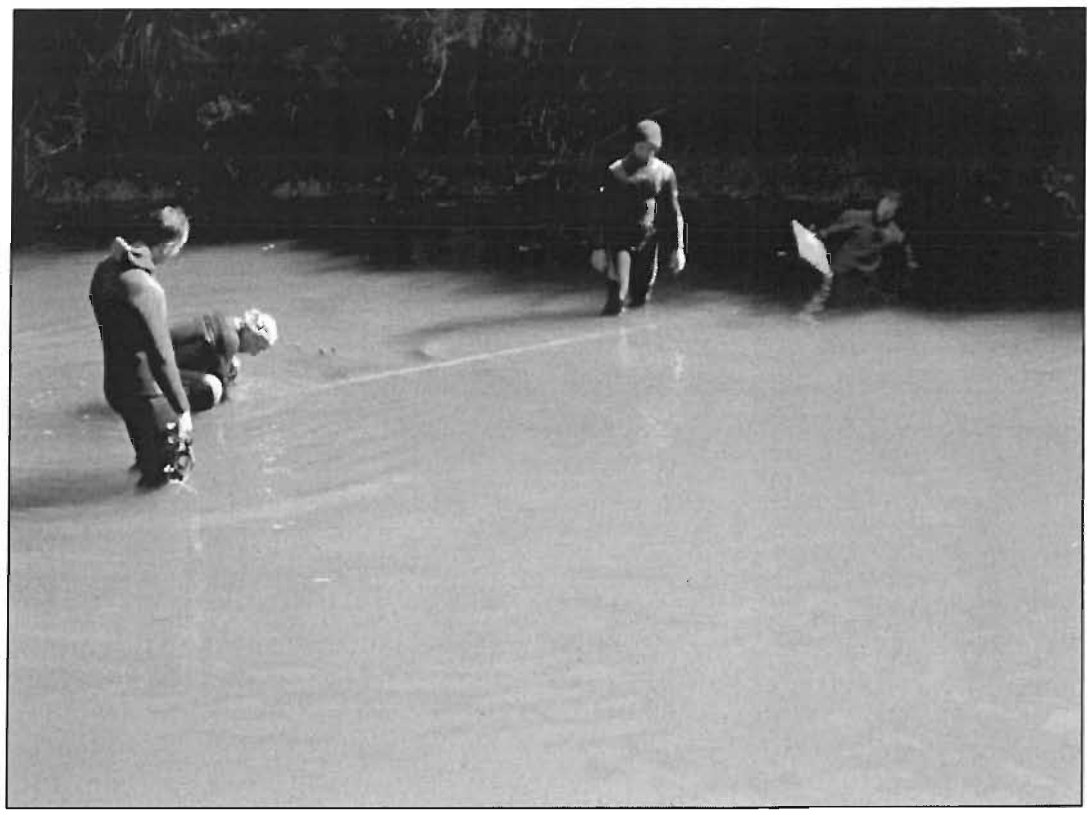


Fig. 8.12. Planimetric recording of the wooden structure found inside the Bagre Stream.

The UMAP and the model for knowledge construction

A theoretical model which describes different optional routes for knowledge construction in maritime archaeology was presented and discussed in chapter III. We need to analyze how the UMAP fits into that model, what was achieved, and what is still expected to be produced.

The UMAP opened with a component expressing interest in exploration strategies and the associated maritime casualties within a region. By contrasting the work so far done against the model presented in chapter 3 we can see at what stages the project is at present. We can expect that since it is in its initial stages our project renders a blurred image on the *holographic* column. However, we are aiming for a greater level of complexity in our image of exploration and its consequences to three societies: the one living on the explored coasts; the navigators' own cultures (their mother culture and its unique maritime culture), and the one resulting from the mix of these two. In short, we aim for the construction of a maritime anthropology through an integrated trans-disciplinary approach. We are trying to reach as deep into the second column as possible, but the still modest amount of data of the third column will hold us back for a time. We hope it will not be for long. Nevertheless, the product we collected in the field, in addition to the advancements in historical research, are putting us closer to the *information* box. Our *appreciation* column is in a very similar stage to the *concept* one. We believe we will eventually reach the very last box, but need to wait for advances in the *product*.

Social results

The progress achieved within the programme, although a modest first step, marks a promising beginning for long term research in maritime

archaeology and anthropology. It is expected that this programme will continue generating strategies and tools with which to help Uruguay develop this area of research.

In addition to the intrinsic scientific significance of the research, an invaluable aggregate gain has been the beneficial integration of both individuals and institutions working towards a common aim. This brings together the international group of maritime archaeology scientists and institutions, the Uruguayan institutions concerned for the proper study, conservation and understanding of the national and international maritime heritage submerged in the country's waters, and the private permit holders genuinely interested in generating the greatest possible benefit for the Uruguayan people regarding the heritage resting in their contract area.

We hope that the development of this research model and the continuation of the programme will encourage heritage interest in the country under real scientific standards, once it has been proved through this work that it is indeed possible to undertake creditable maritime archaeology in Uruguay.

Another benefit of the programme is that from this first season an intense scientific interchange was achieved, both in the field and via interaction and support from various institutions and laboratories in different countries. An added value is that the project started to be seen as a field school in which the participation of other Latin American archaeologists and advanced students is encouraged. In this way, the programme is a driving force in assisting the training of qualified scientists in this area as well as in generating an awareness strategy in the protection of submerged heritage within the similar conflicts shared by Latin American countries.

From a technical point of view, a complete GIS platform has been generated in order to integrate the scientific and heritage information. A SMR for submerged sites was initiated and its value will be increased in subsequent fieldwork. This will also be a strategic tool for the Uruguayan Heritage Commission for better management of the archaeological resources it has defended with so much energy and diligence.

It is obvious that the archaeological potential in the zone is noticeably high. The research discussed here should definitely continue under the same ethical and scientific standards which have brought all the scholars, institutions and particular participants to the same table.

Although these results are important, the most significant is the fact that our colleagues in Uruguay were able to offer up our project as the evidence that it is possible to practise maritime archaeology without any kind of commercial exploitation of the nation's cultural heritage.

Recently, news of an unprecedented event arrived. On September 8th, 2006, a new decree was passed by the Uruguayan Government, declaring treasure hunting illegal in the country. In real terms, it outlawed treasure hunting in Uruguay, although unfortunately there will be a period between the date of this Act's declaration and the final expiration of all the licenses so far granted, allowing some treasure hunters to continue their practices for a limited period of time. This project played a major part in this turning point, as we gave our colleagues the proof they needed to convince their government that archaeology is a better option for their heritage and their people, rather that treasure hunting. At this moment, the Uruguayan government has stated its interest in continuing its links with the University of Southampton's Centre for Maritime Archaeology, and it alone, as well as with the various individual researchers directing and participating with our programme.

The new decree rules out treasure hunting from the country. The most important change has already happened. We are honoured to have been a part of this essential transformation for the benefit of the Uruguay people and its heritage. This is probably the first and only time an archaeological research project has had such an influential and immediate effect on a major state's legislative system.

CONCLUSIONS

CHARTED REGIONS AND EXPLORATION CHALLENGES

To put it in nautical terms, the previous chapters have attempted to chart the processes and momentum which characterize the past and present of theoretical thinking within maritime archaeology. At first the map showed a few zones with detailed depictions and many other areas only tentatively outlined, all interspersed with numerous blank spaces. The end product has become a colourful map upon which innovative concepts are presented and where the areas sketched at the beginning have become more detailed. Many areas which initially appeared to be unrelated are now interconnected. However, the map is not complete and perhaps never will be, as our field will have produced still more features by the time these lines are being read.

The core theme and enquiry direction for this thesis has been the inescapable fact that theory is used thoroughly within maritime archaeology. This opposes what a first overview of the sub-discipline might suggest. Maritime archaeology has been criticized as an area developed by people of action rather than by people of reflection. It is evident that there has been a serious paucity of scholarly driven publications which focus on the relationship between archaeological theory and maritime archaeology. It has also been said that the latter field has had a lack of relevant theoretical grounding to reach the same depth of archaeological analyses as has been the case with the wider discipline.

The present work shows that current maritime archaeology not only intensively exercises its theoretical muscles, but also that today it is riding high on a growing wave of sound theoretical constructions. However, the major drawback in this is that so far the diffusion of the majority of these developments has been generally restricted to the geographical areas in which they arose. Few books have been published in the last 40 years on this topic, and proportionally few articles appear each year. As might be expected in a field which shows increasing development in new countries, as well as building a high profile of institutional professionalization in others, no single theoretical current or theoretical position can be signalled as dominating current research. This plurality is a good sign, as it shows the sheer variety of voices around the globe discussing the study of humanity's past from its maritime archaeological remains. In other words, these voices speak about the various ways to understand the maritime spirit of humankind and its influence throughout the distant and recent past.

Reaching maturity?

There are a number of parameters which can be considered that indicate how strongly a field of research is developing. These include the acceptance of a number of technical skills any practitioner must master; the assumptions and beliefs accepted by a research community at a given time; the existence of shared forums in which the peculiarities of the field are discussed; and the existence of a publication infrastructure which allows for a wider exchange of ideas among international professionals. We also need to include the acceptance of the sub-discipline by the wider group which constitutes the whole field of archaeology. This last element includes the regular presentation of research results in general conferences, not just those concerning the sub-discipline, and also regular publications in major and long-established journals and series.

In those respects the position of maritime archaeology shows promise but yet fails to completely satisfy. On the one hand there are countries such as the United Kingdom and Australia, where its acceptance by the rest of archaeology has been so clear that there are a number of universities offering specific postgraduate courses in such, as well as regular conferences and peer-reviewed journals. There are other nations with the same mentality, although with fewer educational options, such as the USA. In the Netherlands and to some extent Denmark, although there have been successful projects and research units over the years, led by a handful of excellent practitioners, some of the institutions involved are struggling to survive, and university specialization at masters or doctoral level is sporadic. In slight contrast there are places such as Argentina where, although proper maritime archaeology started only about ten years ago, the progress both in heritage management and research has been commendable, led by projects such as the *Swift* or the *Hoorn* (Murray *et al* 2003; Murray 2004; Elkin *et al* 2006; Dellino & Endere 2001). In other regions the term maritime archaeology still raises eyebrows in academia, as in Mexico, where the field has not yet achieved full recognition within the rest of the profession. Egyptian maritime archaeologists who started professional specialization in different European programmes have set themselves on the long but necessary path of fully incorporating maritime research within the rest of general practice.

At the other end of the spectrum are nations like Uruguay, in which one can witness the fierce struggle between two opposing forces. On one side stand the professional archaeologists trying to execute best-practice for maritime archaeology, but who have limited institutional influence, if any at all. The other side comprises a hideous amalgam of 'archaeologists' with no training or experience of any kind in maritime archaeology, and who work for the treasure hunting companies. Within this last group are some who were taught about 'underwater archaeology' by treasure hunters

whilst serving under them, but who have subsequently been able to dig deep into the academic environment, even into university programmes.

It has been suggested at the beginning of this volume that there are many 'maritime archaeologies'. Some of them sail swiftly in favourable contexts, while others fight for their survival. Some are content to excel in data retrieval and the technical side of things. Others believe in achieving a level of technical expertise, but also claim that the pursuit of technical excellence is only a first step, a means to an end, and not an end in itself. Impressive progress has been achieved in many frontiers within maritime archaeology in the last 40 years. Perhaps one of the aspects to be particularly celebrated is the existence of an international media for the exchange of such ideas. Two benchmarks for claiming maturity within the field, and which demonstrate how theoretical and other research interests have changed throughout the decades, are the *International Journal of Nautical Archaeology* and the newly released *Journal of Maritime Archaeology*. The opening editorials and forewords of both publications testify to the changing perspectives within the field. An excerpt from that in the IJNA reads:

> A new journal requires an explanation. This one should appeal to all interested in the story of the development of the ship. It thus joins the long-established *Mariner's Mirror* and the new *Maritime History*.
>
> *The International Journal for Nautical Archaeology and Underwater Exploration* [...] differs from both of the above in being particularly concerned with the evidence offered by ancient wrecks. We can hope for more and more of these to be found as divers and others become increasingly expert and their equipment more sophisticated. The Council for Nautical Archaeology [...] has set itself the task of protecting ancient wrecks by changing the law and therefore must

> also do all it can to educate the public by publishing the results of research in a scholarly, informative and easily manner. Hence the new journal.
>
> [...] The growing interest in nautical research is underlined by the steadily increasing popularity of the incomparable National Maritime Museum and the exciting and informative shipping galleries of the Science Museum, as well as by the crowds who pour over the *Victory* and *Cutty Sark* and who are beginning to appreciate too Brunel's 128 year-old masterpiece, the *Great Britain*, lying at Bristol in the dock in which she was built so many years ago. Perhaps the Dutch will soon be able to raise the *Amsterdam* and present her hull and contents as part of their own National Maritime Museum in her home port on the banks of the river Y (Naish 1972:i).

Many events and ideas have shaped the changing discipline since IJNA's launching. The *Amsterdam* has not been raised (due to lack of funding rather than will) but it has served as a useful focus for primary archaeological research which is projected to continue soon. The *Mary Rose* was fully excavated and raised (and continues to be so with part of the bow recently recovered), and now offers company for the *Victory* in Portsmouth. It has been one of the main maritime archaeological museums in the world for many years, with plans for large improvements on their way, both in terms of conservation, as the present stage of PEG conservation ends and a new one begins, and in terms of curatorship with the opportunity to unite vessel and museum in a new integrated facility. Sadly the recent fire on the *Cutty Sark* has thrown its future into doubt.

There were no university programmes offering postgraduate specialization in 1972. Today an increasing number of high quality postgraduate courses are taught in Britain, the USA, Scandinavia and Australia. I wish to see

the first one in an Iberian-American country, but it seems there is a long journey still to be undertaken in demonstrating the value of maritime archaeology in these countries before this can happen. In terms of ideas, the main changes since 1972 have been to move focus to some extent away from what have long been the two main protagonists in the sub-discipline, namely an emphasis on the abiding importance of the ship and on the field techniques required to access them. The focus is broader today, as the JMA editorial shows:

> Any new journal must reflect those concerns that brought it into being. For that reason the JMA will be a forum for approaches that, while rooted in the materiality of the past, seek to intersect with other archaeologies, other disciplines and engage with current concerns. It is in that light that the JMA's Editorial Board has been assembled, reflecting interests and expertise that provide a suitable wide base from which to push this process forward. In so doing, this journal aims to avoid entrenching maritime archaeology as an enclave of specialism, seeking papers that explore and promote unifying perspectives of theory, practice, analysis and interpretation. The JMA will therefore be less a forum for interim project reports than for the ideas that drive them and the social concerns with which they articulate, both past and present. Ethnographic and anthropological approaches, prehistory as well as history, geomorphology and site evolution, heritage management and ethics, contextual analysis and interpretation of maritime landscapes and sites are all represented in the submissions received so far. Less emphasis will be placed on technical aspects of ships, harbours, maritime infrastructures, artefact typologies or on methodology (technical papers). These areas are already prominent foci of the IJNA. In other words, the editorial policy of the JMA aims to be complementary to the IJNA rather than to duplicate it (Adams 2006:3).

Other types of publications, and not just journals, can be a good measure for evaluating our subject's maturity, due to their variety and quality. For Toni Carrell, for example, this aspect might not demonstrate complete maturity, but definitely offers a heartening perspective as publications show a sure sign of the growth and the development of the profession. She discerns a progressive change in what is available today when compared to some decades ago. In the past there were either things written by Robert Marx, which were descriptions of treasure hunting, or on the other hand, the kind of material written by Keith Muckelroy, which was very academic, very scholarly driven. There was nothing in between. Now there are many more publications trying to bridge that gap, trying to educate the public, but they still provide substantial information, and so they do not put off the interested professional. It was hard to find a book, now it is hard to keep up with the literature (Carrell pers., comm., 2007).

In addition, some of the iconic projects of the field are starting to bring to light their final editorial products. Books such as *Serçe Limani* (Bass *et al* 2004), first of a series of reports based on the excavation of an 11th century merchant ship excavated in the late 1970s, comprise the overall view of the editors' approach to complete research. Three of the five *Mary Rose* final volumes have been published as well, dedicated to various aspects such as conservation (Jones 2003), excavation (Marsden 2003), and the analyses of personal possessions (Gardiner 2005). The *Vasa* has also released one of its final volumes (Cederlund and Hocker 2006). The printing of the *San Juan* excavation final reports are also imminent in Canada.

In discussing the perception of maturity different opinions arose. For some such as George Bass, the field is already mature, as much as classical archaeology (Bass pers., comm., 2006). For others such as Jerzy Gawronski, the fact that this PhD dissertation was being written was a

symptom of immaturity, because if there was a common theoretical ground in the field there would be no need for the present analysis, or it would be superfluous (Gawronski pers., comm., 2006). On the other hand, various factors have been identified as a sign of collective maturity, such as the fact that there has been room for the present research, that ideas from so many pieces of research, and from a number of countries, have been identified as theoretically important, and also that they have had transcendence in the sub-discipline's practice.

There is, indeed, a firm process of maturation in this field of research. 50 years ago the value of the ship as a material record was not even considered. It was largely deemed just as a shell, exploited in the process of mining for antiquities to fill museum rooms, occasionally ending up in private collections. Along this process of conceptual enrichment, the ship was not only accepted as having its own value, but took the leading role as a subject of research. It started to be understood as a manifestation of society. With time this process gave rise to other progressive archaeological interests, bringing not only the ship but seafaring within the scope of research. Later it embraced a more encompassing view, which now stands for maritime aspects of culture in their many varied manifestations.

However, I would argue we are still far away from constituting a mature sub-discipline within archaeology, indeed I believe it would be a serious oversight to believe we are. I have seen in different places that a triumphant feeling of satisfaction abounds. It is a pre-triumphant emotional response, as if the very fact of being or pretending to be *maritime archaeologists* should guarantee us complete status as researchers. I believe that that is a regrettable position to adopt. Plenty of what has been done so far is important and awe-inspiring, but the potential has not yet been completely realised or tested. It is very tempting to believe we are mature, and therein lies great risk. There is an ambivalence between a

critical posture and scientism, which in our case would be "archaeologism", where this operates as a dubious guarantee certificate of maturity. We should not assume the goal is achieved before time.

An active theoretical community

Let us now review the development of the community for which theory is an important aspect in its agenda. As much as maritime archaeology is a fruitful context for theoretical construction and debate, it has been shown that there is still scarce published evidence of it. There have also been a limited number of conferences or meetings centred upon the topic. Although recent years have seen a promising change in intensity, theory should still develop a stronger presence in our practice.

By focusing on the human interaction with the maritime environment and its links with interior waterways, the sub-discipline has been dealing with the alternatives of constructing either a thematic or a generalist line of thought (as discussed in chapter IV). Maritime archaeology deals with a time span that covers the whole history of humankind, from its transoceanic spaces, through to its coastlines and on into its waterways, which have been used and inhabited.

Theoretical orientations developed particularly for researching maritime cultures and activities are needed, for many theoretical constructs have been largely designed for research problems different to those encountered in maritime contexts and by maritime cultures. On the other hand, it is valid to generate a generalist view due to the large time span covered by the sub-discipline.

Today we are no longer solely interested in ships or the objects they carried. The focus of interest has shifted to much broader options of research and types of sites. Whether it is a prehistoric boat, a large war vessel, a harbour or a coastal settlement, we are interested in how these sites manifest in terms of social schemes, strategy, change, behaviour, decision and cultural and environmental interaction. As reviewed in chapters IV and VI, it is not just focal, discrete sites that are part of our realm of interest. Today, even the coastal landscape or, to use now the concepts discussed in those chapters, the *seascape* the *maritorium,* and 'regional maritime contexts' are elements of interest for a wider maritime archaeology.

Mental maps picturing the maritime space have been discussed in chapter VI as alternatives to perceiving both the land and the sea as a unity within a regional approach. Those perspectives are undoubtedly related to the complex symbolic relationships between the ship, the activities related to sailing and shipbuilding, and to living in a maritime environment, as discussed in chapter VII.

This study of maritime archaeology has defined its research and theoretical agendas on the basis of epistemological and ontological premises, but it was also influenced by the sociological context of our field. In other words, by analyzing how the sociology of science has been influential we gain a better understanding of the development of the field than if we had restricted analysis only to methodological concerns. These elements encompass how students are trained, developing their careers under the view of a particular model 'institutionalized' by their university, such as Muckelroy's processual perspective, influenced by the theoretical arena at Cambridge in the late 1970s. There is also the interest in following 'exemplary' research strategies, developed in projects accepted as models of excellent scholarship (such as the Yassi Ada wreck, the *Mary*

Rose, and Dry Tortugas). It also encompasses the tension among professionals of different positions in meetings and seminars, such as the differences between George Bass' particularistic approach and the view of the rest *of contributors* to the *Shipwreck Anthropology* seminar of 1981 (Gould 1983) who were openly inclined towards a generalist and anthropological standpoint.

The effect general archaeological theory has had in maritime archaeology is patent. We can mirror elements of major theoretical routes and changes in the ways that people in the discipline have addressed the archaeological record. The culture-history standpoint has certainly been very influential, with its followers concentrating on the identification of the physical remains in the site, in their desire to construct and provide databases. This view has led to a tradition in which some nautical archaeologists are outstanding at puzzling out the ship, but are not concerned with generalist approaches to the material culture or to larger interpretations based on it. Some of them, such as the archaeologists at INA, have improved these techniques almost to perfection.

Contrastingly, processual views highlighted the importance of driving problem-oriented research, and incorporated an array of new questions regarding a generalist vision of social phenomena and processes. The interest to conduct explicit scientific archaeology prompted a research tradition typified by people such as Muckelroy and McGrail. However, as much as they were important in understanding the nature of material culture via quantification and analyses, they were far from explaining in a social way why the ships were constructed, used and disposed in certain ways. Because of the nature of cultural materiality, a post-processual perspective suggests we need to grapple with what is immensurable in Cartesian ways. This scenario created a polarized theoretical environment, where material and functional aspects were separated from the symbolic

and mythic ones. In other words, as discussed in chapter VII, objects have a mix of functionality and symbolic meaning which can flow and vary, and which is contextually dependant.

Maritime theory is quite interesting in the sense that it has absorbed a lot of the perspectives held during the processsual phase, and uses them as part of its method. It has also absorbed many of the perspectives which have been explored during the post-processual phase. In that sense the most progressive maritime archaeologies, in terms of their theoretical sophistication, are ahead of other archaeologies in the sense that they are exploring these mixtures, these creative ways of searching for knowledge.

There is an increasing momentum today towards theory building in maritime archaeology. It would be a safe prediction to say that in the next five years the number of publications explicitly addressing this matter will surpass those which have been published in the previous forty. Seminars similar to *Shipwreck Anthropology* will be held and they will include professionals from several countries, sharing a great deal of global perspectives and interests. In fact, the difficult decision will be not to find whom to invite, but to choose amongst the many possible options.

Present and future

The sub-discipline is heading in some extremely positive directions in terms of its theoretical components and as a research field in general. The field has become as diversified as the larger discipline. However, serious conflicts have yet to be confronted. The various contexts of the field in different regions present today a diverse number of challenges. Some are general to all, while others are specific to more discrete regions.

Our interests are reaching subject matters that are indeed not only maritime, but also central issues to all archaeology. Those initial interests are currently aspects of more general issues of human strategies and responses to larger processes and agendas. The interest in maritime technology is still fundamental to our practice, but we have now professionals, such as Jonathan Adams, interested in innovation, change and even stasis (why some entities do not change), and which are studied by means of maritime material culture. For such a perspective, change in societies is at least partially a result of the use of technology, and ships and boats are part of how these transformations are manifested. By studying them we are researching a larger scope within society. How humans develop and manipulate different technologies actually manifests strategies which are part of those processes of change. The materiality of change in maritime cultural material is rich in imprinting those elements, whether it is related to the transition from the Bronze Age to the Iron Age in Europe, or in regard to maritime coastal adaptations influencing the early population of South America. These and similar subjects are at the core of the matter of general archaeology. As much as maritime archaeologists excel in demonstrating the sheer value of their research subject, its importance for the larger discipline will be easier to demonstrate.

We have an interest in creating holistic views of the context of maritime enterprises, such as with VOC ships and the company, with city and society behind them, as was discussed in chapter IV. In that sense, the archaeological perception of the ship and boat has rightfully acquired its place, as the ships are thoroughly valued as material culture, and not only as carriers of material culture.

These interests are manifestations of wider searches in archaeological theory. The maritime archaeologist is no longer content with only

answering questions such as when, and what happened, but why they happened, and in understanding their meaning. By closely looking at the symbolic implications of material culture and space we see them in a more interesting context. The symbolic aspect of study might come to be of no lesser, but of contributory importance to the questions addressing large structuring processes, which involve development, competition and change in human behaviour over large scales over time.

The main challenges maritime archaeology appears to be facing today are in ethics, education and theory. As has been previously discussed, although there is always room for new and useful technical developments and adaptations to ensure a better data collection, the effort so far devoted to build up the practicalities of maritime archaeology has proven effective and it is in a well-balanced position today.

Nonetheless, it is clear that different regions present different challenges. In Latin America one of the biggest challenges still is to develop the first generations of truly professionally trained maritime archaeologists, and create the necessary institutional spaces of employment. In other regions it might be that there are too many professionals, and that they over-saturate the existing work opportunities. Developing a career structure is fundamental if we want to increase how the field embeds itself into wider academia. It is equally vital to implant the influence of this structure in government-based systems of heritage management and legislation. In other words, it is important to continue the training of new archaeologists and raising awareness in governmental agencies.

Potentially the most important challenge is to educate the public. It is vital to demonstrate that objects and contexts from the seafloor are no different than those from land. If a country is protecting objects on land that are tied to its culture and history, then it needs to extend that same level of

protection and professionalism to the objects that are on the sea floor, a lake floor or waterfront. Otherwise, they will be gone and it will mean nothing. Educating the public and governments to understand how precious these contexts and objects are and how important they are in their history is the biggest challenge. The evident importance of this topic is highlighted when we see that leading countries in maritime archaeology, such as Britain, are not signing their adherence to the UNESCO Convention and have been trapped in heritage scandals such as the contract for the exploitation of the *HMS Sussex*. Axiology in maritime archaeology and its wider social context is of prime importance.

Another big challenge resides in the hands of the people studying maritime archaeology today. As new postgraduate programs are installed in different universities in various countries, job opportunities become more competitive. In that context, many of these young students and professionals will be tempted by treasure hunters. It is likely that they will face important ethical decisions early in their careers. Decency can not be taught as part of a university program, but ethics can. We should better prepare them properly so they will always remain real archaeologists.

Maritime archaeology, Latin America and Ameristica

Latin America has been a constant topic throughout this research. Consequently, we shall make a final overview of Latin American maritime archaeology regarding its present and how theoretical and ethical orientations might continue shaping it in the years to come.

Latin American maritime archaeology is involved in a doubly fierce process of gaining a firm place within the broader discipline in our countries and in the struggles against commercial exploitation of maritime cultural

heritage. Ironically, it seems our work is professionally better recognized outside the region than inside. The initial context of development of the sub-discipline can partially explain it.

On the one hand, the invasion by treasure hunting companies has dwarfed the interest in real archaeological practice in a number of countries. A main factor has been the presence of a few archaeologists who legitimize salvage by their participation in commercial projects, and also by imposing the names of universities which might not be fully aware of the damage being caused by the weight of their name, i.e. Oxford University. On the other hand, there has been until recently a generalized lack of awareness from the wider discipline regarding what maritime archaeology is and its importance to the archaeological picture of the continent. This results in the existence of limited institutional spaces for proper maritime archaeology to be practiced. This situation deprives excellent professionals of the occasion to perform and to take the sub-discipline to the next steps in its development. This is certainly the case for some of our colleagues involved in the UMAP experience (discussed in chapter VIII). Highly competent archaeologists who contributed to it are currently not holding tenure and can participate only intermittently in archaeological projects. A most hideous situation is the fact that other archaeologists, who have past or present relationships with treasure hunting companies, are sometimes the ones sitting in the institutional chairs from which they can practise their archaeological parodies.

Theoretical developments are one of the main assets in Latin American maritime archaeology, as has been shown with the application of concepts such as *maritorium*, maritime regional contexts, complexity, and how theory is explicitly at the centre of a number of our projects. However, as much as theory has been a constant interest in many of our countries, our developments regarding it are unknown or underappreciated by our

regional colleagues. The situation contrasts greatly to how our theoretical agendas are received abroad. While in Mexican institutions it was sometimes suggested to me not to 'waste time' with theory, outside of it I would receive frequent invitations to give seminars and present papers on this particular subject. Those theoretical efforts, underestimated in our region, have been enthusiastically welcomed in other places, such as in the vivid theoretical scene of British maritime archaeology, particularly in Southampton, Cambridge and UCL.

Regarding the importance of maritime archaeology in understanding the large-scale dynamics in Latin American past, several topics need to be seriously considered, with some of them becoming influential in the near future. These are: a) The study of pre-Columbian societies, focusing on coastal maritime adaptations and also on the use of the seascape by American civilizations, b) the dramatic process of 'contact' and interaction between American and European cultures, c) colonialism and exploitation, and d) the influence of maritime connections within the processes which shaped the modern states in the American continent, through and after the independence processes.

The pre-Hispanic processes of human coastal adaptation are perhaps the area which as been regarded in most detail in the last 15 years. This has been particularly more intense in both Chilean (Aspillaga & Ocampo, Chapanoff & Carabias) and Argentine (Piana, Orquera) coasts of Patagonia. However, most of these studies have been conducted by archaeologists who do not necessarily consider themselves explicitly 'maritime', since the term was not understood in the broad way we have described in this volume. However, as mentioned in chapter I, the experience of Carlos Ocampo's research on coastal adaptations on the isle of Chiloé is an example of joint efforts connecting the perspectives and methodologies between land and maritime archaeologists.

The study of cultural contact, i.e. the intercultural interactions between Europeans and Americans from the 16th century onwards, is a subject that has not been thoroughly addressed. It has been seen from a narrow focus. Namely, it has been concentrated on a Europeanized view of events, with the Europeans as the main characters in the theatre of history. It has also mostly left aside the maritime influences in these processes.

However, as was shown in chapters VII and VIII, a more expanded view is gaining momentum. It is remarkable to see that it is not only an interest from within Latin American archaeologists, but also from other colleagues exercising an 'archaeology of others'. In that sense, we discussed the case of Mathew Russell's research, focusing on the interaction between the local Coast Miwok and Spanish seafarers in Alta California. Such views do not propose to study the 'discovery' but cultural contacts instead. They address the larger research question of how Europeans began interacting with local societies around the world through expansion and exploration, and how it impacted and influenced those groups.

This can be addressed by maritime archaeology in a unique way that has not really been exploited to its full potential. The study of colonial encounters and interactions through archaeology has been largely via terrestrial sites. However, many of those interactions were the result of maritime events, either shipwrecks, or encounters with European ships moving through large areas and making contact with local societies around the globe. Therefore, the material remains might be seen as the result of maritime events. Maritime archaeology has not exploited that line of research. There are a lot of shipwrecks from European exploration in many non-European coasts, but for the most part scholars have been looking at those sites searching to answer European-oriented questions, such as European shipbuilding, European society, or European expansion. Unfortunately little attempt has been made to see how those sites

represent the initial contact between immense varieties of different cultures.

Certainly, much of the historical and archaeological research on European expansion has favoured the Europeans. It has pictured as inevitable that the newcomers were ultimately going to subsume the local inhabitants into their cultural system. This vision generally denies any kind of agency to local populations. They were not the passive victims of domination. Unquestionably, as Europeans moved across the seas and engaged in colonial enterprises many atrocities, massacres and ethnic exterminations happened. But it is inaccurate to see those populations as passive victims who had no role to play whatsoever. It is important to recognize that local inhabitants were approaching these encounters from their own perspectives and negotiating them for their own benefit (Russell pers., comm., 2007).

Such an approach can address research in a way that does not bias either of the cultures involved, as both of them have given rise to what our region is today. Under that perspective, we can hope that when studying exploration the Eurocentric concept of 'discovery' might be substituted in time for a term less biased to one viewpoint and more loyal to reality. Such a term might be defined as 'contact', 'cultural encounters', 'intercultural interactions' or 'intercultural engagements'.

Past Amerindian territories in the entire continent are of fruitful archaeological value in searching for a comprehension of what America is, and what studies of *Americstica* consist of, from the Great Lakes to Tierra del Fuego. In a continent where cultural diversity is not only evident but one of its foundations, the exigency for an integrative maritime archaeology is much needed. The beauty of 'the otherness', *la otredad*, can be rooted in

maritime archaeology if the desire to avoid intellectual colonialism is embraced.

The colonial exploitation has been discussed among Latin American archaeologists as part of historical archaeology (Fournier 1998, 1999; Fournier and Miranda 1992). It is a strong and intense field of research in the region. However, the topic has not been tackled at large, theoretically or practically, from a maritime archaeology perspective. This is a future avenue for research, particularly when more countries are working to develop the field.

A great advantage of the previous lack of this kind of work is that it can avoid from the outset the production of 'histories' heavily biased by a Eurocentric point of view. This must not be substituted by a naïve glorification of the Amerindian past, but serve as the route of a balanced understanding of the realities in America. A good example showing the repetitive colonial-based idea of the past is that of the fall of the Aztec empire. People believe that the Aztecs were conquered by '300 brave Spanish soldiers'. Sadly even many Mexicans have fallen into that unrealistic tale, which is told as part of an official history, first told by the Spanish in 16th century and repeated ever since. However, that was not a conquest, but a social revolution which featured the upheaval of dozens of local nations against the Aztec domination. Little is told in that Europeanized version about the hundred thousand professional Amerindian soldiers who were ahead of the Spanish, in the front lines of the fight against the powerful Aztec army. The 'Spanish conquest' was made by the force of the nations previously oppressed by the Aztec empire.

By starting to reveal the maritime past of the continent, we can be aware of those biases and evade them from the outset. Today, we are not Aztecs or

Incas; we are not Spanish or Portuguese. We are Latin Americans. Let us research and write the Latin American maritime past.

Maritime anthropology

Chapter VI discussed the pertinence of pursuing certain lines of research and a body of knowledge explicitly related to the human experience and societies connected with maritime environments. The core message of that chapter was that a maritime anthropology could embrace these research goals in a trans-disciplinary way, and was not only desirable but essential. Many of the subjects discussed in this volume clearly correspond to the sphere of study of both archaeology and anthropology. Perhaps the most evident fusion of them appears when discussing maritime ethnology and the uses and perceptions of space in a maritime environment.

Scholars from different disciplines are interested in exploring the relationships between societies and the environment when living in maritime surroundings. A question that perhaps summarizes the focus of research in these studies has been recently posted by Swedish archaeologist Johan Rönnby. He is interested in finding "what is the relationship between a maritime environment with an ever-present sea and the functional, cultural and social strategies that people developed within it" (Rönnby 2007:66). Archaeology adds to these studies a time-depth dimension unreachable to the rest of related disciplines.

Furthermore, recent developments in maritime archaeology theory are raising the interest in studying our subject-matter at different and wider spatial scales. Overall, this is widening the focus of interest in local and regional scales and in the synchronic and diachronic study of cultures operating in that space. The contemporary views dealing with 'landscape

archaeology' should be seen parallel to the study of maritime spaces. Those perspectives, the concepts of 'cognitive maritime landscapes', 'regional maritime contexts' and 'maritorium', are bringing together some existing ideas that have been around for some time, but that are now rationalized to research maritime cultures in their widest sense. These concepts are strongly linked to the interest of studying the symbolic components of material culture and its use. Archaeological and anthropological interests in maritime spaces rely both on the physical as well as on the cognitive sense of human experience.

An integrated maritime anthropology receiving the enrichment generated by all the involved disciplines is worthwhile and desirable. Innovation and social and technological change, adaptation, social organization and hierarchies, lifestyles, fear and religion, customs, ritual and magic, institutions, competition, death, nautical skills, etcetera, are some of the research problems common to such a field of study. It has been shown that the subject-matters for an integrated vision and the current state of research will greatly benefit an understanding not of only fishing and not only of shipwrecks. A similar relation to the one between nautical and maritime archaeology, the second embracing the first, can be conceived between a navigation anthropology (less restricted than shipwreck anthropology) and a maritime anthropology.

POSTSCRIPT

Maritime archaeology brings a unique perspective to understanding the past and how it has led to the way the world is today. The proper scientific study of maritime cultural heritage has a distinctive role to play in illuminating the history of humankind. This is not only because of the high

degrees of preservation we find in waterlogged deposits, but mainly because of the particular site types and the patterns that emerge by studying them.

In order to construct the best possible maritime archaeology we need to critically analyse its progress in our daily practice. This constructive analysis must be steered by a working self-critique; as with a reflexive navigator who knows he is crossing through dangerous shoals in a brittle vessel and can run aground and remain trapped, but who figures out a safe route across.

As Chilean biologists Maturana and Varela (1994:5) have suggested, to assume absolute assurance in knowledge implies the risk of denying reflection. To 'know' can sink us, for as far as we believe we know, we might run our ideas aground and reflect no more. The act of knowing can be transformed in a trap. Knowledge can construct the mirage of certainty and clog the reflection process. Once some certainty is reached there is the risk of hanging on to it and not releasing it any more. We might be tempted to blind ourselves and absolutely assume that what we believe we know we truly do. From time to time we need to release our knowledge, to see it again from a distance, to analyze its bases and see if they are still adequate. This is why we do theory.

APPENDIX I: INTERVIEW'S GAZETEER

The following interviews were conducted in relation to the present research. Recording was made in one of two possible formats, magnetic tape and digital files.

INTERVIEWEE	DATE	PLACE	ASCRIPTION AND NATIONALITY
Damián Vainstub	November 17th, 2002	Valparaíso, Chile	INAPL (Argentina)
Diego Carabias	December 6th, 2002	Valparaíso, Chile	Submerged Valparaíso Project / Arkan Consultores (Chile)
Miguel Chapanoff	December 6th, 2002	Valparaíso, Chile	Submerged Valparaíso Project / Arkan Consultores (Chile)
Amaru Argüeso	December 17th, 2002	Buenos Aires, Argentina	INAPL (Argentina)
Cristian Murray	December 17th, 2002	Buenos Aires, Argentina	INAPL (Argentina)
Carlos Ocampo	January 20th, 2003	Chiloé Island, Chile	Universidad de Chile (Chile)
Ernesto Piana	January 20th, 2003	Chiloé Island, Chile	INAPL (Argentina)
Alejo Cordero	January 28-29th, 2003	Montevideo, Uruguay	National Heritage Commission (Uruguay)
Dolores Elkin	January 31st, 2003	Buenos Aires, Argentina	INAPL (Argentina)
Valerio Buffa	February 7th, 2003	Barcelona, Spain	(Uruguay)
Emad Khalil	March, 2005	Southampton, UK	(Egypt)
Martjin Manders	May 26th,	Southampton,	ROB National Service

	2006	UK	for Archaeological Heritage (Netherlands)
Jerzy Gawronski	June 20th and 23rd, 2006	Amsterdam, Netherlands	University of Amsterdam (Netherlands)
Arent Voos	June 20th, 2006	Lelystad, Netherlands	NISA Netherlands Institute for Ship and Underwater Archaeology (Netherlands)
Robert Parthesius	June 21st, 2006	Amsterdam, Netherlands	(Netherlands)
Filipe Castro	November 4th, 2006	College Station, USA	Texas A&M / Institute of Nautical Archaology (Portugal)
George Bass	November 5th, 2006	College Station, USA	Texas A&M / Institute of Nautical Archaology (USA)
Donny Hamilton	November 5th, 2006	College Station, USA	Texas A&M / Institute of Nautical Archaology (USA)
Cemal Pulak	November 6th, 2006	College Station, USA	Texas A&M / Institute of Nautical Archaology (Turkey)
Kevin Crisman	November 6th, 2006	College Station, USA	Texas A&M / Institute of Nautical Archaology (USA)
Wayne Smith	November 7th, 2006	College Station, USA	Texas A&M / Institute of Nautical Archaology (USA)
Lucy Blue	June 2005	Southampton, UK	Centre for Maritime Archaeology / Southampton University (UK)
Seán McGrail	July 5th, 2007	Tisbury, UK	Centre for Maritime Archaeology / Southampton University

			(UK)
Donald Keith	May 27th, 2007	Corpus Christi, USA	Ships of Discovery (USA)
Toni Carrell	May 28th, 2007	Corpus Christi, USA	Ships of Discovery (USA)
Larry Murphy	June 2nd, 2007	Santa Fe, USA	National Parks Service / Submerged Resources Center (USA)
Dan Lenihan	May 31st, 2007	Santa Fe, USA	National Parks Service / Submerged Resources Center (USA)
Dave Conlin	June 4th, 2007	Santa Fe, USA	National Parks Service / Submerged Resources Center (USA)
Matthew Russell	June 5th, 2007	Berkeley, USA	National Parks Service / Submerged Resources Center – Berkeley University (USA)
Ian Oxley	July, 10th 2006	Portsmouth, UK	English Heritage
Jonathan Adams	Various sessions between 2002-2007	Southampton, UK	Centre for Maritime Archaeology / Southampton University (UK)

REFERENCES

Acheson, J. 1981. Anthropology of Fishing, *Annual Review of Anthropology* 10: 275-316.

Adams, J. 1985. Sea Venture: A second Interim Report-part 1, *IJNA* 14.4: 275-299.

Adams, J. 1991. Review. Maritime Archaeology – A Technical Handnook., *IJNA* 20.2: 175-176.

Adams, J. 2001. Ships and Boats as Archaeological Source Material. *World Archaeology* 32.3: 292-310.

Adams, J. 2002a. Excavation Methods Underwater. In C. Orser (ed.) *Encyclopedia of Historical Archaeology.* 192-196. London: Routledge.

Adams, J. 2002b. Maritime Archaeology. In C. Orser (ed.) *Encyclopedia of Historical Archaeology.* 328-330. London: Routledge.

Adams, J. 2003. *Ships, Innovation and Social Change. Aspects of Carvel Shipbuilding in Northern Europe 1450-1850.* Stockolm Studies in Archaeology 24, Stockolm Marine Archaeology Reports 3. Stockolm: Stockolm University.

Adams J. 2005. *New Tools on Old Sites.* Unpublished paper presented at AIMA National Conference. Australia.

Adams, J. 2006. Editorial: From the Water Margins to the Centre Ground. *JMA* 1.1: 1-8.

Alegret T., J. L. 1996. La Antropología Marítima Como Campo de Investigación de la Antropología Social. In D. Quezada & Y. Breton (eds.) *Antropología Marítima: Pesca y Actores Sociales*: 51-70. Mérida: Universidad Autónoma de Yucatán.

Ahlström, C. 1997. *Looking for Leads. Shipwrecks of the Past Revealed by Contemporary Documents and the Archaeological Record.* Helsinki: The Finnish Academy of Science and Letters.

AIMA. 2001 (orig. 1999). Code of Ethics. Australian Institute for Maritime Archaeology. In M. Staniford & M. Hyde (eds.) *Maritime Archaeology in Australia: a Reader.* 224-226. Adelaide: Southern Archaeology.

Arnold. B. J. 1981. A Marine Archaeological Magnetometer in the Galveston, Texas, Area. In G. Watts. (ed.) *Underwater Archaeology: The Challenge Before Us. The Proceedings of the Twelfth Conference on Underwater Archaeology*: 209-217. SHA: San Marino.

Arnold. B. J. & Clausen, C. J. 1975. A Magnetometer Survey with Electronic Positioning Control and Calculator Plotter System. *IJNA* 4.2:353-356.

Arnold J. B. & Weddle, R. 1978. *The Nautical Archaeology of Padre Island.* The *Spanish Shipwrecks of 1554.* New York: Academic Press.

Aspillaga, E., Castro M., Rodriguez, M., & Ocampo, C. 2006. Paleopatología y Estilo de Vida: El Ejemplo de los Chonos. *Magallania* 34.1: 77-85.

Babits, L. & van Tilburg, H. 1998. *Maritime Archaeology: A Reader of Substantive and Theoretical Contributions.* New York: Plenum.

Barnes, J. A. 1954. Class and Committee in a Norwegian Island Parish. *Human Relations* 7:39-58.

Barsam, R. 1988. *The Vision of Robert Flaherty. The Artist as Myth and Filmmaker.* Indiana University Press.

Barth, F. 1966. *Models of Social Organization.* Royal Anthropological Institute Ocasional Papers 23. London: Royal Anthropological Institute.

Bascom, W. 1976. *Deep Water, Ancient Ships. The Treasure Vault of the Mediterranean.* London: David & Charles.

Basch, L. 1972. Ancient Wrecks and the Archaeology of Ships. *IJNA* 1.1: 1-58.

Bass, G. F. 1970 (orig. 1966). *Archaeology Underwater.* Middlesex: Pelican.

Bass, G. F. 1983. A Plea for Historical Particularism in Nautical Archaeology. In R. Gould, (ed.) *Shipwreck Anthropology*: 91-104. Albuquerque: University of New Mexico.

Bass, G. F. (ed.) 1988. *Shipwrecks of the Americas. A History Based in Underwater Archaeology.* London: Thames & Hudson.

Bass, G. E. 1999. The Men Who Stole the Stars. In L. V. Prott, & I. Srong, (eds.). *Background Materials on The Protection of the Underwater Cultural Heritage / Documents de Base sur la Protection du Patrimonie Culturel Subaquatique*: 203-204. Portsmouth: UNESCO / Nautical Archaeology Society.

Bass. G. E. (ed.) 2005. *Beneath the Seven Seas: Adventures with the Institute of Nautical Archaeology.* London: Thames & Hudson.

Bass, G. F., Matthews, S. D., Steffy, J. R. & van Doornick, F. H. (eds.) 2004. *Serçe Limani. An Eleventh-Century Shipwreck. Volume 1. The Ship and its*

Anchorage, Crew and Passengers. College Station: Texas A & M University Press.

Basso, K. & Selby, H. (eds.) 1976. *Meaning in Anthropology.* Albuquerque: University of New Mexico Press.

Battuta, I. 2003. *The Travels of Ibn Battutah.* London: Picador.

Baynton-Williams A. & Baynton-Williams, M. 2006. *New Worlds. Maps from the Age of Discovery.* London: Quercus.

Benavides, H. 2001. Returning to the Source: Social Archaeology as Latin American Philosophy. *Latin American Antiquity* 12.4: 355-370.

Bernal, I. 1980. *A History of Mexican Archaeology.* London: Thames & Hudson.

Bernard, H. R. 2002. *Research Methods in Anthropology. Qualitative and Quantitative Approaches.* Walnut Creek: Altamira Press.

Blackman, D. J. (ed.) 1973a. *Marine Archaeology.* Proceedings of the Twenty-third Symposium of the Colston Research Society held in the University of Bristol, April 4th to 8th, 1971. London: Butterworths.

Blackman, D. J. 1973b. Preface. In D. J. Blackman (ed.) *Marine Archaeology.* Proceedings of the Twenty-third Symposium of the Colston Research Society held in the University of Bristol, April 4th to 8th, 1971. London: Butterworths.

Blehr, O. 1963. Action Groups in a Society with Bilateral Kinship: A Case Study from the Faroe Islands. *Ethnology* 2.3: 269-275.

Binford. L. R. 1962. Archaeology as Anthropology. *American Antiquity* 28.2: 217-225.

Binford. L. R. 1965. Archaeological Systematics and the Study of Culture Process. *American Antiquity* 31.2, Part 1: 203-210.

Binford, L. (ed.) 1977. *For Theory Building in Archaeology.* New York: Academic Press.

Binford, S. R. & Binford, L. R. (eds.) 1968. *New Perspectives in Archaeology.* [Papers from a Symposium Entitled The Social Organization of Prehistoric Communities, held at the 64th Annual Meeting of the American Anthropological Association at Denver in November 1965] New York: Aldine.

Blot, J. Y. 1996. *Underwater Archaeology, Exploring the World Beneath the Sea.* London: Thames & Hudson.

Blue, L. 2007. Locating the Harbour: Myos Hormos/Quseir al-Qadim: a Roman and Islamic Port on the Red Sea Coast of Egypt. *IJNA* 36.2: 265-281.

Blue, L., Kentley, E., & McGrail, S. 1997. The Patia Boat of Orissa: A case Study in Etnoarchaeology. South Asian Studies 13: 189-207.

Blue, L., Kentley, E., & McGrail, S. 1998. The Vattai Fishing Boat and Related Frame-first Vessels of Tamil Nadu. South Asian Studies 14: 41-74.

Boas, F (ed.) 1938. *General Anthropology.* USA: D.C. Heath Company.

Bohm, D. 1957. *Causality and Chance in Modern Physics.* London: Routledge and Paul.

Bohm, D. 1980. *Wholeness and the Implicate Order.* London: Routledge and Paul.

Bohm, D. & D. Peat. 1988. *Ciencia, Orden y Creatividad. Las Raíces Creativas de la Ciencia y la Vida.* Barcelona: Kairós.

Boas, F (ed.) 1938a. *General Anthropology*: 1-16. USA: D.C. Heath Company.

Boas, F (ed.) 1938b. Introduction. In F. Boas (ed.) *General Anthropology*: 1-16. USA: D.C. Heath Company.

Braudel, F. 1981. *Civilization and Capitalism, 15th – 18th Centuries.* III Vols. London: Collins.

Breton, Y. 1981. L' Antropologie Sociale et les Sociétés de Pêcheurs: Réflexions sur la Naissance d'un Sous-champ Disciplinaire. *Anthropologie et Sociétés* 5.1: 7-29.

Breton, Y. 1996. Pescadores y Ciencias Sociales: Paradigmas e Investigaciones en Antropología Marítima. In D. Quezada & Y. Breton (eds.) *Antropología Marítima: Pesca y actores sociales*: 27-49. Mérida: Universidad Autónoma de Yucatán.

Briggs, J. P. & Peat, F. D. 1989. *A través del Maravilloso Espejo del Universo.* Barcelona: Gedisa.

Bruseth E. J. & Turner, T. S. 2005. *From a Watery Grave. The Discovery and Excavation of La Salle's Shipwreck, La Belle.* College Station: Texas A&M University.

Buffa, V. 2003. *British and Iberic Shipbuilding of Exploration Ships Between 16th and 17th Centruries*, PhD Research Project, Manuscript. Southampton: Centre for Maritime Archaeology, University of Southampton.

Burton, R. (trans.) 1885. *Plain and Literal Translation of the Arabian Nights' Entertainments, Now Entituled The Book of the Thousand Nights and a Night.* Vol. VI; Luristan Edition. Benares: The Burton Club for Private Subscribers Only.

Capelle, T. 1995. Bronze Age Stone Ships. In O. Crumlin-Pedersen., & B. Munch Thye (eds.) *The Ship as Symbol in Prehistoric and Medieval Scandinavia*: 71-75. Copenhagen: Publications from the National Museum, Studies in Archaeology & History Vol. I.

Carvajal de, G. 1894. *Descubrimiento del Río de las Amazonas*. Exfoliada de la obra de J. Toribio Medina, J. B. Bueno Medina (ed): Sevilla. Biblioteca Virtual Miguel de Cervantes, 2007.

Casteel, R. W. & Quimby, G. I. 1975. *Maritime Adaptations of the Pacific*. The Hague: Mouton.

Castro, F. V. 2000. The Last Field season on the Pepper Wreck. A Preliminary Analysis of the Hull. *INA Quarterly* 27.4: 3-9.

Castro, F. V. 2005. *The Pepper Wreck. A Portuguese Indiaman at the Mouth of the Tagus River*. College Station: Texas A&M University Press.

Castro, F. V. 2006. Sailing the Pepper Wreck: A Proposed Methodology for Understanding an Early 17th Century Portuguese Indiaman. *IJNA* 35.1: 97-103.

Cederlund C. O. & Hocker, F. (eds.) 2006. *Vasa I. The Archaeology of a Swedish Warship of 1628*. Stockholm: Statens Sjohistoriska Meseer.

Cereijido, M. 2000. *Ciencia Sin Seso. Locura Doble*. Mexico City: Siglo XXI.

Chapman, R. 2003. *Archaeologies of Complexity*. London: Routledge.

Chippindale, C. 2000. Capta and Data: On the True Nature of Archaeological Information. *American Antiquity* 65. 4: 605-612.

Clarke, D. 1973. The Loss of Innocence. *Antiquity* 47: 6-18.

Cleator, P. E. *Underwater Archaeology*. 1973. London: Robert Hale and Company.

Clifford, J. 1991. Sobre la Autoridad Etnográfica. In Reynoso, C., *El Surgimiento de la Antropología Posmoderna*: 141-170. Mexico City: Gedisa.

Colby, B. N., Fernandez, J. W. & Kronenfeld, D. B. 1981. Toward a Convergence of Cognitive and Symbolic Anthropology. *American Ethnologist* 8.3, Symbolism and Cognition: 422-450.

Collingwood R. G. 1993 (orig. 1946). *The Idea of History*. Oxford: Clarendon.

Cowan, G., Pines, D. & Meltzer, D. (eds.) 1995. *Complexity. Metaphors, Models and Realities*. Santa Fe Institute Studies in the Sciences of Complexity, Proceedings Vol. XIX. Santa Fe: Addison Wesley.

Crumlin-Pedersen, O. 1984. Experimental Boat Archaeology in Denmark. In S. McGrail (ed.) 1984. *Aspects of Maritime Archaeology and Ethnography*: 97-122. London : National Maritime Museum.

Crumlin-Pedersen, O. 1995. Boat-Burials at Slusegaard and the Interpretation of Boat-Grave Custom. In O. Crumlin-Pedersen & B. Munch Thye (eds.) *The Ship as Symbol in Prehistoric and Medieval Scandinavia*: 87-99. Copenhagen: Publications from the National Museum, Studies in Archaeology & History Vol. I.

Crumlin-Pedersen, O., Warmind, M., & Westerdahl, C. 1995. Introduction. In O. Crumlin-Pedersen & B. Munch Thye (eds.) *The Ship as Symbol in Prehistoric and Medieval Scandinavia*: 9-19. Copenhagen: Publications from the National Museum, Studies in Archaeology & History Vol. I.

Dean, M., Ferrari, B., Oxley, I., Redknap, M. & Watson, K. (eds.) 1992. *Archaeology Underwater, The NAS Guide to Principles and Practice*. London: Nautical Archaeology Society.

Dellino, V. & Endere, M. Luz. 2001. The HMS Swift Shipwreck. The Development of Underwater Heritage Protection in Argentina. *Conservation and Management of Archaeological Sites*: 4.

Dellino-Musgrave, V. 2006. *Maritime Archaeology and Social Relations. British Action in the Southern Hemisphere*. New York: Springer.

Diole, P. 1954. *4,000 years Under the Sea. Excursions in Undersea Archaeology*. London: Sidwick and Jackson.

du Plat Taylor, J. (ed.) 1965. *Marine Archaeology: Developments During Sixty Years in the Mediterranean*. London: Hutchinson.

Dumas, F. 1962. *Deep-Water Archaeology*. London: Routledge.

Dumas, F. 1965. Underwater Work and Archaeological Problems. In J. du Plat Taylor (ed.) *Marine Archaeology*: 15-23. London: Hutchinson.

Dunn, R. E. 2005. *The Adventures of Ibn Battuta, a Muslim Traveller of the Fourteenth Century*. Berkeley: University of California Press.

Dobbs, C. T. C. & M. Bridge. 2000. Preliminary Results from the Dendrocronological Studies on the *Mary Rose*. In J. Litwin (ed.) *Down the River to the Sea. Proceedings of the Eight International Symposium on Boat and Ship Archaeology, Gdansk 1997*: 257-262. Gdansk: Polish Maritime Museum.

Elia, R. J. 1999. The Ethics of Collaboration: Archaeologists and the *Whydah* Project. In L. V. Prott & I. Srong (eds.) *Background Materials on The Protection of the Underwater Cultural Heritage / Documents de Base sur la*

Protection du Patrimonie Culturel Subaquatique: 107-117. Portsmouth: UNESCO / Nautical Archaeology Society.

Elkin, D.; A. Argüeso; M. Grosso; C. Murray: D. Vainstub; R. Bastida & V. Dellino-Musgrave. 2006. Archaeological Research on HMS Swift: A British Sloop-of-War lost off Patagonia, Southern Argentina, in 1770. *IJNA* 36.1: 32-58.

Escalante de Mendoza, J. 1985 (orig. 1575). *Itinerario de Navegación de los Mares y Tierras Occidentales*. Madrid: Museo Naval.

Evans, A. 1980. Five Viking Ships at Skuldelev. In K. Muckelroy (ed.) *Archaeology Under Water. An Atlas of the World Submerged Sites*: 74-75. New York: McGraw Hill.

Ewe, F. 1972. *Schiffe auf Siegeln*. Berlin: Verlag Delins Klasing & Co.

Fernandez W. J. & Turner, V. 1973. Analysis of Ritual: Metaphoric Correspondences as the Elementary Forms. *Science*, New Series, 182.4119: 1366-1368.

Ferrari, B. & Adams, J. 1990. Biogenic Modifications of Marine Sediments and their Influence in Archaeological Material. *IJNA* 19.2: 139-151.

Fetterman, D. M. 1998. *Ethnography*. Thousand Oaks, California: Sage.

Feyerabend, P. 1993. *Tratado contra el Método*. Mexico City: Rei.

Firth, R. 1973. *Symbols: Public and Private*. Ithaca: Cornell University Press.

Flannery, K. & Marcus, J. 1996. Cognitive Archaeology. In Preucel R. W., & Hodder, I., *Contemporary Archaeology in Theory. A Reader*: 350-363. Oxford: Blackwell.

Flatman, J. 2003. Cultural Biographies, Cognitive Landscapes and Dirty Old Bits of Boat: 'Theory' in Maritime Archaeology. *IJNA*, 32.2: 143-157.

Flatman, J. 2007. *The Illuminated Ark. Interrogating Evidence from Manuscript Illuminations and Archaeological Remains for Medieval Vessels*. BAR International Series 1616. Oxford: BAR.

Fontenoy, P. 1998. A discussion of Maritime Archaeology. In L. E. Babits & H. van Tilburg, (eds.) *Maritime Archaeology. A Reader of Substantive and Theoretical Contributions*: 47-52°Plenum, New York. Reprinted from Ms on File, Ruppe Library. 1994. Program in Maritime History and Nautical Archaeology, East Carolina University.

Fornos. M. 2004. El Proyecto de Rescate del Graf Spee. El Acorazado que Quiere Seguir en el Mar. *Galería de Búsqueda*, 1240-174: 42-44.

Fournier, P. 1998. Arqueología del Colonialismo de España y Portugal: Imperios Contrastantes en el Nuevo Mundo. *Boletín de Antropología Americana*, 32: 89-96.

Fournier, P. 1999. La Arqueología del Colonialismo en Ibero América: Balance y Perspectivas. *Boletín de Antropología Americana*, 34: 75-87.

Fournier, P., & F. Miranda. 1992. Historic Sites Archaeology in Mexico. *Historical Archaeology*, 26: 75-83.

Frankel, H. R. 1978. The Importance of Galileo's Nontelescopic Observations Concerning the Size of the Fixed Stars. *Isis*. 69. 1: 77-82.

Fritz, J. M., & Plog, F. T. 1970. The Nature of Archaeological Explanation. *American Antiquity* 35.4: 405-412.

Frondeville G. de. 1965. The Mahdia Wreck. In J. du Plat Taylor (ed.) *Marine Archaeology*. London: Hutchinson.

Galeano, E. 1987a. *Memoria del Fuego. Vol. I. Los Nacimientos*. Montevideo: Ediciones del Chanchito.

Galeano, E. 1987b. *Memoria del Fuego. Vol. II. Las Caras y las Máscaras*. Montevideo: Ediciones del Chanchito.

Galeano, E. 2000. *Patas Arriba. La Escuela del Mundo al Revés*. Montevideo: Ediciones del Chanchito.

Gándara V., M. 1982 (orig. 1980) La Vieja Nueva Arqueología. *Boletín de Antropología Americana*. Teorías y Métodos en Arqueología: 59-160.

Gándara V., M. 1987. Hacia una Teoría de la Observación en Arqueología. *Boletín de Antropología Americana* 15:5-13.

Gándara V., M. 1992. El Análisis Teórico: Aplicaciones al Estudio del Origen de la Complejidad Social. *Boletín de Antropología Americana*, 25: 93-104.

Gándara V., M. 1992b. *La Arqueología Oficial Mexicana. Causas y Efectos*. Mexico City: INAH.

Gándara V., M. 1993. El Análisis de Posiciones Teóricas: Aplicaciones a la Arqueología Social. *Boletín de Antropología Americana* 27:5-20.

Gándara V., M. 1994. Consecuencias Metodológicas de la Adopción de una Ontología de la Cultura: Una Perspectiva desde la Arqueología. In González, J. & J. Galindo (coords.) *Metodología y Cultura*. Mexico City: Conaculta.

Gándara V., M. 2006. *Corrientes Teóricas en Arqueología*. La Piedad: CEQ/Colegio de Michoacán.

Gardiner, J. (ed.) 2005. *Before the Mast. Life and Death Aboard the Mary Rose.* Portsmouth: Mary Rose Trust.

Gawronski, J. (ed.) 1986. *Amsterdam Project. Jaarrapport van de Stichting VOC-Ship 'Amsterdam' 1985.* Amsterdam: Stichting VOC-Ship Amsterdam.

Gawronski, J. 1990. East Indiaman *Amsterdam* Research 1984-1986. *Antiquity* 64: 365-375.

Gawronski, J. 1991. The Archaeological and Historical Research of the Dutch East Indiaman *Amsterdam* (1749). In R. Reinders & P. Kees (eds.) *Carvel Construction Technique. Fifth International Symposium on Boat and Ship Archaeology, Amsterdam 1988*: 81-84. Oxbow Monograph 12. Exeter: Oxbow.

Gawronski, 1992. The Hollandia Catalogue. In Gawronski *et al, Hollandia Compendium: A Contribution to the History, Archaeology, Clasification and Lexicography of a 150 ft. Dutch East Indiaman (1740-1750)*: 255-529. Amsterdam: Rijks Museum / Elsevier.

Gawronski, J. 1992. Underwater Archaeological and Historical Research of Sunken Dutch East Indiamen. In Gawronski, J., B. Kist & O. Stokvis-van Boetzelaer. *Hollandia Compendium*: 13-31. Amsterdam: Rijks Museum.

Gawronski, J. 1996. *De Equipagie van den Hollandia en de Amsterdam. VOC-Bedrijvigheid in 18de-eeuws Amsterdam.* Amsterdam: De Bataafsche Leeuw.

Gawronski, J. 1997. The *Hollandia* and the *Amsterdam*: Ships and the Economic Network of the VOC in Amsterdam Around 1750. In D. Lakey (ed.) *Underwater Archaeology Proceedings of the Society for Historical Archaeology Conference 1997*: 1-8. Tucson: Society for Historical Archaeology.

Gawronski, J.; Kist, B. & Stokvis-Van Boetzelaer, O. (eds.) 1992. *Hollandia Compendium: A Contribution to the History, Archaeology, Clasification and Lexicography of a 150 ft. Dutch East Indiaman (1740-1750).* Amsterdam: Rijks Museum / Elsevier.

Gawronski, J., Kist, J. B. & van Regteren Altena, H. H. 1986. Research Project VOC-Ship 'Amsterdam'. In J. Gawronski (ed.) *Amsterdam Project. Jaarrapport van de Stichting VOC-Ship 'Amsterdam' 1985*: 5-9. Amsterdam: Stichting VOC-Ship Amsterdam.

Geertz, C. 1976. From the Native's Point of View: On the Nature of Anthropological Understanding. In K. Basso & H. Selby (eds.) *Meaning in Anthropology.* Albuquerque: University of New Mexico Press: 221-237.

Geertz, C. 1988. *Works and Lives. The Anthropologist as Author.* Stanford: Stanford University Press.

Geertz, C. 1993a (orig. 1973). *The Interpretation of Cultures.* London: Fontana Press.

Geertz, C. 1993b (orig. 1973). Thick Description: Toward an Interpretive Theory of Culture. In Geertz, C. *The Interpretation of Cultures.* London: Fontana Press.

Gell-Mann, M. 1994. *The Quark and the Jaguar. Adventures in the Simple and the Complex.* New York: Freeman & Company.

Gell-Mann, M. 1995a. What is Complexity? *Complexity* 1.1.

Gell-Mann, M. 1995b. Complex Adaptive Systems. In G. Cowan *et al* (eds.) *Complexity. Metaphors, Models and Realities.* Santa Fe Institute Studies in the Sciences of Complexity, Proceedings Vol. XIX. Santa Fe: Addison Wesley: 17-47.

Gibbins, D. 1990. Analytical Approaches in Maritime Archaeology: a Mediterranean Perspective. *Antiquity.* 64: 376-389.

Gibbins, D. 1992. Reviewing the Underwater Archaeology Proceedings from the 1990 Society for Historical Archaeology Conference. *IJNA* 21.1: 82-84.

Gibbs, M. 2006. Cultural Site Formation Processes in Maritime Archaeology: Disaster Response, Salvage and Muckelroy 30 Years on. *IJNA* 35.1: 4-19.

Goggin, J. M. 1960. Underwater Archaeology: Its Nature and Limitations. *American Antiquity* 25.3: 348-354.

Gómez Ortero, J., Lanata, J. L. & Prieto, A. 1998. Arqueología de la Costa Atlántica Patagónica. *Revista de Arqueología Americana* 15: 107-185.

González, J. & Galindo, J. (coords). 1994. *Metodología y Cultura.* Mexico City: Conaculta.

Gould, R. A. 2000. *Archaeology and the Social History of Ships.* Cambridge: Cambridge University Press.

Gould, R. A. (ed.) 1983. *Shipwreck Anthropology.* Albuquerque: University of New Mexico.

Green, J. 1990. *Maritime Archaeology. A Technical Handbook.* San Diego: Academic Press.

Greenhill, B. & Morrison, J. 1995 (orig. 1976). *The Archaeology of Boats and Ships. An Introduction.* London: Conway Maritime Press.

Grimes, W. F. 1962. Introduction to Dumas, F. *Deep-Water Archaeology.* London: Routledge.

Guevara, A., F. 1984. *Menosprecio de Corte y Alabanza de Aldea / Arte de Marear.* Madrid: Cátedra.

Gummerman, G. J. & Phillips Jr, D. A. 1978. Archaeology Beyond Anthropology, *American Antiquity* 43.2: 184-191.

Gummerman, G. & Gell-Man, M. (eds.) 1994. *Understanding Complexity in the Prehistoric Southwest.* Santa Fe Institute Studies in the Sciences of Complexity, Proceedings Vol. XVI. Santa Fe: Addison-Wesley.

Gummerman, G. J. & Dean, G. S. (eds.) 2000. Digital Anasazi. Digital People From a Computerized Landscape in Prehistoric Arizona. *Scientific American Discovering Archaeology* 2.2.

Hammersley, M. & Atkinson, P. 1995. *Ethnography. Principles in Practice.* London: Routledge.

Hacking, I. 1999. *The Social Construction of What?* Cambridge: Harvard University Press.

Harley, J. B. 2001. The New Nature of Maps. Essays in the History of Cartography. Baltimore: Johns Hopkins University Press.

Hasslöf, O., H. 1972. Maritime Ethnology and its Associated Disciplines. In O. Hasslöf, H. Henningsen & A. E. Christesen (eds.) *Ships and Shipyards Sailors and Fishermen. Introduction to Maritime Ethnology*: 9-19. Copenhagen: Copenhagen University Press.

Hasslöf, O., Henningsen, H., & Christesen, A. E. (eds.) 1972. *Ships and Shipyards Sailors and Fishermen. Introduction to Maritime Ethnology.* Copenhagen: Copenhagen University Press.

Heinsius, P. 1956. *Das Schiff der Hansischen Frühzeit.* Weimar: Herman Bolan.

Henderson. G. 1986, *Maritime Archaeology in Australia.* Nedlands: University of Western Australia Press.

Hempel, C. G. 1965. *Aspects of Scientific Explanation and Other Essays in the Philosophy of Science.* New York: Frees Press.

Hempel, C. G. & Oppenheim, P. 1948. Studies in the Logic of Explanation. *Philosophy of Science* 15.2: 135-175.

Herrera, J. M. 1997. Ballast in the Port of Veracruz During the Second Half of the Eighteen Century. In D. Lakey (ed.) *Underwater Archaeology Proceedings of the Society for Historical Archaeology Conference 1997*: 22-26. Tucson: Society for Historical Archaeology.

Herrera, J. M. 2000. Remote Sensing Surveys in Underwater Archaeology. Its Application in the New Spain's 1630-1631 Fleet Research Project and

Submerged Cultural Resources Inventory. *Revista Antropología y Técnica* 6: 31-40.

Herrera, J. M. 2001a. *El navegante complejo. Antropología, complejidad, sensoramiento remoto y Sistemas de Información Geográfica en la arqueología marítima.* Professional Dissertation. Mexico City: Escuela Nacional de Antropología e Historia.

Herrera, J. M. 2001b. El uso de Sistemas de Información Geográfica e Instrumentos de Detección Remota en la Arqueología Subacuática Mexicana. Su Empleo Desde una Perspectiva Antropológica. *Memorias del Congreso de Arqueología Subacuática*: 171-179. Mexico City: ICOMOS-INAH.

Herrera J. M. 2001c. Desnaufragando historias. Antropología y arqueología marítimas en tres accidentes navales en la Sonda de Campeche. *Amerística* 7: 67-129.

Herrera, J. M. 2003. Intentando Salvar la Nao: Decisiones Náuticas y Quebrantos de Esperanza. In Trejo, F. (coord.) *La Flota de la Nueva España 1630-1631*: 113-141. Mexico City: INAH.

Herrera, J. M. (Forthcoming) From Cervantes to the Sea Bed: Or How Maritime Archaeology Can Be Benefited by Maritime Literature, *JMA*.

Herrera, J. M. & Peláez, I. (In preparation) Charting Knowledge Construction in Archaeology and Anthropology.

Hodder, I. 1986. *Reading the Past: Current Approaches to Interpretation in Archaeology.* Cambridge: Cambridge University Press.

Hodder, I. 1991. Interpretive Archaeology and Its Role. *American Antiquity* 56.1: 7-18.

Hodder, I. 2000. Developing a reflexive method in archaeology. In I. Hodder (ed.) *Towards Reflexive Method in Archaeology: The Example at Çatalhöyük.* Cambridge: McDonald Institute Monographs / British Institute of Archaeology at Ankara.

Hunter, J. R. 1994. Maritime Culture: Notes from the Land. *IJNA* 23.4: 261-264.

ICOMOS 1996. *Charter on the Protection and Management of Underwater Cultural Heritage.* Sofia: UNESCO.

Institute of Field Archaeologists (IFA) 1988. *By-Laws of the Institute of Field Archaeologists: Code of Conduct.* Birmingham: Institute of Field Archaeologists.

Johnson, M. 1993. Notes Towards an Archaeology of Capitalism. In C. Tilley (ed.) *Interpretative Archaeology*: 327-356 .Province: Berg Publishers.

Johnson, M. 1996. *An Archaeology of Capitalism.* Oxford: Blackwell.

Johnson, M. 1999. History, Archaeology, Capitalism. In M. P. Leone & P. B. Potter (eds.) *Historical Archaeologies of Capitalism*: 219-232. New York: Kluwer Academic / Plenum.

Johnson, M. 2000. *Teoría Arqueológica. Una Introducción*. Barcelona: Ariel.

Jones, M. 2003. *For Future Generations. Conservation of a Tudor Maritime Collection*. Portsmouth: The Mary Rose Trust.

Kauffman, S. 1992. *Origins of Order. Self-Organization and Selection in Evolution*. Oxford: Oxford University Press.

Kauffman, S. 1995a. *At Home in the Universe. The Search for the Laws of Self-Organization and Complexity*. New York: Oxford University Press.

Kauffman, S. 1995b. Whispers from Carnot: The Origins and Order and Principles of Adaptation in Complex Nonequilibrium Systems. In G. Cowan *et al* (eds.) *Complexity. Metaphors, Models and Realities*. Santa Fe Institute Studies in the Sciences of Complexity, Proceedings Vol. XIX. Santa Fe: Addison Wesley: 83-136.

Keith, D. 1987. *The Molasses Reef Wreck*. PhD Thesis. Texas A & M University.

Keith, D., & Carrell, T. 2007. *The Search for* Trouvadore*, 2006 Season*. Report for the Turks & Caicos National Museum. Corpus Christy: Ships of Discovery.

Keith, D., Duff, J. A., James, S. R., Oeterling, T. J., & Simmons, J. J. 1984. The Molasses Reef Wreck, Turks & Caicos Island: A Preliminary Report. *IJNA* 13.1: 45-63.

Keith, D. & Simmons, J. J. 1985. Analysis of Hull Remains, Ballast, and Artifact Distribution of a 16th-Century Shipwreck, Molasses Reef, British West Indies. *Journal of Field Archaeology* 12.4: 411-424.

Keith, D., Sadler, N., Veerkamp, V., & Coberly, R. 2006. Search for the Slave Ship *Trouvadore*. Unpublished NOAA Grant Proposal. Corpus Christy: Ships of Discovery.

Kentley, E., McGrail, S., & Blue, L. 1999. Further Notes on Patia Fishing Boats in the Bay of Bengal. South Asian Studies 15: 151-158.

Kentley, E., McGrail, S., & Blue, L. 2000. Further Notes on the Frame-first Vessels of Tamil Nadu. South Asian Studies 16: 143-148.

Klejn, L. S. 1977. A Panorama of Theoretical Archaeology. *Current Anthropology* 18.1: 1-42.

Kobyliński, Z. 1995. Ships, Society, Symbols and Archaeologists. In O. Crumlin-Pedersen & B. Munch Thye (eds.) *The Ship as Symbol in Prehistoric and*

Medieval Scandinavia: 9-19. Copenhagen: Publications from the National Museum, Studies in Archaeology & History Vol. I.

Kroeber A. L. 1953a. Introduction. In A. L. Kroeber (ed.) *Anthropology Today.* Chicago: University of Chicago Press: xiii-xv.

Kroeber A. L. (ed.) 1953b. *Anthropology Today.* Chicago: University of Chicago Press.

Kuhn, T. 1992 (orig. 1962). *La Estructura de las Revoluciones Científicas.* Mexico City: Fondo de Cultura Económica.

Lakatos, Imre. 1998. La Falsificación y la Metodología en los Programas de Investigación Científica. In J. Worral & G. Currie (eds.) *Imre Lakatos. La Metodología de los Programas de Investigación Científica*: 17-133. Madrid: Alianza Universidad.

Lakey, D. (ed.) 1997. *Underwater Archaeology Proceedings of the Society for Historical Archaeology Conference 1997.* Tucson: Society for Historical Archaeology.

Lamb, W. R., Keith, D., & Judy, S. A. 1990. Analysis of the Ballast of the Molasses Reef Wreck. *National Geographic Research* 6.3: 291-305.

Langton, C. (ed.) 1989. *Artificial Life.* Santa Fe Institute Studies in the Sciences of Complexity, Proceedings Vol. VI. Redwood City: Addison-Wesley.

Langton, C., Taylor, C., Farmer, J. D. & Rassmussen, S. (eds.) 1989. *Artificial Life II.* Santa Fe Institute Studies in the Sciences of Complexity, Proceedings Vol. X. Redwood City: Addison-Wesley.

Lenihan, D. J. 1983. Rethinking Shipwreck Archaeology: A History of Ideas and Considerations for New Directions. In R. A. Gould (ed.) *Shipwreck Anthropology*: 37-64. Albuquerque: University of New Mexico Press.

Lenihan, D. 2002. *Submerged. Adventures of America's Most Elite Underwater Archaeology Team.* New York: New Market Press.

Lenihan, D. (ed.) 1994. *Shipwrecks of Isle Royale National Park. The Archaeological Survey.* Minnesota: Lake Superior Port Cities Inc.

Lenihan, D. & Brooks, J. D. 1998. *Underwater Wonders of the National Parks. A Diving and Snorkeling Guide Compiled by the National Park Service.* Oakland: Fodor's.

León Portilla, Miguel. 1991. *La Visión de los Vencidos.* Mexico City: UNAM.

Leone, M. P. 1995. A Historical Archaeology of Capitalism. *American Anthropologist,* New Series, 97.2: 251-268.

Leone, M. P. 1999. Setting Some Terms for Historical Archaeologies of Capitalism. In M. P. Leone & P. B. Potter (eds.) *Historical Archaeologies of Capitalism*: 3-20. New York: Kluwer Academic / Plenum.

Leone, M. P. & Potter, P. B. (eds.) 1999. *Historical Archaeologies of Capitalism.* New York: Kluwer Academic / Plenum.

Lewin, R. 1995. *Complejidad. El Caos como Generador del Orden.* Barcelona: Tusquets.

Lincoln, B. 1995. The Ship as Symbol. Mobility, Stability, and Mercantile Capitalism in *Gautrek's Saga.* In O. Crumlin-Pedersen & B. Munch Thye (eds.) *The Ship as Symbol in Prehistoric and Medieval Scandinavia*: 25-33. Copenhagen: Publications from the National Museum, Studies in Archaeology & History Vol. I.

Litwin, J. (ed.) 2000. *Down the River to the Sea. Proceedings of the Eight International Symposium on Boat and Ship Archaeology, Gdansk 1997.* Gdansk: Polish Maritime Museum.

Lofgren, O. 1981. Manniskan i Landskapet- Landskapet i Manniskan. In L. Honko & O. Lofgren (eds.) *Tradition och Miljo*: 235-261. Lund.

López, F. 2003. Los Procesos de Abandono. Lo Blanco y lo Negro en la Investigación Arqueológica. *Anales de Antropología*, 37.

Lyotard, J. F. 1993. *La Condición Postmoderna.* Mexico City: Rei.

Malinowski, B. 1999 (orig. 1922). *Argonauts of the Western Pacific.* London: Routledge.

Marchant, J. 2006. In Search of Lost Time. *Nature*, 444: 534-538.

Marcus, G., & Cushman, D. 1991. Las Etnografías Como Textos. In Reynoso, C. *El Surgimiento de la Antropología Posmoderna*: 171-213. Mexico City:Gedisa.

Marsden, P. 1997. *Ships and Shipwrecks.* London: English Heritage.

Marsden, P. 2003. *Sealed by Time. The Loss and Recovery of the Mary Rose.* Portsmouth: The Mary Rose Trust.

Martin, C. 1997. Ships as Integrated Artifacts: The Archaeological Potential. In M. Redknap (ed.) *Artefacts From Wrecks, Dated Assemblages from the Late Middle Ages to the Industrial Revolution.* Oxford: Oxbow.

Martin, C. 1997. *Scotland's Historic Shipwrecks.* London: B. T. Batsford Ltd / Historic Scotland.

Martínez, E., & J. Silveira. 2001. Patrimonio Cultural Subacuático en el Uruguay. El Río de la Plata Atesora Fragmentos de Historia y Fragmentos de Vida.

Memorias del Congreso de Arqueología Subacuática: 102-108. Mexico City: ICOMOS-INAH.

Martín-Bueno, M., Izaguirre, M., Casado, J. L., Mejunto, R. & Senen López, F. 1985. La Arqueología Subacuática en las Costas del Norte y Noroeste Peninsular: El Estado de la Cuestión. In *VI Congreso Internacional de Arqueología Submarina*: 33-58. Cartagena: Museo y Centro Nacionales de Investigaciones Arqueológicas Submarinas.

Maturana, H., & Valera, F. 1994. *El Árbol del Conocimiento*. Santiago de Chile. Editorial Universitaria.

McCarthy. 2001 (orig. 1998). The Study of Iron Steamship wrecks: is it archaeology?. In M. Staniford & M. Hyde (eds.) *Maritime Archaeology in Australia: a Reader*. 28-36. Adelaide: Southern Archaeology.

McCarthy. 2001 (orig. 1999). Types of Explanation in Maritime Archaeology: The Case of SS Xantho. In M. Staniford & M. Hyde (eds.) *Maritime Archaeology in Australia: a Reader*. 26-50. Adelaide: Southern Archaeology.

McGrail, S. (ed.) 1984a. *Aspects of Maritime Archaeology and Ethnography*. London: National Maritime Museum.

McGrail, S. 1984b. Maritime Archaeology – Present and Future. In S. McGrail (ed.) *Aspects of Maritime Archaeology and Ethnography*: 11-40. London: National Maritime Museum.

McGrail, S. 1989. Maritime Archaeology in Britain. *Antiquaries Jour* 69:10-22

McGrail, S. 1998. *Ancient Boats in North-West Europe. The Archaeology of Water Transport to AD 1500*. New York: Longman Archaeology Series.

McGrail, S. 2001. *Boats of the World, From the Stone Age to Medieval Times*. Oxford: Oxford University Press.

McGrail, S. & A. Farrell. 1979. Rowing: Aspects of the Ethnographic and Iconographic Evidence. *IJNA* 8: 155-66.

McGuire, R. H. & Navarrete, R. 1999. Entre Motocicletas y Fusiles: Las Arqueologías Radicales Anglosajona y Latinoamericana. *Boletín de Antropología Americana*, 34: 89-110.

Medawar, P. 1964. Is the Scientific Paper Fraudulent? *Saturday Review* 1: 42-43.

Medina, P. 1964. *Regimiento de Navegación, en que se Contienen Todas las Reglas, Declaraciones, Secretos, y Avisos, que a la Buena Navegación son Necesarios, y se Deben Saber, Hecha por el Maestro Pedro de Medina. Dirigida al Serenísimo y Esclarecido Señor Don Phelipe, Príncipe de España y de las Dos Sicilias, etc. Con Privilegio Imperial.* (Facsimile of the 1563 Seville edition). Madrid: Instituto de España.

Merton, R. K., & Kendall, P. L. 1946. The Focused Interview. *The American Journal of Sociology* 51.6: 541-557.

Menotti, F. 2001. The Pfahlbauproblem and the History of Lake Dwelling Research in the Alps. *Oxford Journal of Archaeology* 20.4: 319-328.

Mol, F. 1929. *Das Schiff in der Bildenden Kunst.* Bonn: Kurt Frelag.

Morin, E. 1996. Sobre la interdisciplinariedad. *Sociología y Política.* Nueva Época IV.8:17-27.

Morin, E. 1998. *Introducción al pensamiento complejo.* Barcelona: Gedisa.

Morrison, I. A. 1980a. Man-made Islands in the Scotish Lochs. In K. Muckelroy (ed.) *Archaeology Under Water. An Atlas of the World Submerged Sites*: 156-157. New York: McGraw Hill.

Morrison, I. A. 1980b. The Nature and Construction of Crannogs. In K. Muckelroy (ed.) *Archaeology Under Water. An Atlas of the World Submerged Sites*: 158-159. New York: McGraw Hill.

Morrison, I. A. 1980c. Lake Dwellings in the Landscape. In K. Muckelroy (ed.) *Archaeology Under Water. An Atlas of the World Submerged Sites*: 160-161. New York: McGraw Hill.

Muckelroy, K. 1976. The Integration of Historical and Archaeological Data Concerning an Historic Wrecksite: The "Kennemerland". *World Archaeology* 7.3: 280-289.

Muckelroy, K. 1978. *Maritime Archaeology.* Cambridge: Cambridge University Press.

Muckelroy, K. (ed.) 1980. *Archaeology Under Water. An Atlas of the World Submerged Sites.* New York: McGraw Hill.

Murphy, L. E. 1983. Shipwrecks as Data Base for Human Behavioral Studies. In R. Gould (ed.) *Shipwreck Anthropology*: 65-90. Albuquerque: University of New Mexico Press.

Murphy, L. E. (ed.) 1984. *Submerged Cultural Resources Survey. Portions of Point Reyes National Seashore and Point Reyes Farallon Islands National Marine Sanctuary.* Santa Fe: Submerged Cultural Resources Unit / National Park Service.

Murphy, L. E. 1984b. Phase I. Remote Sensing Survey. In L. E. Murphy (ed.) *Submerged Cultural Resources Survey. Portions of Point Reyes National Seashore and Point Reyes Farallon Islands National Marine Sanctuary*: 65-90 Santa Fe: Submerged Cultural Resources Unit / National Park Service.

Murphy, L. E. 1990. *8SL 17: Natural Site-Formation Processes of a Multiple-Component Underwater Site in Florida.* Santa Fe: Submerged Cultural Resources Unit / National Park Service.

Murphy, L. E. (ed.) 1993. *Dry Tortugas National Park; Submerged Cultural Resources Assessment.* Santa Fe: Submerged Cultural Resources Unit / National Park Service.

Murphy, L. E. 1998. Maritime Archaeology at Dry Tortugas National Park. In J. Tancredi & J. Loret (eds.) *Ocean Pulse*: 169-176. New York: Kluwer Academic Publishers.

Murphy, L. E. & Johnson, R. W. 1993a. Environmental Factors Affecting Vessel Cassualties and Sites Preservation. In L. E. Murphy (ed.) *Dry Tortugas National Park; Submerged Cultural Resources Assessment*: 97-109. Santa Fe: Submerged Cultural Resources Unit / National Park Service.

Murphy, L. E. & Johnson, R. W. 1993b. Fort Jefferson National Monument Documented Maritime Casualties. In L. E. Murphy (ed.) *Dry Tortugas National Park; Submerged Cultural Resources Assessment*: 143-165. Santa Fe: Submerged Cultural Resources Unit / National Park Service.

Murphy, L. E. & Saltus, A. R. 1990. Considerations of Remote Sensing Limitations to Submerged Historical Site Survey. In T. L. Carrell (ed.) *Underwater Archaeology Proceedings of the Society for Historical Archaeology Conference 1990*: 95-93. Tucson: Society for Historical Archaeology.

Murphy, L. E. & Smith, T. G. 1995. Submerged in the Past. Mapping the Beguiling of Florida's Biscayne and Dry Tortugas National Park. *Geo Info Systems* 5.10: 15-19.

Murray, C., Elkin, D. & Vainstub, D. 2003. Corvette of war HMS Swift: An archaeological approach. In N. Tracy (ed.) *The Age of Sail.* Conway Maritime Press, London: 101-115.

Naish, G. 1972. Foreword. *IJNA.* 1.1: i.

Nieto Prieto, J. & Nolla, M. J. 1985. El Yacimiento arqueológico Submarino de Riells-La Clota y su relación con Ampurias. *VI Congreso Internacional de Arqueología Submarina*: 265-284. Cartagena: Museo y Centro Nacionales de Investigaciones Arqueológicas Submarinas.

Noort, Van de, R. 2003. An Ancient Seascape: The Social Context of Seafaring in the Early Bronze Age. *World Archaeology* 35.3: 404-415.

Núñez Cabeza de Vaca, A. 1984. *Naufragios.* Mexico City: Origen.

Ocampo, C. 2002. Proceso y Orígenes del Poblamiento Marítimo de los Canales Patagónicos: Chiloé y el Núcleo Central. Unpublished CONICYT &

FONDECYT Research Project. Santiago: Universidad de Chile / Facultad de Ciencias Sociales / Departamento de Antropología.

Orquera, L. A. & Piana, E. L. 2006. El Poblamiento Inicial Del Área Litoral Sudamericana Sudoccidental. *Magallania* 34. 2: 21-36.

Orser, C. E. 1995. *Historical Archaeology.* New York: Harper Collins.

Orser, C. E. 1996. *A Historical Archaeology of the Modern World.* New York: Plenum.

Orser, C. E. (ed.) 2002. *Encyclopedia of Historical Archaeology.* London: Routledge.

Oxley, I. 1984. Non-Artefactual Materials From Underwater Archaeological Sites. *IJNA* 13.4: 337-338.

Oxley, I. 1990. Factors Affecting the Preservation of Underwater Archaeological Sites. *IJNA* 19.4: 340-341.

Oxley, I. 2002. Towards the Integrated Management of Scotland's Cultural Heritage: Examining Historic Shipwrecks as Marine Environmental Resources. *World Archaeology* 32.3: 413-426.

Oxley, I. 2002. Scapa Flow and the Protection and Management of Scotland's Historic Military Shipwrecks. *Antiquity* 76: 862-868.

O'Shea, J. M. 2002. The Archaeology of Scattered Wreck-Sites: Formation Processes and Shallow Water Archaeology in Western Lake Huron. *IJNA* 31.2: 211-227.

Plath, O. 1994. *Geografía del Mito y la Leyenda Chilenos.* Santiago de Chile: Grijalbo.

Plets, R.M.K., Dix, J.K., Adams, J.R., Bull, J.M., Henstock, T., Gutowski, M. & Best, A.I. 2006. 3D reconstruction of a shallow archaeological site from high-resolution acoustic imagery - a case study. In S. N. Jesus, & O.C. Rodriguez (eds.) *Proceedings of the 8th European Conference on Underwater Acoustics, 12-15 Jun 2006.* Carvoeiro, Portugal: 757-762. Carvoeiro: ECUA Secretariat.

Pérez-Mallaína, P. E. 1996. *El Hombre Frente al Mar: Naufragios en la Carrera de Indias Durante los Siglos XVI y XVII.* Sevilla: Universidad de Sevilla.

Phillips, T. 2003. Seascapes and Landscapes in Orkney and Northern Scotland. *World Archaeology* 35.3: 371-384.

Piana, E., Vila, A., Roquera, L. & Estévez, J. 1992. Chronicles of 'Ona-Ashaga': Archaeology in the Beagle Channel (Tierra del Fuego – Argentina). *Antiquity* 66: 771-783.

Pizarro, A. 2005. Imaginario y Discurso: La Amazonía. *Revista de Crítica Literaria Latinoamericana* 61: 59-74.

Plog, F. 1982. Is a Little Phiosophy (Science) a Dangerous Thing? In C. Renfrew M. J. Rowlands & B. Abbot Segraves (eds.) *Theory and Explanation in Archaeology. The Southampton Conference*: 25-33. London: Academic Press.

Polo, M. 1927. *The Travels of Marco Polo the Venetian*. London: J. M. Dent & Sons.

Popper, K. L. 1991 (orig. 1934) *La Lógica de la Investigación Científica*. Mexico City: Rei.

Preucel R. W., & Hodder, I. (eds.) 1996a. *Contemporary Archaeology in Theory. A Reader*. Oxford: Blackwell.

Preucel R. W., & Hodder, I. 1996b. Material Symbols. In R. W. Preucel & I. Hodder (eds.) *Contemporary Archaeology in Theory. A Reader*: 299-314. Oxford: Blackwell.

Prott, L. V. & Srong, I. (eds.) 1999. *Background Materials on the Protection of the Underwater Cultural Heritage / Documents de Base sur la Protection du Patrimonie Culturel Subaquatique*. Portsmouth: UNESCO / Nautical Archaeology Society.

Pulak, C. 2005. Discovering a Royal Ship from the Age of King Tut: Uluburun, Turkey. In: G. F. Bass (ed.) *Beneath the Seven Seas. Adventures with the Institute for Nautical Archaeology*: 34-47. London: Thames & Hudson.

Purser, M. 1999. Ex Occidente Lux? An Archaeology of Later Capitalism in the Nineteenth-Century West. In M. P. Leone & P. B. Potter (eds.) *Historical Archaeologies of Capitalism*: 219-232. New York: Kluwer Academic / Plenum.

Quezada, D. & Breton, Y. (eds.) 1996. *Antropología Marítima: Pesca y Actores Sociales*. Mérida: Universidad Autónoma de Yucatán.

Quezada, D. 1996a. Antropología de la Pesca o Antropología Marítima. In D. Quezada & Y. Breton (eds.) *Antropología Marítima: Pesca y Actores Sociales*: 11-24. Mérida: Universidad Autónoma de Yucatán.

Quezada, D. 1996b. Comunidades Costeras en Yucatán: Una Aproximación Etnohistórica. In D. Quezada & Y. Breton (eds.) *Antropología Marítima: Pesca y Actores Sociales*: 93-109. Mérida: Universidad Autónoma de Yucatán.

Quezada, Delfín. 1996c. La Articulación Pesca-Agricultura en la Antropología Marítima. In D. Quezada & Y. Breton (eds.) *Antropología Marítima: Pesca y Actores Sociales*: 113-134. Mérida: Universidad Autónoma de Yucatán.

Quinn, R., Bull, M., Dix, J. K., & Adams, J. R. 1997. The Mary Rose Site - Geophysical Evidence for Paleo-Scour Marks. *IJNA* 26.1: 3-16.

Raab, M. L., & Goodyear, A. C. 1984. Middle-Range Theory in Archaeology: A Critical Review of Origins and Applications. *American Antiquity* 49. 2: 255-268.

Ray, T. 1992. Evolution, Ecology and Optimization of Digital Organisms. *Santa Fe Institute Working Papers* 92-08-042. Santa Fe: Santa Fe Institute.

Redknap, M. (ed.) 1997. *Artefacts From Wrecks, Dated Assemblages from the Late Middle Ages to the Industrial Revolution.* Oxford: Oxbow.

Redknap, M. 1997. Reconstructing 16th-Century Ship Culture from a Partially Excavated Site: The Cattewater Wreck. In Redknap, M. (ed.) *Artefacts From Wrecks, Dated Assemblages from the Late Middle Ages to the Industrial Revolution*: 73-85. Oxford: Oxbow.

Reinders, R. & Kees, P. 1991. *Carvel Construction Technique. Fifth International Symposium on Boat and Ship Archaeology, Amsterdam 1988.* Oxbow Monograph 12. Exeter: Oxbow.

Reiss, W., Bayreuther, W. A. & Cembrola, R. 1986. The Whidah Investigation: Satisfying Both Archaeological and Salvage Interests. In P. H. Johnston (ed.) *Proceedings of the Sixteen Conference on Underwater Archaeology. Special Publication Series* 4: 96-97. California: Society for Historical Archaeology.

Renfrew, C. 1982. Explanation Revisited. In C. Renfrew, M. J. Rowlands, & B. Abbot Segraves (eds.) *Theory and Explanation in Archaeology. The Southampton Conference*: 5-23. London: Academic Press.

Renfrew, C, Rowlands, M. J. & B. Abbot Segraves (eds.) 1982. *Theory and Explanation in Archaeology. The Southampton Conference.* London: Academic Press.

Renfrew, C. & Bahn, P. 1996. *Archaeology, Theories, Methods and Practice.* London: Thames & Hudson.

Reynoso, C. 1998. *Corrientes en Antropología Contemporánea.* Buenos Aires: Biblos.

Reynoso, C. 2006. *Teorías y Métodos de la Complejidad y el Caos. Una Visión Antropológica.* Barcelona: Gedisa.

Robb, J. E. 1998. The Archaeology of Symbols. *Annual Review of Anthropology* 27: 329-346

Rodger, N. 1998. *The Safeguard of the Sea: A Naval History of Britain.* New York: Norton.

Rojas Mix, M. 1992. *América Imaginaria.* Barcelona: Lumen.

Rönnby, J. 1995. *Bålverket, Om samhällsförändring och motstånd med utgångspunkt från det tidigmedeltida Bulkverket i Tingstäde träsk på Gotland.* Stockholm: Studier Från Uv Stockholm, Riksantikvarieämbetet Arkeologiska Undersökningar Skrifter Nr 10.

Rönnby, J. 2007. Maritime Durées. Long-Term Structures in a Coastal Landscape. *JMA* 2.2: 65-82.

Rönnby, J. & Adams, J. 2006. Identity, Threat and Defiance: Interpreting the 'Bulwark', a 12th Century Lake Building on Gotland, Sweden. *JMA* 1.2: 170-190.

Rule, M. 1982. *The Mary Rose. Excavation and Raising of Henry VIII's Flagship.* Leicester: Windward.

Ruoff, U. 1972. Palafittes and Underwater Archaeology. In UNESCO *Underwater Archaeology: A Nascent Discipline*: 123-137. Paris: UNESCO.

Ruoff, U. 1980a. Alpine Villages on Stilts. In K. Muckelroy (ed.) *Archaeology Under Water. An Atlas of the World Submerged Sites*: 148-149. New York: McGraw Hill.

Ruoff, U. 1980b. Discovering Drowned Villages. In K. Muckelroy (ed.) *Archaeology Under Water. An Atlas of the World Submerged Sites*: 150-151. New York: McGraw Hill.

Ruoff, U. 1980c. Landscapes, Villages and Houses. In K. Muckelroy (ed.) *Archaeology Under Water. An Atlas of the World Submerged Sites*: 152-153. New York: McGraw Hill.

Ruoff, U. 1980d. Dating the lakeside Villages. In K. Muckelroy (ed.) *Archaeology Under Water. An Atlas of the World Submerged Sites*: 154-155. New York: McGraw Hill.

Sánchez, G. 2003. Zarpar Bajo el Cobijo Divino. Prácticas Religiosas en los Viajes de la Carrera de Indias. In Trejo, F., (coord.) *La Flota de la Nueva España 1630-1631*: 145-208. Mexico City: INAH.

Schiffer, M. B. 1972. Archaeological Context and Systemic Context. *American Antiquity* 37.2: 156-165.

Schiffer, M. B. 1975. Archaeology as Behavioral Science. *American Anthropologist* 77.4: 836-848.

Schiffer, M. B. 1976. *Behavioural Archaeology.* New York: Academic Press.

Schjødt, J. P. 1995. The Ship in Old Norse Mythology and Religion. In O. Crumlin-Pedersen & B. Munch Thye (eds.) *The Ship as Symbol in Prehistoric and Medieval Scandinavia*: 20-24. Copenhagen: Publications from the National Museum, Studies in Archaeology & History Vol. I.

Schultz, R. 1993. *Looking Inside / Sunken Treasure.* Santa Fe: John Muir Publications.

Searle, J. 1995. *The Construction of Social Reality.* New York: Free Press.

Silverman, D. 1985. *Qualitative Methodology and Sociology.* Aldershot: Gower.

Smith, R. C., Spireck, J., Bratten, J. & Scott-Ireton, D. 1995. *The Emanuel Point Ship archaeological investigations, 1992-1995.* Tallahasee: Florida Department State, Division of Historical Resources, Bureau of Archaeological Research.

Soop, H. 1992. *The Power and the Glory. The Sculptures of the Warship Wasa.* Stokolm: Vitterhets Historie och Antikvitets Akademien.

Staniforth M. 1995. Dependent Colonies: The importation of Material Culture into the Australian Colonies (1788-1850). In P. Forsythe (ed.) *Underwater Archaeology Proceedings of the Society for Historical Archaeology Conference 1995*: 159-164. Washington: Society for Historical Archaeology.

Staniforth M. 1996. Tracing Artifact Trajectories: Following Chinese Export Porcelain. *Bulletin of the Australian Institute for Maritime Archaeology* 20.1: 13-18.

Staniforth M. 1997. The Archaeology of the Event – The Annales School in Maritime Archaeology. In D. Lakey (ed.) *Underwater Archaeology Proceedings of the Society for Historical Archaeology Conference 1997*: 17-21. Tucson: Society for Historical Archaeology.

Staniforth M. & Hyde, M. (eds.) 2001. *Maritime Archaeology in Australia: a Reader.* Adelaide: Southern Archaeology.

Steffy, R. J. 2004. Introduction to Ship Studies. In G. F. Bass *et al* (eds.) *Serçe Limani. An Eleventh-Century Shipwreck. Volume 1. The Ship and its Anchorage, Crew and Passengers*: 73-74. College Station: Texas A & M University Press.

Sténuit R. 1982. The Eastindiaman the Witte Leeuw. In C. L. van der Pijl-Ketel (ed.) *The Ceramic Load of the Witte Leeuw (1613).* Amsterdam: The Rijksmuseum.

Suazo, A. 2000. *Cartas y Memorias (1511-1539).* Mexico City: CONACULTA.

Tarrés, M., L. (coord.) 2001. *Escuchar, Observar y Comprender. Sobre la Tradición Cualitativa en la Investigación Social.* Mexico City: Porrúa / COLMEX / FLACSO.

Tejera G. H. 1988. Bronislaw Malinowski y la Antropología Funcionalista. *Boletín de Antropología Americana* 14: 115-126.

Terrazas Mata, A. 1998. ¿Qué es, si es que es algo, una teoría biosocial en antropología física? *Boletín de Antropología Americana* 33: 115-128.

Thomas, J. 1996. *Time, Culture and Identity.* London: Routledge.

Throckmorton, P. 1969. *Shipwrecks and Archaeology: The Unharvested Sea.* Boston: Little, Brown & Company.

Throckmorton, P. 1973. Ships and Shipwrecks: the Archaeology of Ships. In D. J. Blackman (ed.) *Marine Archaeology.* Proceedings of the Twenty-third Symposium of the Colston Research Society held in the University of Bristol, April 4th to 8th, 1971. London: Butterworths.

Tilley, C. (ed.) 1993. *Interpretative Archaeology.* Province: Berg Publishers.

Turner, V. 1975. Symbolic Studies. *Annual Review of Anthropology* 4: 145-161.

Trigger, B. C. 1989. *A History of Archaeological Thought.* Cambridge: Cambridge University Press.

UNESCO. 1972. *Underwater Archaeology: A Nascent Discipline*: 123-137. Paris: UNESCO.

UNESCO, 2001. *Convention on the Protection of the Underwater Cultural Heritage.* Sofia: UNESCO.

Unger, R. 1991. The Art of Medieval Technology. Images of Noah the Shipbuilder. Rutgers University Press: New Jersey.

Unger, R. (ed.) 1995. *Cogs caravels and Galleons.* London: Conway Maritime Press.

van der Pijl-Ketel, C. L. (ed.) 1982. *The Ceramic Load of the Witte Leeuw (1613).* Amsterdam: The Rijksmuseum.

Varenius, B. 1995. Metaphorical Ships in Iron-Age Contexts. In O. Crumlin-Pedersen & B. Munch Thye (eds.) *The Ship as Symbol in Prehistoric and Medieval Scandinavia*: 35-40. Copenhagen: Publications from the National Museum, Studies in Archaeology & History Vol. I.

Vargas Martínez, G. 2004. *Semiótica Cartográfica.* Mexico City: El Caimán Alado.

Vela León, F. 2001. Un Acto Metodológico Básico de la Investigación Social: La entrevista Cualitativa. In Tarrés, M., L. (coord.) *Escuchar, Observar y Comprender. Sobre la Tradición Cualitativa en la Investigación Social.* Mexico City: Porrúa / COLMEX / FLACSO.

Vera Vega, J. 2001. Arqueología Subacuática en Nuestra América. *Memorias del Congreso de Arqueología Subacuática*: 62-69. Mexico City: ICOMOS-INAH.

Veth, P. & McCarthy, M. 2001 (orig. 1999). Types of Explanation in Maritime Archaeology: the Case of the SS Xanto. In M. Staniford & M. Hyde (eds.) *Maritime Archaeology in Australia: a Reader*: 46-50. Adelaide: Southern Archaeology.

Villain-Gandossi, C. 1985. *Le Navaire Médiéval à Travers les Miniatures*. Paris: CNRS.

Villain-Gandossi, C. 1995. Illustration of Ships: Iconography and Interpretation. In R. Unger (ed.) *Cogs caravels and Galleons*. London: Conway Maritime Press.

Watson, P. J., Leblanc, S. A. & Redman, C. L. 1971. *Explanation in Archaeology: An Explicitly Scientific Approach*. New York: Columbia University Press.

Weber, M. 1967 (orig., 1904-5). *The Protestant Ethic and the Spirit of Capitalism*. London: Unwin University Books.

Westerdahl, C. 1992. The Maritime Cultural Landscape. *IJNA* 21.1: 5-14.

Westerdahl, C. 1994. Maritime Cultures and Ship Types: Brief Comments on the Significance of Maritime Archaeology. *IJNA* 23.4: 265-270.

Westerdahl, C. 1995. Society and Sail. On Symbols as Specific Social Values and Ships as Catalysts of Social Units. In O. Crumlin-Pedersen & B. Munch Thye (eds.) *The Ship as Symbol in Prehistoric and Medieval Scandinavia*: 41-50. Copenhagen: Publications from the National Museum, Studies in Archaeology & History Vol. I.

Westerdahl, C. 2000. From Land to Sea, From Sea to Land. On Transport Zones, Borders and Human Space. In J. Litwin (ed.) *Down the River to the Sea. Proceedings of the Eight International Symposium on Boat and Ship Archaeology, Gdansk 1997*: 11-20. Gdansk: Polish Maritime Museum.

Wilkes, B. St. J. 1971. *Nautical Archaeology. A Handbook*. Newton Abbot: David & Charles.

Wilkie, A. L. 2003. *The Archaeology of Mothering. An African-American Midwife's Tale*. New York: Routledge.

Wilie, A. 1999. Why Should Historical Archaeologists Study Capitalism. In M. P. Leone & P. B. Potter (eds.) *Historical Archaeologies of Capitalism*: 23-50. New York: Kluwer Academic / Plenum.

Willey, G. R. & Phillips, P. 1958. *Method and Theory in Archaeology*. Chicago: University of Chicago Press.

Wittkower, R. 1977. *Allegory and the Migration of Symbols*. London: Thames & Hudson.

Worral, J. & Currie, G. (eds.) 1998. *Imre Lakatos. La Metodología de los Programas de Investigación Científica.* Madrid: Alianza Universidad.

Yule, Henri. 1967 (orig. 1916). *Cathay and the Way Thither: Being a Collection of Medieval Notices of China /Translated and Edited by Sir Henry Yule.* Nendeln: Kraus Reprint.

Yofee, N. 1994. Memorandum to Murray Gell-Man Concerning: The Complications of Complexity in the Prehistoric Southwest. In G. Gummerman, & M. Gell-Man (eds.) *Understanding Complexity in the Prehistoric Southwest.* Santa Fe Institute Studies in the Sciences of Complexity, Proceedings Vol. XVI. Santa Fe: Addison-Wesley: 341-358.

FILM MATERIAL

Man of Aran. 2003 orig., 1934. Directed by Robert Flaherty. USA: Home Vision Entertainment. [DVD]

Last Broadside. 1998. Directed by M. Wortman. USA: Zeb Guber Productions Inc., & Bilbo TV, Lost Ships Series.

Tras la Estela del Hoorn. 2004. Cristian Murray. Buenos Aires: Balder Producciones SLR.

NEWSPAPER MATERIAL

El País. 2004. Rescatista del "Graf Spee" Anuncia Varias Demandas Contra el Estado. *El País.* March 10th, Montevideo.

Galeano, E. 2005. Caras y Caretas. *La Jornada.* October 11th, Mexico City.