

Seafaring as social action

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Abstract This paper builds upon traditional investigations of maritime activities, particularly seafaring itself, to study the social relationships between people and the sea as well as the technology, necessary knowledge and skills that are implicated. The research is based upon evidence of seafaring drawn from the circulation of obsidian from the island of Lipari around the central Mediterranean throughout the Neolithic c.6500–3500 BC. It focuses upon journeys across the Adriatic, identifying the importance of travel in the creation of social alliance and identity, shedding light upon relationships and practices that are generally invisible without proper consideration of maritime activity. The implications of ongoing maritime activity in the region reflect upon Neolithic activities and temporalities which are outside the sphere of settlement specific landscapes, hitherto the sole focus of the majority of Italian Neolithic research.

Keywords Mediterranean · Neolithic · Seafaring · Obsidian · Adriatic · Knowledge · Skills

Introduction

Until fairly recently maritime archaeology has been viewed as a separate sub-discipline developing, on a parallel trajectory, yet perhaps a few paces behind, the development of archaeology itself. Although it is nearly thirty years since Muckleroy argued for a theoretically informed maritime archaeology (Muckelroy 1978), it has taken the majority of that time for the discipline as a whole to respond to the potential of the maritime past.

Perhaps a significant impediment has been that maritime archaeology and the questions that it could answer were viewed as peripheral. For the majority of terrestrially based archaeologists the sea was merely a boundary to their contextual landscapes, a liminal zone at best. If recognised as a possible corridor for movement, it was assumed that prehistoric boat technology was simple and unspecialised, or at least, no more complex than anything

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else. However, over the past couple of years, we have seen issues fundamental to maritime archaeology emerge in central archaeological discourse, and as such it is possible to re-address questions of maritime activity using a more integrated approach, and in particular, to try to understand the social organisation and dynamics behind maritime technologies.

Obsidian circulation: Problem and paradox

The circulation of obsidian in the Mediterranean is a textbook example of prehistoric trade and exchange and has a long tradition of archaeological research. Obsidian circulation forms part of two of the largest and most complex trade networks in the Mediterranean, one including the circulation of material from the Aeolian island of Lipari which lies to the north of Sicily in the central Mediterranean, and the other from the island of Melos in the Aegean. These networks and the knowledge of seafaring they entailed were crucial to the expansion of the Neolithic (Renfrew and Aspinall 1990). It is the circulation of Liparian material which is considered here in more detail.

Obsidian, a black volcanic glass (Fig. 1), is traditionally thought to have been prized in prehistory for its aesthetic qualities and sharp edge once knapped (Whitten and Brooks 1972; Williams-Thorpe 1995; Shackley 1998). Yet, for whatever reasons obsidian was valued in the past, a question to which I shall return, it has a particular archaeological value due to the potential information which can be obtained from dating and characterization studies. One reason for this is that whilst obsidian may be widely dispersed, its sources are fairly limited and can be identified.

In the central Mediterranean there are four sources: Lipari, Pantelleria, Palmarola and Monte Arci on Sardinia (Fig. 2). It is from these sources that obsidian was circulated around the central Mediterranean, across the Italian peninsula, the Adriatic and Balkans, reaching as far north as France (Tykot 1997) and as far south as the north African coast.

Archaeologically this phenomena has been studied in terms of traditional categories of trade and exchange networks (Renfrew 1975; Renfrew 1993), lithic technologies and use-wear (Ammerman and Andrefsky 1982) and geochemical characterization and dating (Cann and Renfrew 1964; Clark 1981; Williams-Thorpe 1995; Tykot 1997; Tykot 1997; Shackley 1998; Tykot 1998). Due to this, obsidian analysis has become an archaeological success story (Williams-Thorpe 1995). However, the success of obsidian as an analytical archaeological material does not only lie in its potential for provenancing studies.

Fig. 1 Obsidian Flake (from Neolithic site Bova Marina, Calabria)





Fig. 2 Topographic map of the central Mediterranean showing obsidian sources

In the central Mediterranean the obsidian sources are all located upon islands. Even accounting for sea-levels c.20 meters lower than the present day (Pirazzoli 1991; Lambeck 1996; Pirazzoli 1998; Morhange et al. 2001), due to the depth and the steeply shelving nature of the Mediterranean basin in this region, these were islands in the Neolithic. Trade in this material would have necessarily involved seafaring, thus, obsidian circulation in the



Fig. 3 Map to show Adriatic islands

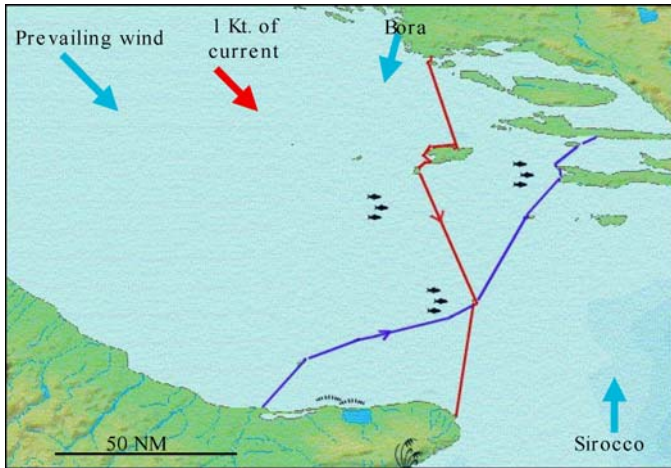


Fig. 4 Likely roots taking into account prevailing winds, currents and location of islands.

central Mediterranean was a maritime phenomenon. This is not unexpected given that the circulation of obsidian in the Aegean provides one of the best indicators of early sea voyages and evidence of the earliest sea trade in the world (Johnstone 1980). Melos obsidian was circulated from the Middle Palaeolithic onwards (Cherry 1981; Perlès 1990; Perlès 1992; Broodbank 2000; Perlès 2001).

Whilst the importance of this has been duly noted (Ammerman 1985; Castagnino Berlinghieri 2003), there has been very little research undertaken into the circulation of obsidian as a maritime activity. In this context the *process* of prehistoric seafaring itself has had very little consideration (Excepting: Johnstone 1980; Broodbank 1999; Broodbank 2000; Farr 2001).

This lack of research can be seen to have originated from three issues within archaeology:

1. Firstly, mainstream archaeology has been terrestrially focused, maritime questions and considerations of maritime technology have been absent from considerations of most prehistoric groups. As such, traditional discussions have centred upon trade and exchange networks, mobility, technology and social organisation within the *landscape*, thus overlooking a whole sphere of prehistoric activities and relationships.

Whilst seafaring is acknowledged as a mechanism for trade, as an activity it lies outside the sphere of these settlement-specific landscapes which are the normal focus of research, and as such seafaring and the maritime landscape are largely ignored.

2. Maritime archaeology was first rationalised as a sub-discipline defined as “The scientific study of the material remains of man and his activities upon the sea” (Muckelroy 1978) and as such has traditionally focussed upon technology (generally ships) and methodology (underwater archaeology). In spite of recent developments, much of the maritime archaeological discourse has remained firmly within traditional techno-functional studies and typologies. One example of this is McGrail’s classical definition of boat typology (McGrail 2001: 8–9). This is equally reflected within the study of boats and seafaring in prehistory. Socio-technical questions, social agency and the role of maritime technologies and activities in the creation of identity and social organisation, are issues that have not been thoroughly considered.

In general, any discussion about seafaring in prehistory has been based either on boat archaeology i.e. questions on technology, for example “Were boats sailed or paddled?” or, solely upon the trade and the exchange of raw materials. The social side of seafaring and the relationship people may have had with the sea are often overlooked.

3. Finally and pertinently, one reason why the role of prehistoric seafaring has had so little consideration in the central Mediterranean, is that there are few prehistoric watercraft and no seafaring vessels preserved in the archaeological record. As such the majority of our evidence for prehistoric seafaring and maritime activity in general, is secondary evidence. Having argued above that maritime archaeology has been dominated by technological studies, it is unsurprising that without the boats—the actual technology, so to speak—the analysis of maritime activity within this region and period has slipped out of both maritime and mainstream archaeological discourse.

This poses us with a paradoxical problem, the circulation of obsidian was a maritime phenomenon, and seafaring played a crucial role within this network of trade and exchange which is considered to be one of the largest and most complex in prehistory. Without the preservation of the actual technology—the boats—how can we study this activity?

Seafaring as a mechanism for trade and exchange

Archaeology due to its very nature, facilitates the study of material culture. Traditionally, an understanding of people and their actions can be inferred through the archaeologically preserved remains of lives, settlements, houses, possessions and rubbish, i.e. the material world in which people lived. Leading on from this perhaps, one of the most useful indicators of *action within the landscape*, of lives being lived, journeys made, social contacts and organisation, is that gained through the identification of “foreign” objects within an assemblage, raw materials or stylistically recognisable objects which have been moved from their point of origin through the landscape by trade and exchange mechanisms or direct procurement (Robb and Farr 2005; Robb 2005).

Due to this, “trade and exchange” has become an archaeological category and focus of much research. However, the emphasis of these studies has often been placed upon the importance of provenancing the materials, and this is especially true in the case of obsidian. Whilst this provides an undeniably vital starting point it is equally necessary to research the social relationships which have enabled and led to the movement of the materials in the first place. Whilst one purpose of trade and exchange mechanisms is to fulfil the need to procure and obtain artefacts or raw materials, another, is to create and maintain existing social relationships upon which such mechanisms rely (Mauss 1990; Perlès and Vitelli 1999). Therefore the emphasis of such studies must go beyond the materials themselves and refocus upon the people and the actions which led to the movement of artefacts which we see in the archaeological record. To do this it is necessary to look beyond sourcing towards the social organisations and necessary relationships which underlie them, setting the archaeology in its context. So often in the past we have not done so: pots, lithics and ground stone axes are seen to ebb and flow across the Mediterranean basin on general trade and exchange maps, where the arrows sweep across land and sea irrespectively. Yet, whilst it is often joked that pots “don’t have legs,” why then are the human narratives behind the journeys of these objects so often ignored?

We know that obsidian was circulated around the Mediterranean by boat in the Neolithic. We also know that it is a bias of the archaeological record that what we see as having been traded in the past, is merely that which has been preserved (Skeates 1992). It is more than

likely that along with the circulation of imperishable materials such as the obsidian, flint or ceramics, organic materials such as food and water, animals, basketry or textiles which have not been preserved, were also circulated. Equally, in addition to the movement of the people who carried these items was their individual and cultural knowledge, skills, beliefs and ideas. Seafaring, therefore played an important role within these Neolithic trade and exchange mechanisms.

Trade and exchange are irrevocably linked to mobility and travel from the local and regional scales to that of long distance movement within the landscape: “What we consider archaeologically as ‘trade’ may often be a by-product of travel and interaction undertaken for other purposes” (Robb and Farr 2005). It is for this reason that in the following discussion of seafaring in the Adriatic, this paper refers to ‘journeys’ and ‘travel’ rather than ‘mobility’ and ‘raw material circulation.’ This is more than simple semantics, it is a realignment of what is considered to be important, introducing a social dimension, which moves us beyond mere discussions of trade and exchange.

Seafaring technology

Evidence of Neolithic boats in the Mediterranean is sparse. The earliest known Italian boats were found at the submerged site of La Marmotta on Lake Bracciano (Fugazzola Delpino and Mineo 1995; Farr 2001). It is most likely that on the coast similarly simple vessels such as reed or log boats would have been used. During the Neolithic it would be unfounded to hypothesise anything more complex, there is no evidence for sailing anywhere in this period. The evidence for sailing does not appear until c.3100 BC in the very particular context of the River Nile (Johnstone 1980). It is likely therefore, that these Neolithic boats would have been paddled (Fig. 5).



Fig. 5 Paddled experimental *Papyrella* reed boat. (photo: Henry Tzalas 1995)

Whilst this assumption has direct consequences for the evidence of longer distance maritime trade and exchange, such as the appearance of Pantellerian obsidian on the Italian mainland and Sicily or, Liparian obsidian found on Malta, it also effects what appear at first to be short water crossings. It is necessary therefore, to dispense with our present day notions of distance, time and accessibility if we are to try to understand travel in the Neolithic (Broodbank 2000). Similarly this has social implications for the processes of trade and exchange, both on land and sea, knowledge, spatial awareness and navigation would have been crucial.

The lack of archaeological boat remains in this region and period may at first seem rather unfortunate. However, it forces us away from the traditional study of *boats as technology* in terms of production, towards a discussion of *seafaring technologies*, viewing seafaring itself as a technological development, a complex practice involving specific skills and knowledge. In this way it becomes possible to discuss and reconstruct prehistoric seafaring in this region separately from in depth discussions of boat technology. Instead all that is needed is a knowledge of the types and general capacity of boats which may have been available, and it is through detailed research of prehistoric vessels in other areas and through ethnographic research (respectively McGrail 1987; Blue et al 1997; Ushijima 2000) that this is made possible.

If seafaring is studied as a socio-technical process therefore, questions of journeys, social organisation and temporality can be addressed, thus allowing a progression from the technical minutiae towards answering more general questions about prehistoric travel, social organisation and knowledge within this region.

Specific journeys

When evidence for exchanged materials is found on a site, various processes such as direct procurement or down the line exchange, which may have included any number of short increments of travel, may have taken place (Renfrew 1975). This problem of equifinality means that it is difficult to understand how far people were actually travelling and to what extent long distance exchange is reflective of long distance travel.

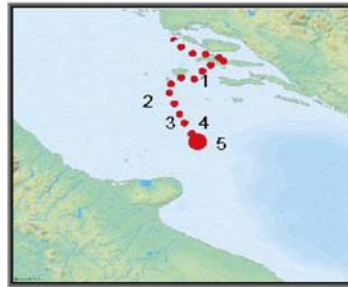
On land this may be difficult to deduce for only very rarely is it possible to glimpse people or goods in motion. In the case of maritime transport however, it is often easier to deduce the minimum length of journey that would have to have been undertaken by any individual or group, from the minimum distance from the mainland to an island, for example, from Sicily to Malta. This has implications for knowledge and spatial awareness and familiarity with landscape or the ability to navigate, as well as organisation, duration and time spent away from village life. This level of inference is very rarely visible within terrestrial archaeology.

Seafaring as social action

Why is seafaring social? To answer this it is necessary to unpack our ideas of what seafaring truly is. When seafaring is viewed as a mode of travel, a way to cross space, to enable the transportation of people and ideas, in addition to artefacts and materials, and as a means of communicating and sharing knowledge across the landscape, it becomes not only a very social activity but our questions and answers become relevant to studies of Neolithic travel in general, whether it be by land or sea. One of the main themes to come out of this perspective of seafaring as social action, is that of knowledge.

Fig. 6 Locating overselves today: a representation of time, space, and knowledge of place

Travelling to Palagruza: A modern perspective



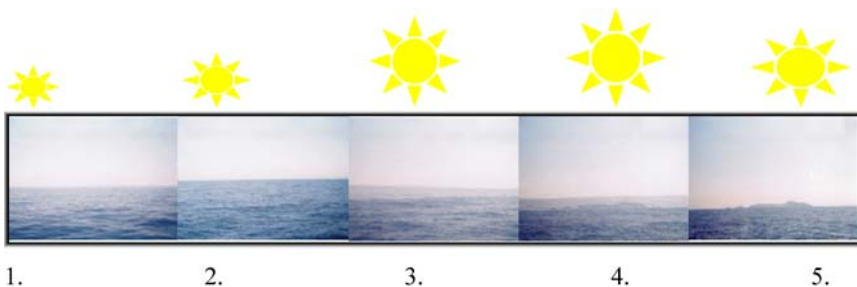
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Route and Loci

Discussion of specialist knowledge and skill should not necessarily be reserved for discussions of production but can be reviewed in relation to the process of exchange and therefore travel and seafaring itself. Knowledge of our surroundings is gained through our perception of the landscape, yet our existing knowledge and belief affects what we perceive and how we treat incoming information, what we select as relevant. In reference to travel and navigation and, in particular, seafaring where decisions and choices must constantly be updated due to changing conditions, knowledge and skill can be seen as socially constructed and influenced (Farr 2001; Robb and Farr 2005).

Seafaring is a skill which requires knowledge on a number of different levels. What may be referred to as ‘world’ knowledge involves spatial and temporal awareness and an understanding of land and seascape and a perception of surroundings, whilst ‘local’ knowledge involves navigational lore, local weather and current conditions, location of resources and other social groups.

Knowledge of the land and seascape would have been vital especially when traversing open water or when visibility was bad. Bourdieu (Gell 1985) used the concept of practical mastery theory to describe familiarity with practical space, which is subjective as opposed to Cartesian space (a map or chart), which is objective and not subject centred (see Figs. 6 and 7). With practical mastery, knowledge could be passed between people and maintained through subjective oral traditions and collective memories. Mental maps of a sequence of memorised images or a chain of events could be recollected. Gell, however, argues that



1. 2. 3. 4. 5.

The Journey (Bourdieu’s Practical Space)

Fig. 7 The same locales as experienced. Orientation would depend on awareness of time lapsed and local conditions, including sea-state, swell size and direction, position and height of the sun, visibility of clouds and eventually visibility of the island itself.

this would not be sufficient (Gell 1985), as to be orientated within an external coordinate it is necessary to create a logical form of spatial knowledge so that perceptual information and images can be matched with perceived spatial knowledge. In the case of navigation this includes knowledge of landscape and seascape (in which I would include currents, prevailing winds and wave formations), lunar cycles, star courses and navigational lore to enable speed, drift and heading to be reckoned. In addition to such specialised knowledge and skills, the need for fresh water, food or shelter may indicate necessary formations of social alliances. It is no wonder therefore that seafaring has been described as a specialist occupation.

To study some of these ideas in context the case study of the Neolithic circulation of obsidian across the Adriatic shall be used.

Case study: Travelling across the Adriatic

The transportation of obsidian from the island of Lipari around the southern Italian coast and across the Adriatic to the Dalmatian islands into Croatia, indicates that people were travelling between Italy and the Balkans during the Neolithic (Forenbaher 1992, 1997) (Fig. 3). However, this line of travel is not only unilinear—there are marked similarities between the south eastern Italian Neolithic and Balkan Neolithic, as discussed for example by Robin Skeates amongst others (Skeates 1992), and it has been argued that the initial spread of the Neolithic may also have followed this maritime route across the Adriatic into Italy as seen through the initial spread of Impressed Wares (Price 2000). People were crossing this stretch of water in both directions throughout the Neolithic (Fig. 4), bringing knowledge and beliefs with them as well as raw materials and artefacts, and as such Liparian obsidian can be found on sites within this region.

This investigation focuses upon a trans-Adriatic crossing between the Dalmatian coast of Croatia and the Italian peninsula. Whilst the crossing outlined (Fig. 4) is a suggested route, it has been carefully selected in relation to the shortest distance, currents and winds and the presence of islands necessary for rest stops. In addition, these islands: Tremitis and Palagruža and the Dalmatian islands have Neolithic sites and Liparian obsidian, showing that there was Neolithic activity in the region and that they were within the exchange network.

The distance of this entire crossing is approximately 100 Nautical Miles (NM) direct (Heikell 1998; Simović 1993; Thompson and Thompson 2000), although winds and currents would have affected the actual route. As for identifying prevailing wind directions in the Neolithic, this work draws from Murray (1987) that prehistoric winds were similar to those today. Similarly, as there has been no significant bathymetric change, the direction and strength of prevailing currents would also have been similar to the present, although there would have been a few local differences. As such it is possible to use this information combined with a basic knowledge of the boat capacity to identify probable routes, and when this is combined with the archaeological evidence, the argument for these routes is strengthened.

Traditional questions have focused on the exchange system which may have enabled this spread of obsidian, however when seafaring is viewed as social action, it becomes more important to ask questions about the knowledge needed to travel across the stretch of water, and how this knowledge was maintained. Similarly, the knowledge and skill needed for this open water crossing may have been different from that needed to make local coastal trips within site of familiar land. Therefore it is possible that not all of the Neolithic population would have held this specialist knowledge, in turn introducing questions about specialization and social differentiation.

In regard to a trans-Adriatic crossing, it is possible to identify what may be referred to as preparatory knowledge, for example, where to go, when to go and how to go, as well as what,

and possibly who, to take. In addition to this would be the knowledge needed during the trip itself, immediate knowledge, which includes being able to answer the questions of “where am I?” and “how much time has passed?.” These latter questions are dynamic and answers would constantly be updated using perception of the surrounding environment, experience and belief.

On the one hand, seafaring provided easy contact with coastal groups, perhaps easier than traversing mountains and valleys when travelling overland. Yet on the other, the sea can be described as having a terrain or topography with passes and routes in the same way as the land has mountain passes and impasses. Not all waterways present equal accessibility at all times of the year, month or even day, due to weather conditions, prevailing winds, currents and tides. This affects the organisation, decision-making, knowledge and skills involved in each journey (Farr 2001; Robb and Farr 2005).

Route knowledge-where to go- depends upon knowledge of the landscape and the cultural landscape, for example, when crossing the Adriatic, a stop at the mid Adriatic island of Palagruža may be desirable for rest and perhaps the collection of good quality flint from the outcrop on the island (Bass 1998; Kaiser and Forenbaher 1999). However, before the necessity of navigational knowledge and *how* to get there, is the *a priori* knowledge of the island’s existence. A knowledge that could be passed from person to person. The island is sometimes visible from the mainland but only in good conditions, even in the Neolithic, when it is thought that visibility would have been better due to lower levels of pollution, the island would not always have been seen from land. Instead it may have been possible to locate its approximate position on the horizon from cloud formations which often form over islands and increase their visibility.

Once the existence and location of the island has been established, other considerations may be whether there is food and water on this island (and incidentally there is not water), whether it would provide shelter and in which wind directions it would do so, and whether there are other people upon the island who would be welcoming. We must not forget that Neolithic travellers were not crossing an empty landscape.

As for questions as to how and when to make a trip, account must have been taken of general weather conditions, which includes knowledge of seasonal changes and an understanding of tides and currents. Whilst the Mediterranean is not strongly tidal, there are tides and local currents which would considerably affect small boats travelling at low speeds. A general understanding of the tides and thus lunar time is necessary to at least a basic extent for planning when to make an open water crossing. This reveals an understanding of the relationship between lunar cycles and the sea, something which may not be visible to those studying village life and agriculture in isolation as the agricultural cycle is mainly governed by solar time.

Once a decision has been made to make an open water crossing this general knowledge is incorporated into decision making as the conditions change.

Whilst at sea, perhaps the most important question after *where* you are going is where you *are* at the present time, and this relies on spatial awareness, local knowledge and navigational lore (Figs. 6 and 7). Skills of pilotage (when in coastal waters and in sight of land) and navigational knowledge when in open water out of sight of land, would have been necessary. As well as knowledge of the landscape and coastal and island recognition, it includes a local knowledge of seascape and the cues which this provides: knowledge of prevailing wind directions and strength in certain locations, of sea state and water colour which reflects depth and current direction, wave height, wave length and direction and cloud configurations, together with a host of other natural and environmental phenomena.

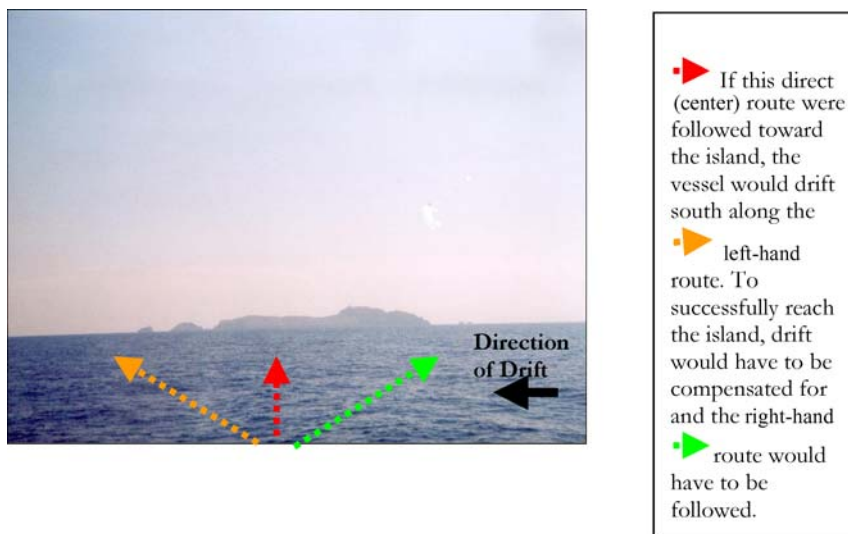


Fig. 8 Effect of drift

However, in calculating position by dead reckoning without the use of a chart, one must also be able to track the amount of time which has elapsed. As well as the spatial awareness, temporal awareness is critical, and a knowledge of sun (day) or star (night) tracks helps the calculation of lapsed time (Fig. 7). In addition to this, before one can calculate heading, i.e. in which direction to travel, lateral drift, a fairly invisible force when travelling in open waters at slow speeds, must be considered and compensated for (Fig. 8).

Crossing from the Gargano peninsula to Palagruža and on to Croatia, an average southerly current of 1 knot (nautical miles per hour) can be expected (Fig. 4). To a modern vessel travelling at 5 knots or more this has only a slight affect but assuming speeds of prehistoric vessels taken from Tzalas's trial of a papyrella (Fig. 5) (Tzalas 1995), or Broodbank's calculations of log boats (Broodbank 2000), both travelling roughly at a speed of under 2 knots, this is quite a considerable force. Therefore when travelling sideways at the same speed or half the speed which you are travelling forward, a basic knowledge of vectors and speed over the ground would have been necessary if any planned destination were ever to be reached. In relation to Fig. 8, once the island became visible, paddling towards it directly in a straight line would leave a vessel drifting off course, in the case of Palagruža the next land fall would be at a considerable distance—if you were lucky.

In addition to this risk, is that of bad weather or storms blowing up once out on the water. A crossing of this length at a speed of around 2 knots would have taken anywhere between 24–60 hr depending on conditions and direction (see Fig. 4) (highlighting the necessity of a stop-over). If however, the weather changed, after a certain number of hours there would be no chance of returning to shore. The Sirocco wind regularly blows in the summer months with strong hot winds, whilst the Bora can blow from the northeast with fierce cold winds funnelling down the Adriatic with speeds of up to 60 knots. Both these winds bring bad weather and can last for several days at a time. For a small paddled vessel the risks would have been considerable.

Even without an extreme wind, however, when travelling by boat rather than on land by foot, one is in constant motion. The boat is constantly drifting with the current and being

pushed by the wind, therefore unless these are both in the direction in which you wish to travel, it is not possible to stop and rest. On land, it is possible that a journey may be broken into any number of increments and therefore, archaeologically, the temporality of the journey is difficult to decipher. By boat however, crossing open water where there are no islands on which to stop, the temporality of the journey is clear. The journey has its own impetus, seafaring is an immediate and dynamic activity, success would have been reliant on the crew working together in close cooperation, sharing skills and knowledge, but also the risk. The sociality of seafaring as process, therefore, would lead to the creation of relationships and identity amongst Neolithic seafarers.

Briefly returning to the theme of boat speed at this point, it is relevant to highlight that the slowness of such prehistoric craft would have meant that even what may appear as short open water crossings would have taken a considerable amount of time and if vessels were paddled, considerable energy too. Therefore, journeys would have been broken down into sections wherever possible, this would have meant that seafarers were away from home for considerable periods of time. When considering the small social groups of the Neolithic, if a section of this population were regularly absent from village life for a significant period of time it would have a direct influence on village activities, including agricultural practice. As such, it is possible that specific times chosen to undertake such journeys may have been affected as much by the freedom to leave, as it was by the weather conditions. In addition to this, in such circumstances, communication and affiliation with communities along the route would have been vital for the success of a long distance trip. Therefore cultural knowledge of groups and affiliations would also have been necessary.

In summary, a general knowledge base and a local knowledge base would have been necessary for seafaring. This knowledge would have been maintained and disseminated through oral traditions, in which stories, songs or poetry, recounted trips, celebrated deeds and transmitted cautionary advice. However, we can call to mind the old adage “I hear and forget, I see and remember, I do and I understand.” Therefore, one of the most important ways to maintain knowledge would have been through practice and experience from regular trips. This brings us to the question of why people were making these trips. When considering the old perception of seafaring as a mechanism for trade and exchange, the answer would be for the exchange of materials and artefacts, possibly driven by the need for these rare materials, for functional or value reasons. However, when studying the quantity of obsidian travelling around this region (most of which could fit into an average shoe box), it would appear that in fact only a very small quantity was in circulation. If this was the case, the drive behind seafaring may not have been solely related to the material and instead I would argue that it was the need for communication and contact and the spread and maintenance of knowledge which were behind seafaring in the Neolithic. Travel may not have been driven by artefacts, trade and technology but instead by the desire for social communications and knowledge itself.

In addition to this, the risk involved in the journey may have been important in the creation of social identity. Obsidian is thought to have been valued due to its aesthetic qualities and sharp edge as well as the fact that it was not openly available in all locales. However, in reality, the utility of obsidian blades is limited by its lack of strength. Blades dull almost immediately they are used (Pelegrin 1988; Perlès 1990; Carter 1997; Carter 1998; Farr 2001). It may be possible that the real value of obsidian was its symbolism of the journey, the knowledge, skill and risk which had been undertaken.

The importance of travel and communication in allowing flow of knowledge and materials may also be seen in the positioning of sites. Perhaps it is not a coincidence that one of the largest Neolithic communities is that on the Tavoliere plain on the coast just at the

departure/arrival point of trans-Adriatic journeys. Equally, the constant Neolithic occupation on the Tremiti islands, to the northeast of the Gargano peninsula can be more easily understood when seen in relation to their positioning on the route across the Adriatic (Fig. 4). Crossing the Adriatic from the Italian coast, it would be necessary to consider the importance of the current and prevailing winds and as such, if the important mid-way island of Palagruža was to be reached, disembark north of the Gargano peninsula. The Tremiti islands would therefore have been on route across the Adriatic and the importance of their location becomes clear. With this knowledge is easier to understand why they have continual Neolithic activity. Similarly, the importance of the island of Palagruža itself becomes evident. It is rare in archaeology to be able to pinpoint so precisely an area which would have been a meeting point of people, materials and ideas, but in this case, this is exactly what we can deduce. Again, this helps to explain the rather unusual archaeology on the island (Bass 1998; Kaiser and Forenbaher 1999).

Research into seafaring in this way can therefore prove useful not only for maritime archaeologists, but also for land-based archaeologists. Travel and seafaring in the Neolithic were more important than past village-centric studies have allowed, an analysis of seafaring as social action really can provide new ways to understand Neolithic life and social organisation in this region.

In the past Neolithic life has been portrayed as village-centred, yet an understanding of the importance of travel, especially maritime travel, opens up new questions about the validity of such a generalisation. It becomes clear from an investigation of the circulation of materials in the central Mediterranean that not all Neolithic life was centred within the village, and not all Neolithic people were exclusively concerned with agriculture. The analysis of seafaring and the skills and specialist knowledge which it involved may be a link in the deconstruction of this traditional stereotype of the Neolithic rural idyll.

Conclusions

Relationships and practices that are generally invisible within archaeological narratives can be examined with a proper consideration of maritime activity. The relationship between people and the sea has had little consideration in traditional Mediterranean archaeology which research has tended to stop at the high-water mark. Whilst seafaring has been studied in terms of technology, viewing it as a social process allows conclusions to be drawn about necessary knowledge, social organisation and identity, placing the process of seafaring firmly in its cultural context. In addition, this social approach formulates new questions which we can ask of the archaeological material and opens up fresh ideas for future research both within the terrestrial and maritime archaeological spheres.

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