

EARLY MODERN TRAVELLERS IN THE AEGEAN: ROUTES AND NETWORKS

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This study uses the collection of fifteenth- to twentieth-century travel literature from the BSA library to consider issues of (elite) mobility in the Aegean Sea. These texts contain a wealth of information on the routes chosen by travellers between various islands and mainland ports, and on the navigability of the Aegean basin. By using a combination of computational Proximal Point Analysis and Social Network Analysis, these routes are visualised, and discussion focuses on how navigation varied both between centuries and according to the traveller's place of origin. It is suggested that travellers were dependent on other sorts of networks, and that routes travelled were shaped greatly by the economics and politics of the day. It is also proposed that methodologies used in this paper offer great potential for engaging broad-scale sets of archive data.

INTRODUCTION

The Aegean Sea was well-travelled between the fifteenth and twentieth centuries. A number of diaries, encyclopaedias and travelogues were written during this early modern period, and they document in great detail some of the journeys taken. Furthermore, the names of some of those who travelled are well known to scholars of antiquity – George Wheler (1682, with Spon), William Martin Leake (1830 and 1835), J. Theodore Bent (1885) – as their diaries are useful sources on the pre-modern topography and ethnography of Greece (Bennet, Davis and Zarinebaf-Shahr 2000; Sutton 2001; Wagstaff 2001). Some of these early travellers made for Greece seeking out ancient monuments or antiquities, motivated by dreams of a Grand Tour or of classical-mania.¹ Others, however, merely passed through on more extended travels further east, for pilgrimage, as diplomatic envoys, for trade, or for scientific business.² Yet what all of these travelogues have in common is that they contain a wealth of valuable information on *how* routes were plotted between coasts and islands: they can be read to tell us about how different places within the Aegean basin were accessed (cf. Bennet and Voutsaki 1991; Broodbank, Bennet and Davis 2004). Many of these travellers moved around by boat, and the routes they chose constitute a well documented matrix of maritime connectivity.

‘Connectivity’ of this sort has been on the agenda of Mediterranean scholars for almost a century now (Braudel 1949;³ Horden and Purcell 2000; and Broodbank 2013 for the ancient Mediterranean). That regions and micro-regions are linked by the ways people move between them is now well understood, and the importance of mobility and connection in and around the Aegean Sea has now been well treated.⁴ Movement through and experience of a landscape

¹ On the motivation of travellers of various nationalities and the reception of the classical past in the early-modern period, see Constantine (1984), Stoneman (1987), Eisner (1990) and Augustinos (1994).

² See Malamut (2004), 181–3, for a summary of the various reasons for which ‘travellers’ travelled; see also the division of types of ‘travellers’ by Stagl (1995).

³ Although Braudel did not use the term ‘connectivity’ explicitly, his central thesis was the same to that advanced half a century later by Horden and Purcell: that the Mediterranean comprised smaller units that interacted with one another.

⁴ See Agouridis (1997), Morton (2001), Papageorgiou (2008a), Constantakopoulou (2007) and Tartaron (2013). On routes plotted around and across the Aegean Sea, see *Homeric Hymn to Apollo* 30–44; Apollonius of Rhodes, *Argonautica* 1.559–608 and 1.910–88; and Pseudo-Scylax, *Periplus*.

connects both people and places (Tilley 1994; Ingold 2000; Gibson 2007), and the sea provides people with a means of communicating with one another (cf. Broodbank 2000, 18). Connections are made visible through various datasets, and travel is a good proxy for shedding light on how processes of interconnection change over time.

Computational techniques have been used frequently over recent years to investigate issues of connection, route-making, and travel on land-based areas (Bevan 2013). However, few methodologies pioneered are appropriate for specifically *seascape* environments. The most common technique employed uses cost-surface modelling (see Lloberea 2000; Posluschny 2010; Wilkinson 2014; Güimil-Fariña and Parcero-Oubiña 2015; and Palmisano 2017), a system that considers the ‘obstacles’ within a landscape and calculates the path of least resistance between two given points (cf. Conolly and Lake 2006, 234–62). In a least-cost path (LCP) analysis this renders a single path to connect two known dots, while other techniques can consider a range of possible paths. ‘Obstacles’ are generally considered to be topographic, whereby landscapes are represented by raster images whose grid cells correspond to slope values.⁵ Slopes of a steeper gradient are ‘penalised’ by the model to a greater degree, accounting for the extra effort required in travelling over the slopes of a continuous terrain.⁶ It is clear, then, that some sort of base layer is required, which in most instances can be represented by a digital elevation model (DEM). However, no comparable base layer can be used for analysis of maritime landscapes. The ‘obstacles’ in modelling maritime routes would have to be based on tidal and wind patterns and, given that these systems alter significantly seasonally, daily, and even hourly and in highly localised ways,⁷ no single raster base map can simulate shifting sailing conditions.⁸ Cost-surface analysis could suggest a route between two points under *specific* types of wind or tide conditions, but it could not suggest (without very complex models) how this route should be adapted in different circumstances. Furthermore, it is inadequate to plot routes only between known ports. On the one hand, the location of harbours relative to rocky coastlines and headwinds, or their distance or visibility from other harbours, made certain places more or less accessible to one another. But on the other hand, it is also important to remember that ships also stopped not infrequently at less formally designated anchorages and stop-over points (Fig. 1), either by choice or by necessity: route modelling must consider that an actual destination is not always the same as an intended destination. For investigating issues of mobility and connectivity in specifically *maritime* spaces, therefore, environmental-based modelling is not that helpful. One cannot start from the landscape itself; one must, instead, work from other datasets.

This article presents a different sort of computational technique for engaging with issues of maritime navigability. By performing a statistical analysis on a large corpus of early modern travelogues, the role of seafaring in establishing connectivity will be considered. First, patterns will be identified that elucidate the main navigable ‘corridors’ of the Aegean Sea. Second, the routes taken by travellers will be compared to other historical networks (e.g. cultural, economic and political networks), and it will be discussed to what extent travellers relied on these other routes in charting their own voyages.

⁵ Variations on this approach exist. One might investigate all the paths possible from a given point instead of connecting to known points (Fábrega-Álvarez 2006; Howey 2011; Déderix 2017), or one could combine route analysis with visibility analysis (Wheatley et al. 2010; Lock, Kormann and Pouncett 2014).

⁶ ‘Penalty’ values for raster cells could just as easily be scored against different criteria, such as the time and effort taken to change modes of transport (cf. Newhard, Levine and Phebus 2014).

⁷ Pryor 1988, 87–90; 1989; Papageorgiou 2008b. Portolan charts and sailing handbooks were in circulation throughout the early modern period, but conditions were such that these could not always be followed.

⁸ Some projects have attempted to circumnavigate this issue by randomly sampling set tide and wind values from databases of seasonal or annual data, and by using different draws in each iteration of a model (Callaghan 2003; Di Piazza, Di Piazza and Pearthree 2007; Callaghan and Scarre 2009).

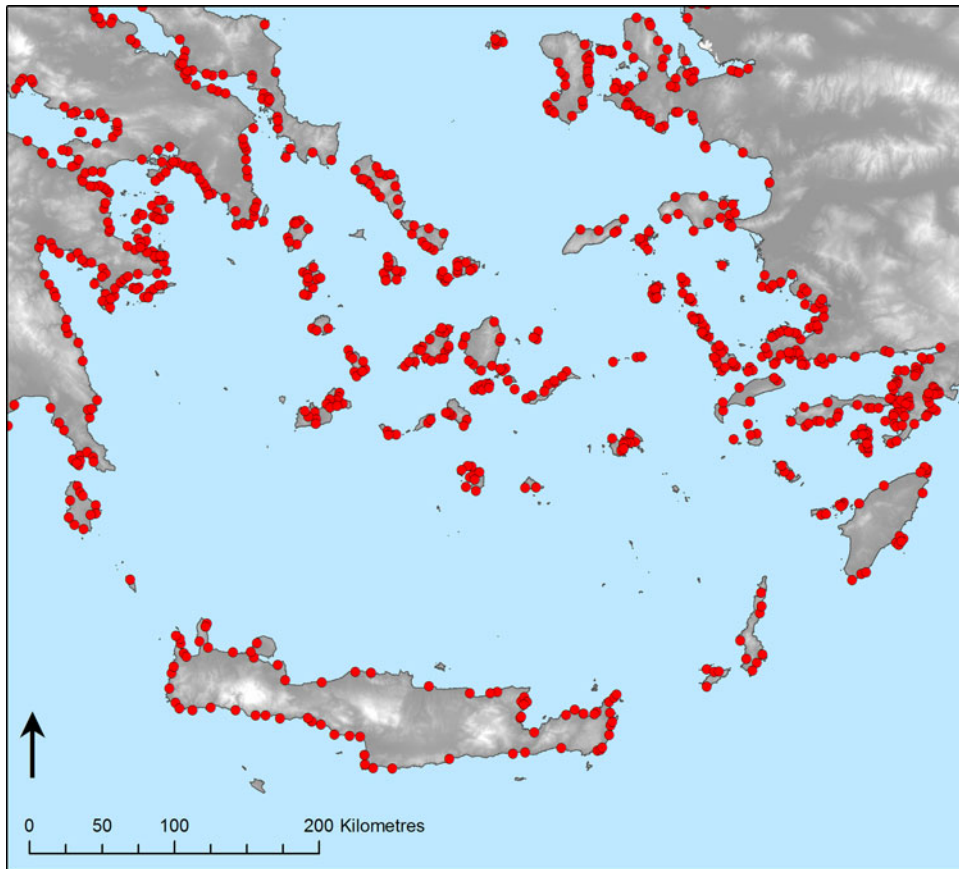


Fig. 1. The location of c.1200 potential anchorages around the Aegean basin, based on modern sailing charts and nautical maps.

TRAVELLERS AND THEIR ITINERARIES

The dataset for this study comprises items that are available for consultation in the library and rare books store of the British School at Athens. Forty-one volumes were consulted, one of which (Yerasimos, 1991) collated, for the purpose of a similar quantitative analysis, a number of travel sources.⁹ Furthermore, additional information on sources was obtained from the Aikaterini Laskardis Foundation web resource *Travelogues*.¹⁰ The authors cited are referred to as ‘travellers’ and their works as ‘travelogues’, but, as discussed below, some ‘travellers’ did so from the comfort of their armchairs, and some of the ‘travelogues’ are more encyclopaedia than diary.

The journeys of 104 travellers are studied here (Table 1). The list is non-exhaustive,¹¹ but is representative of some of the material available for study at the BSA. Travels conducted between

⁹ The multi-volume compilation of travel writing by Simopoulos (1970) is indeed another goldmine of travellers’ accounts for this period. However, the focus of Simopoulos is on synthesising and critiquing the observations of travellers *at specific places*, not so much on the routes taken between different places: sometimes information on routes is unclear or not included. As the resolution of the data at the level of the route is variable, and in order to produce as even and comparable a dataset as possible, the decision was taken not to mine for information from Simopoulos (1970), and to focus instead on syntheses whose focus is more avowedly on routes and place-finding (e.g. Yerasimos 1991) and to go back to the original texts themselves.

¹⁰ <<http://eng.travelogues.gr/collections.php>>, accessed 23 April 2019.

¹¹ As noted above, Simopoulos (1970) provides an exhaustive study of places visited, even if it is non-exhaustive for routes taken.

Table 1. Travellers' texts consulted in this study.

Name	Date of visit	Origin	Reference
Affagart	1519	German	Yerasimos 1991
Akdersey	1581	British	Yerasimos 1991
Alcarotti	1588	Italian	Yerasimos 1991
Bellievre	1521	French	Yerasimos 1991
Belon	1547	French	Yerasimos 1991
Bent	1885	British	Bent 1885
Biddulph	1600	British	Yerasimos 1991
Bockenberch	1565	Dutch	Yerasimos 1991
Bodenham	1551	British	Yerasimos 1991
Bondelmontii	1420	Italian	de Sinner 1824
Bonsignori & Michelozzi	1498	Italian	Yerasimos 1991
Boschini	1658	Italian	Boschini 1658
Breuning	1579	German	Yerasimos 1991
Bröndsted	1826	Danish	Bröndsted 1820
Buchon	1911	French	Buchon 1911
Castela	1601	French	Yerasimos 1991
Celini	1582	Italian	Yerasimos 1991
Chateaubriand	1811	French	Chateaubriand 1811
Choiseul-Gouffier	1782	French	Choiseul-Gouffier 1782
Clarke	1818	British	Clarke 1818
Dallam	1599	British	Yerasimos 1991
Dapper	1703	Dutch	Dapper 1703
d'Estourmel	1832	French	d'Estourmel 1848
de Beauvau	1604	French	de Beauvau 1615
de Billerbeck	1581	French	Yerasimos 1991
de Bonnet	1565	French	Yerasimos 1991
de Bruyn	1693	Dutch	Jurriaans-Helle 1998
de la Borderies	1537	French	Yerasimos 1991
de Nicolay	1551	French	Yerasimos 1991
de Pavie	1585	French	Yerasimos 1991
de Pinon	1579	French	Yerasimos 1991
de Salignac	1522	French	Yerasimos 1991
de Thevenot	1689	French	de Thevenot 1689
de Vega	1538	French	Yerasimos 1991
de Vlaming	1565	Dutch	Yerasimos 1991
Dei	1462	Italian	Yerasimos 1991
di Castel Durante	1591	Italian	Yerasimos 1991
di S. Maria	1687	Italian	di S. Maria 1687
Dreux	1665	French	Pernot 1925
du Fresne-Canaye	1573	French	Yerasimos 1991
Favolio	1545	Dutch	Yerasimos 1991
Fernberger	1584	Austrian	Yerasimos 1991
Galt	1813	British	Galt 1813
Giuliani	1584	Italian	Yerasimos 1991
Hurs	1536	Croatian	Yerasimos 1991
Kiechel	1588	German	Yerasimos 1991
Kuynretorff	1520	Dutch	Yerasimos 1991
Lacroix	1853	French	Lacroix 1853
Laurent	1822	British	Laurent 1822
Le Maréchal	1837	Belgian	Le Maréchal 1837
Le Saige	1518	French	Yerasimos 1991
Loupvent	1531	French	Yerasimos 1991
MacGill	1803	British	MacGill 1808
Magius	1570	Italian	Yerasimos 1991
Maurand	1544	French	Yerasimos 1991

Membre	1539	French	Yerasimos 1991
Moryson	1597	British	Yerasimos 1991
Murray	1872	British	Murray 1872
Nutzel	1586	German	Yerasimos 1991
Olivier	1801	French	Olivier 1801
Palerne	1582	French	Yerasimos 1991
Pasch van Krienen	1773	Dutch	Pasch van Krienen 1773
Porsius	1581	German	Yerasimos 1991
Possot	1532	French	Yerasimos 1991
Prefet z Vlkanova	1546	Czech	Yerasimos 1991
Randolph	1689	British	Randolph 1689
Roasaccio	1598	Italian	Yerasimos 1991
Rofs	1840	German	Rofs 1840
Sanderson	1585	British	Yerasimos 1991
Schram til Hammergaard	1590	Danish	Yerasimos 1991
Schweiger	1578	German	Yerasimos 1991
Sherlet	1598	British	Yerasimos 1991
Somer	1591	Dutch	de Carla Burri and Bleser 1971
Sommer	1591	Dutch	Yerasimos 1991
Sonnini	1801	French	Sonnini 1801
Stulz	1519	German	Yerasimos 1991
Thevet	1549	French	Yerasimos 1991
Thompson	1730	British	Thompson 1744
Thompson	1733	British	Thompson 1744
Torkington	1517	British	Yerasimos 1991
Tournefort	1700	French	Tournefort 1715
Tozer	1890	British	Tozer 1890
Tschudi	1519	German	Yerasimos 1991
Turner	1820	British	Turner 1820
Ullfeld	1588	German	Yerasimos 1991
van Egmont	1759	Dutch	van Egmont 1759
van Ghiste	1482	Dutch	Yerasimos 1991
van Kootwyck	1598	Dutch	Yerasimos 1991
Viaje de Turquí por Cristobal de Villalon	1555	Spanish	Yerasimos 1991
Villamont	1589	French	Yerasimos 1991
Villinger	1565	German	Yerasimos 1991
von Aschkow	1590	German	Yerasimos 1991
von Bretten	1586	German	Yerasimos 1991
von Breydenbach	1486	German	Geck 1961
von Lichenstein	1587	German	Yerasimos 1991
von Lowenstein	1561	German	Yerasimos 1991
von Rattenberg	1527	German	Yerasimos 1991
von Rauter	1569	German	Yerasimos 1991
von Zunhart	1496	Dutch	Yerasimos 1991
Waddington	1825	British	Waddington 1825
Wheler	1682	British	Wheler and Spon 1682
Wrag	1593	British	Yerasimos 1991
Zwallart	1586	Dutch	Yerasimos 1991
Zygomalas	1576	Greek	Yerasimos 1991

the fifteenth and twentieth century were analysed (Table 2a), and the largest number of datapoints ($n = 65$) comes from the sixteenth century: this is, largely, a result of mining from Yerasimos (1991). Travellers were of 12 different nationalities (Table 2b), but Austrian, Belgian, Croatian, Czech, Greek, and Spanish travellers were each represented by only one text each. The most frequently represented nationalities in this study were French (31 texts) and British (22 texts).

Table 2a. Number of travellers and journeys by century.

Century	Travellers	Journeys
Fifteenth	6	35
Sixteenth	64	197
Seventeenth	10	63
Eighteenth	7	110
Nineteenth	16	110
Twentieth	1	15

Table 2b. Number of travellers and journeys by place of origin of the traveller.

Origin	Travellers	Journeys
Austrian	1	3
Belgian	1	5
British	22	141
Croatian	1	1
Czech	1	2
Danish	2	4
Dutch	14	56
French	31	134
German	18	63
Greek	1	7
Italian	11	106
Spanish	1	8

Travel texts were usually written in the first-person, as the works of scholars, scientists and adventures who aimed both to inform and to entertain. Although these travellers must have relied on the local knowledge of captains, sailors or navigators in plotting their routes, paradoxically, these ‘locals’ seldom feature in the texts.¹² Indeed, when travellers drew on additional sources to supplement their observations they frequently turned to *ancient* sources – the sort which were the preserve of an elite learned class at this time. For some travellers, interaction with contemporary people was largely through observational ethnography. The consequence of this is that the following analysis does not yield patterns about travel and mobility per se, but about *elite* and *western* travel and mobility that was possible to male travellers of a certain class.

The focus of this study is on journeys that were made in the southern Aegean. This relates, primarily, to the islands of the Cyclades and the Dodecanese, and also to the ports of mainland Greece and Turkey. The aim of this study, therefore, is to think about the internal connectivity of the Aegean Sea as a navigable space. For the present analysis, ‘journey’ is defined as a movement of unspecified time without intermediary stops between two places. Journeys made between islands are recorded at the level of the name of the island, rather than of separate ports on the various islands, e.g. ‘Paros to Naxos’. ‘Routes’ are understood as non-fixed entities that comprise many journeys from an initial start-point to an end destination (e.g. ‘Venice to Jerusalem’), and they are, therefore, specific to each traveller. ‘Corridors’, by contrast, are understood as the accumulation of routes by many travellers over time (i.e. areas that encompass commonly taken routes); they are non-physical, but they may have been at certain times

¹² This problem is not exclusive to texts relating to maritime travel. For land travel, too, writers seldom mention the guides or servants, or how local people helped to get travellers successfully past Ottoman authorities and outposts.

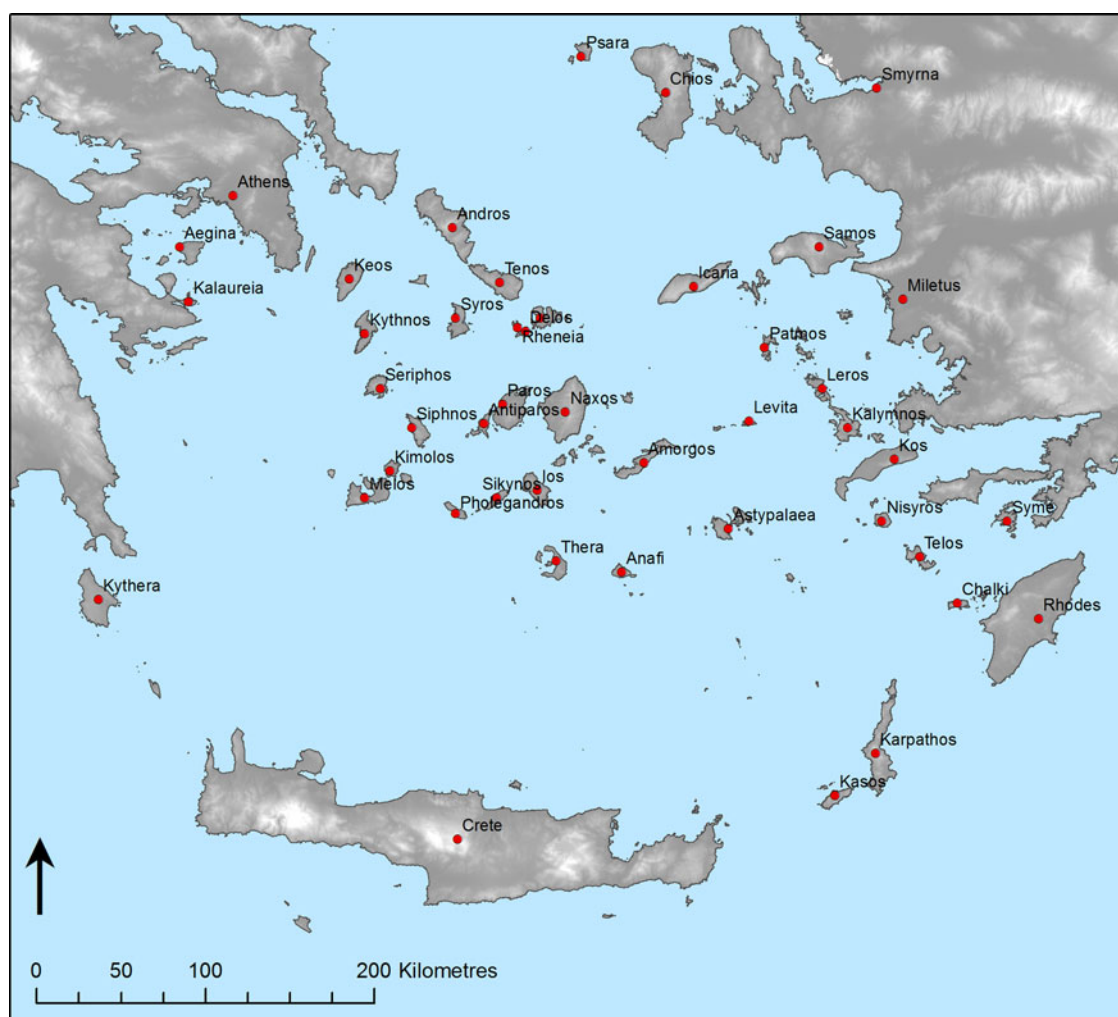


Fig. 2. Extent of the study area, and places mentioned within the text.

illustrated on sea-charts, recorded in texts, or communicated verbally. A ‘network’, moreover, refers to socio-cultural, economic or political systems. This is not to be confused with the network analytical techniques used to explore *physical* sets of journeys (‘route-networks’), and unless otherwise stated the word ‘network’ by itself refers to human relationships. This juxtaposition is important, however, because one of the key aims of this paper is to put physical and human networks side-by-side. Mapping the data in this way, 530 separate journeys were documented, distributed across 6 centuries and 12 nationalities.

Journeys were made to or from 45 islands or ports (‘places’) in the southern Aegean (Fig. 2). Given that there were 530 journeys analysed and that each journey comprises a movement between two places, the aggregate number of times that places were part of journeys is 1060 (Table 3; Fig. 3). Rhodes (81 times), Chios (74), Melos (60) and Samos (56) were the most frequently visited places, while Kalaureia, Kasos, the Milesian Peninsula, Pholegandros and Telos were only recorded as being visited twice each.

What becomes clear from sorting the data is that there is (rather predictably) little obvious relationship between location of a site and its frequency visited. One must consider, instead, the network of routes *between* places, rather than just the places themselves. Therefore, in the rest of this paper the data is considered by means of network analytical methodologies – a set of techniques now well-known to scholars in the social sciences and the humanities that explicitly handle connections between datapoints.

Table 3. Number of visits received by each place.

Place	Number of visits
Aegina	5
Amorgos	21
Anaphi	12
Andros	28
Antiparos	17
Astypalaia	6
Athens	18
Chalki	6
Chios	74
Crete	49
Delos	29
Ikaria	13
Ios	28
Kalaureia	2
Kalymnos	14
Karpathos	15
Kasos	2
Keos	41
Kimolos	6
Kos	49
Kythera	23
Kythnos	17
Leros	8
Levita	4
Melos	60
Milesian Peninsula	2
Mykonos	32
Naxos	44
Nisyros	6
Paros	46
Patmos	39
Pholegandros	2
Psara	8
Rheneia	6
Rhodes	81
Samos	56
Seriphos	19
Sikynos	12
Siphnos	20
Smyrna	17
Symi	11
Syros	25
Telos	2
Tenos	49
Thera	36

SCALE AND METHODOLOGY: A REDUCTIONIST APPROACH?

Analysing the data at this scale might mask some of the more subtle patterns in the travelogue *corpus* – but this is not an issue if the focus, as here, is on broad-scale patterning. The present methodology takes for granted, to some extent, that travellers planned their journeys and that they could go wherever they chose. Yet it has already been discussed that strong, shifting, and unpredictable

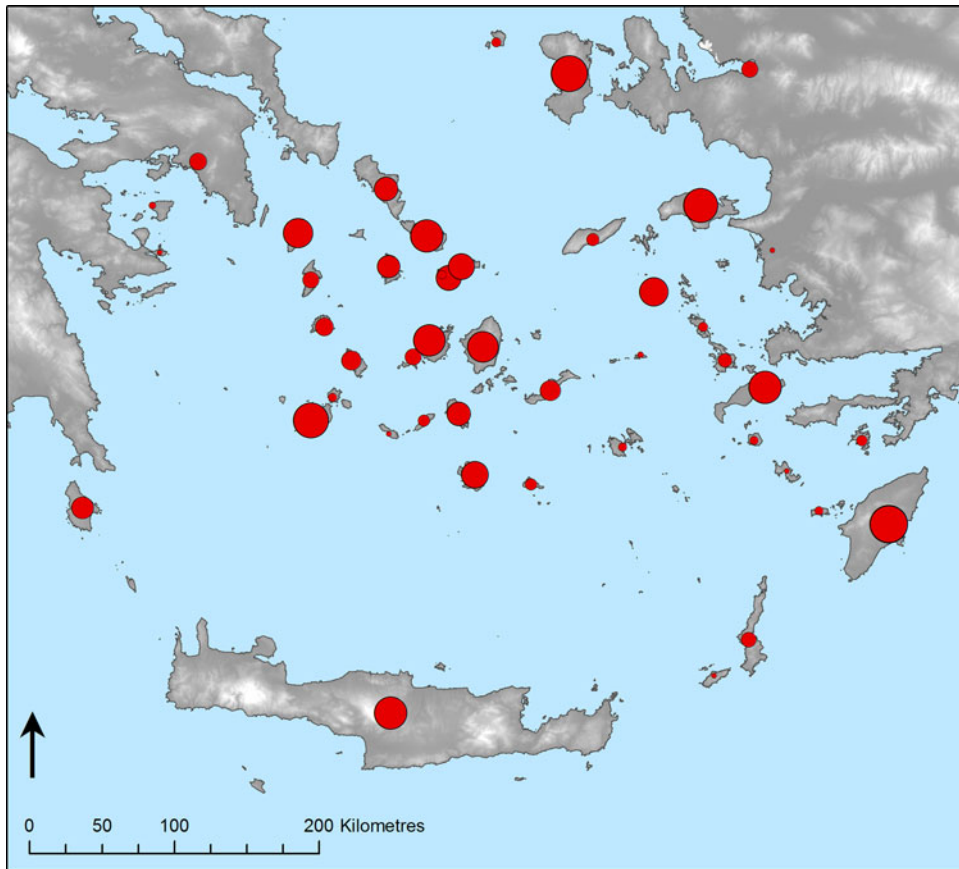


Fig. 3. Map showing the frequency of place mentions in the dataset, where size of point is proportional to the number of times each place was visited (cf. Table 3).

wind and tide patterns made planning journeys practically difficult.¹³ By sailing in vessels of particular size and propulsion,¹⁴ one might aim to reduce some of the problems faced¹⁵ – but the charting of routes was still subject to all sorts of uncertainties.¹⁶ Clearly, journeys made were not always the journeys intended, and the present dataset is actually a dataset of routes that were merely *possible* given the particular circumstances of each voyage. However, both the timespan and geographic region investigated are large enough that, even though there will undoubtedly be

¹³ Much (commercially funded) research is dedicated to modelling contemporary weather systems. Variability and unpredictability, however, are such that there is still no consensus as to what algorithms can be used most effectively to model these systems, on which see Philpott and Mason (2001), Philpott (2005), Tagliaferri, Viola and Flay (2015).

¹⁴ Deliberately excluded in the discussion are travellers who went by steamer. As the interest of the present study is on conditions of mobility and connectivity in the Aegean Sea, and given that steamers could move fairly freely, including journeys made by this sort of vessel would actually tell relatively little about potential navigability. For nineteenth-century journeys taken by steamer whose texts are in the BSA library, see, for example, Waddington (1825) and Chenavard (1849).

¹⁵ It is also particularly useful for understanding the logistics of travel to look (where available) at the times taken for travel between various points. See, for example, Buchon (1911), who records the date on which he arrived at and departed from each of the stopover points on his journey. In this study, travel times are not considered, as the number of texts offering this information are relatively few.

¹⁶ Storm narratives are not infrequent in the travelogue literature, and they go some way to illustrating this point. To pick just two illustrative accounts from the nineteenth-century literature: MacGill (1808, 37–43) describes how he and his companions were forced through stormy conditions to shelter on Kos until the winds were more favourable; and Tozer (1890, 119–21), in light of snow and ‘heavy seas’, laments having not taken a different route between Andros and the islands of the east Aegean.

variations and fluctuations in certain places or texts and at certain times, any ‘bumpiness’ created by anomalies is smoothed over to give a good impression of the main route corridors.

Furthermore, working at a broad scale does not replace close reading, but it changes our engagement with the source material. Over recent years – and owing to the accessibility both of datasets and of computer packages capable of synthesising and transforming larger and more complex datasets – the number of data-intensive studies conducted has risen almost exponentially in the hard sciences, in social sciences and (to a lesser extent) in the humanities (Kaplan 2015; Richterich 2018, 1–12). Moreover, techniques have been developed to identify patterns above the ‘messiness’ or ‘background noise’ necessarily created in synthesising datasets of such magnitude (Gattiglia 2015, 2–3). What these studies have illustrated well is that large sets of archival data reveal patterns and continuities that are not identifiable when texts are read in isolation (Cooper and Green 2015; McCoy 2017). They help to refocus our attention to broader issues that might not be so immediately obvious – such as the themes of connectivity and navigability discussed above. A secondary aim of this paper, therefore, is methodological, and it seeks to explore how data-intensive methodologies can be used productively on the target dataset. Patterns will be evaluated in light of the quality of the data, and the results of the analysis will be used as a *starting point* for a larger discussion on mobility and connectivity.

A COMPUTATIONAL-BASED METHODOLOGY FOR IDENTIFYING ROUTES AND NETWORKS

The data described above are processed by means of a Social Network Analysis (SNA), using computational tools. The general principles of SNA (cf. Hanneman and Riddle 2005) are now familiar to many historians of Greek history and prehistory (Malkin, Constantakopoulou and Panagopoulou 2009; Taylor and Vlassopoulos 2015; Sweetman 2017), and the application of SNA via digital techniques has been discussed extensively, principally by Tom Brughmans and others (see Brughmans 2010; 2012; Collar et al. 2015; Brughmans, Collar and Coward (2016); Leidwanger and Knappett 2018). In an SNA, people, places or things are represented as abstract nodes, and explicit emphasis is put on the connections – or edges – that exist between them. Through the use of various algorithms and statistical tests, one can readily compare the structure of networks, the arrangement of sub-groups within networks, or the most efficient paths between a set of nodes.¹⁷

A combination of SNA and routes analysis has at its core the principle of Proximal Point Analysis (PPA). In PPA, places are inherently ‘connected’ to others by virtue of geographic proximity, wherein the overall connective potential of a place is proportional to the number of its immediate neighbours and their own connections. It follows, therefore, that places central to larger geographic regions will exhibit higher ‘natural’ levels of connectivity. This principle was first discussed in relation to the Aegean basin (albeit less formally) by Jack Davis (1982), who argued that the island of Delos became progressively more important between 1900 and 700 BC as the ‘Aegean’ region grew and became subject to a greater number of connections. Cyprian Broodbank (2000) developed this idea for the prehistoric Cyclades more broadly, arguing that the flow of information and resources depended both on the islands’ proximity to one another, but also on an island’s indirect interactions with its neighbours’ own contacts. Most recently, Carl Knappett, Tim Evans and Ray Rivers (2008), through the creation of their *Ariadne* model, suggested that interactions between Aegean sites in the Bronze Age were subject both to the geographic proximity, but also to a (shifting) ‘centre of gravity’. It is clear, though, that modelling environmental factors only gets one so far. Route-making and path-finding are not purely environmentally determined, but they are subject to human agency, and to social,

¹⁷ Compare to the well-known ‘travelling salesperson’ scenario, where it is required to plot the geographically shortest route between a set of target place nodes, and return to the same place of origin.

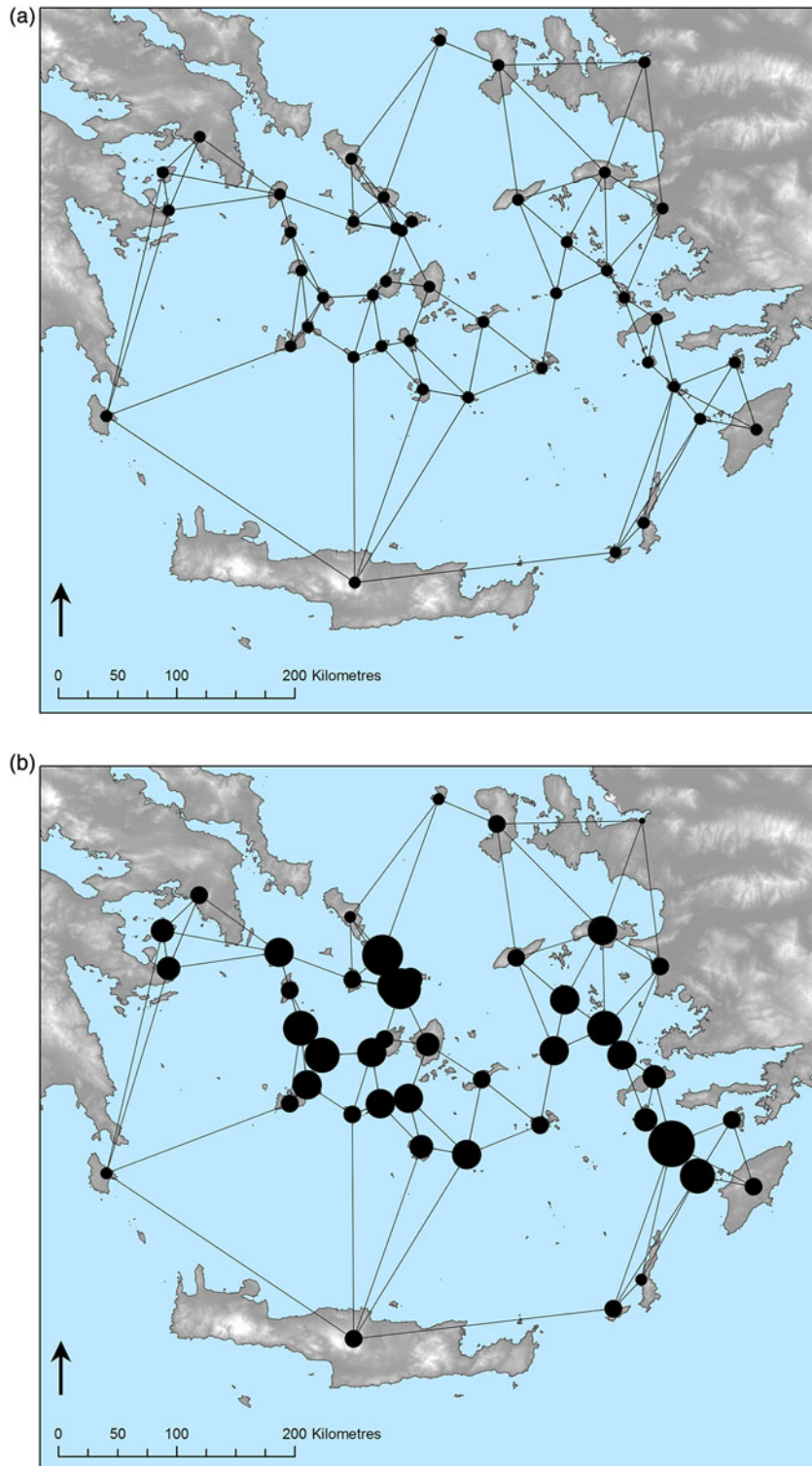


Fig. 4. a) Results of the PPA, connecting each node to three nearest neighbours. b) PPA with the size of each point proportional to the betweenness centrality value of the node.

cultural, economic and political factors. PPA is insufficient on its own for identifying the route networks under investigation here, and it must be used in combination with the travellers' texts.¹⁸

Each of the places identified was visualised as an abstract node in geographic space. For the mainlands, nodes were placed on the approximate locations of known ports; for islands, nodes were placed at a central position. Using the native '*Generate Near Table*' tool in ArcGIS, the three nearest neighbours of each node were identified,¹⁹ and edges were drawn between these neighbour sites in order to produce a PPA network (Fig. 4a). In order to assess the potential connectivity of each place (i.e. to test the principles of geographic proximity as discussed above), statistics for the betweenness of each node were generated via the native tools available in Gephi 0.9.2. Betweenness is a measure of the level of connectedness expressed by a node between other neighbouring nodes, and it provides a useful means of measuring how 'central' a node might be. Visualised graphically where the size of a node is proportional to its betweenness score (Fig. 4b),²⁰ the results demonstrate, rather predictably, that central places like Naxos and Paros, Seriphos and Siphnos, and Kalymnos and Leros have high PPA potential. Places on the 'periphery' of this zone (such as Andros, Crete, Kythera, and Psara) do not.²¹ However, one must remember that while the Cyclades were a closed system, they were also connected at various places to external sailing networks. PPA gives some indication of the shape of this closed system, but, depending on where the boundaries of study are drawn, the ways in and out of external networks are harder to identify.

Each of the journeys identified was visualised as a directed edge between two place nodes. These edges were weighted such that journeys made more frequently in the travelogue record were 'heavier'.²² The result, however, is somewhat difficult to interpret visually (Fig. 5a), and one can run additional tests to clarify the patterning. A betweenness measure of each node was once more taken (Fig. 5b):²³ the results were different in this iteration, given that the betweenness calculation takes account of the weight and directionality of edges, and that these are necessarily different to those generated in the PPA. Maps were produced breaking down the data according to century (Fig. 6) and to the place of origin of the traveller (Fig. 7).

On comparing the overall output with the PPA betweenness network (cf. Fig. 4b and Fig. 5b), some patterns are obvious: places like Chios, Melos and Thera were more popular than an environmentally deterministic model alone would suggest (the reasons for this are discussed more fully below), while the islands of the Dodecanese were visited far less frequently. The point here is a completely obvious one: routes were not plotted for geographic convenience

¹⁸ Very few studies have been done that connect together route modelling with empirical travel data. On-going work by Rebecca Seifried and Chelsea Gardner (the 'CART-ography Project') explores this principle in relation to the Mani peninsula in the southern Peloponnese, and preliminary results (Seifried and Gardner 2019) suggests that LCP modelling conducted under certain parameters can yield 'realistic' results when compared to travellers' itineraries (in this case, the journeys of Colonel Leake). The next phase of the project will involve testing the models constructed against a larger selection of travellers' accounts.

¹⁹ In addition, Crete was connected manually to the islands of Kythera and Kasos.

²⁰ Compare this graph to the visualisation in Fig. 3.

²¹ There is, quite obviously, an edge effect here. If the geographic region of this study were expanded the contrast between the high scores for the central nodes and the lower scores for those on the 'periphery' would not be so great; but the difference would still be there. Therefore, while the pattern is somewhat 'exaggerated' here it is, in fact, still a *real* pattern.

²² This model is similar to the Stanford ORBIS model of connectivity in the imperial Roman world (Scheidel 2014), for which places are considered as abstract nodes, and are linked to one another by means of network connections. Whereas the model in the present paper weights edges on the number of journeys attested between nodes, the ORBIS model considers travel times between places. Furthermore, the present model is descriptive and exploratory of a core dataset, while the ORBIS system allows one to model hypothetical scenarios by adjusting different input variables.

²³ One might argue that there is also an edge effect here, and that each journey should be plotted from its 'true' start to end (e.g. from Venice all the way to Jerusalem), and that one should only isolate the Aegean section for analysis. But as the present method is based on plotting the number of journeys between each pair of nodes, this would not actually change the pattern for the Aegean: it would merely illustrate in addition *other* patterns around the Aegean. And so it is perfectly possible to look, as here, at this region in isolation.

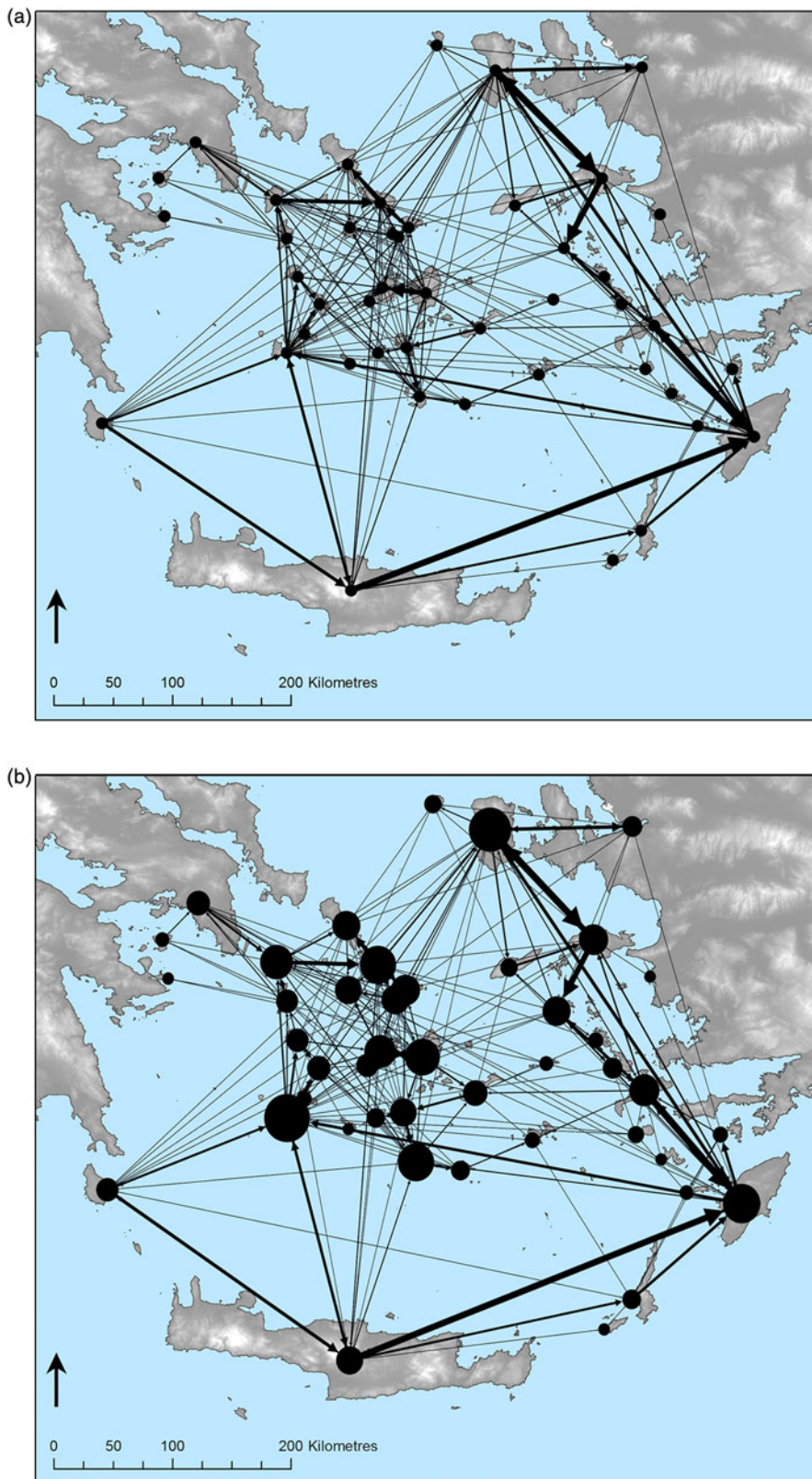


Fig. 5. a) Results of the SNA, where each directed edge is weighted to the number of journeys taken between each place node. b) SNA with the size of each point proportional to the betweenness centrality value of the node.

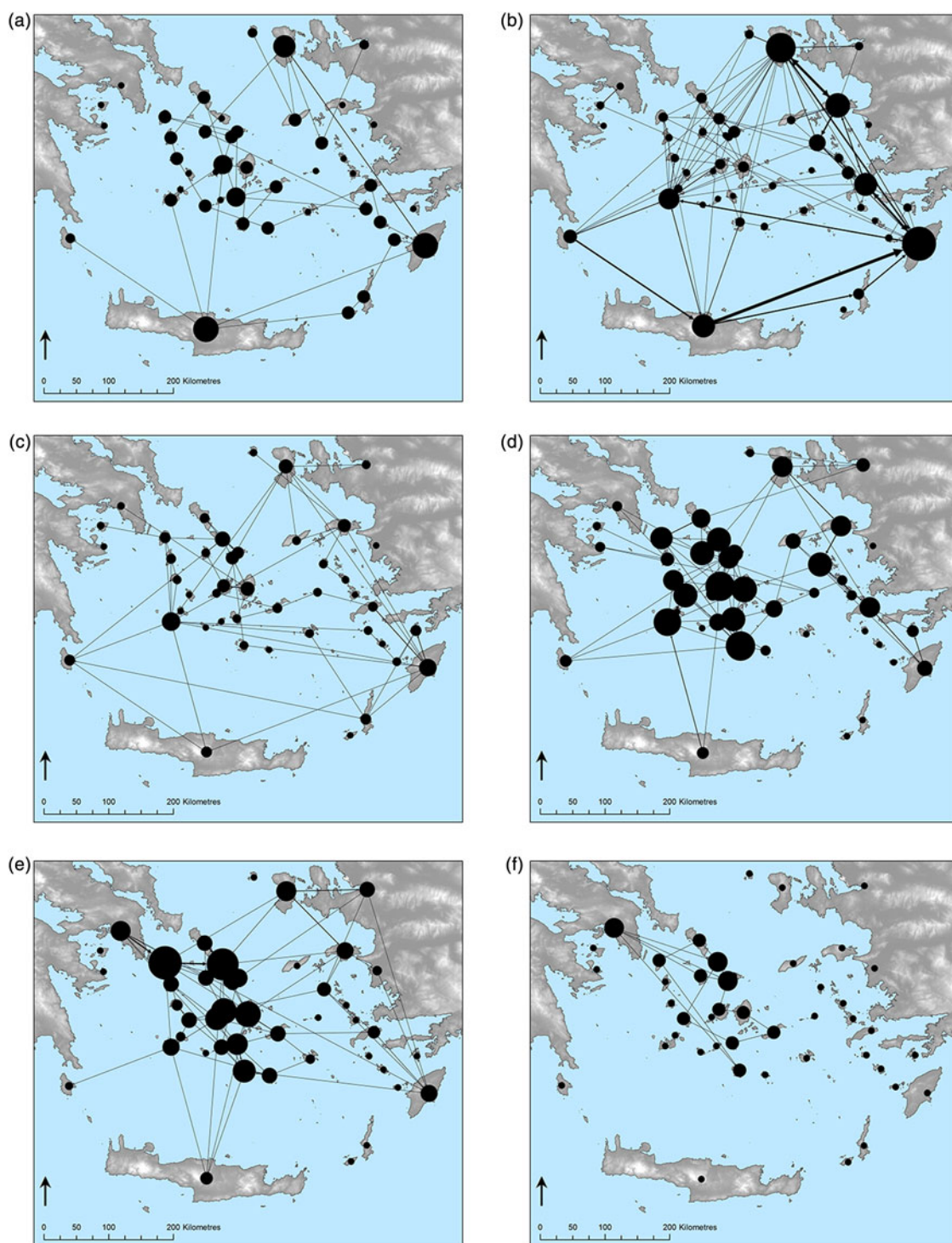


Fig. 6. Results of the SNA split up according to century: a) fifteenth; b) sixteenth; c) seventeenth; d) eighteenth; e) nineteenth; f) twentieth.

alone; context mattered. Whether cultural, economic, political or social, various factors dictated why some places became more popular stopover points than others. The network model can only identify as much, and it remains to explain the reasons behind this patterning.

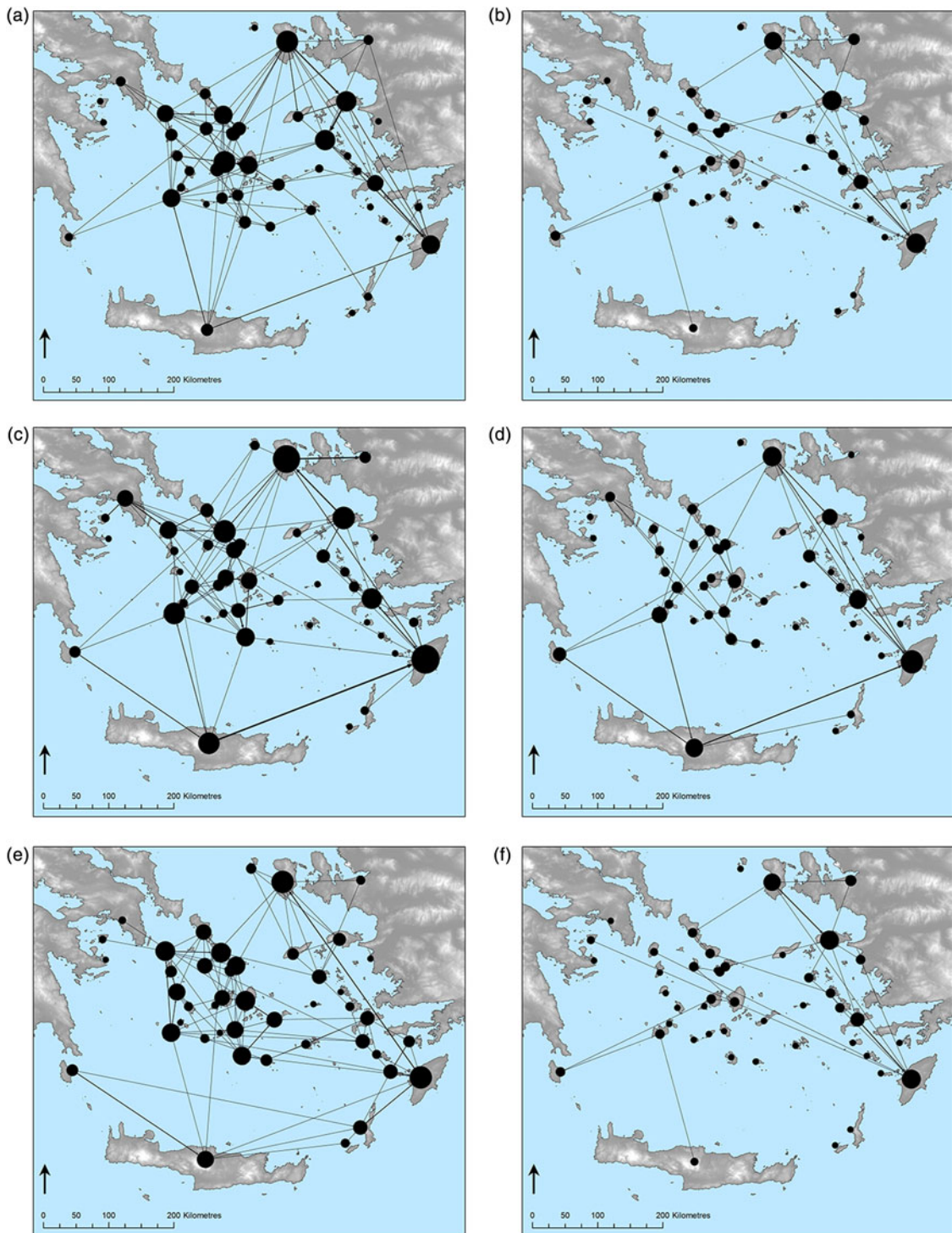


Fig. 7. Results of the SNA split up according to the place of origin of the traveller: a) British; b) Dutch; c) French; d) German; e) Italian; f) Other.

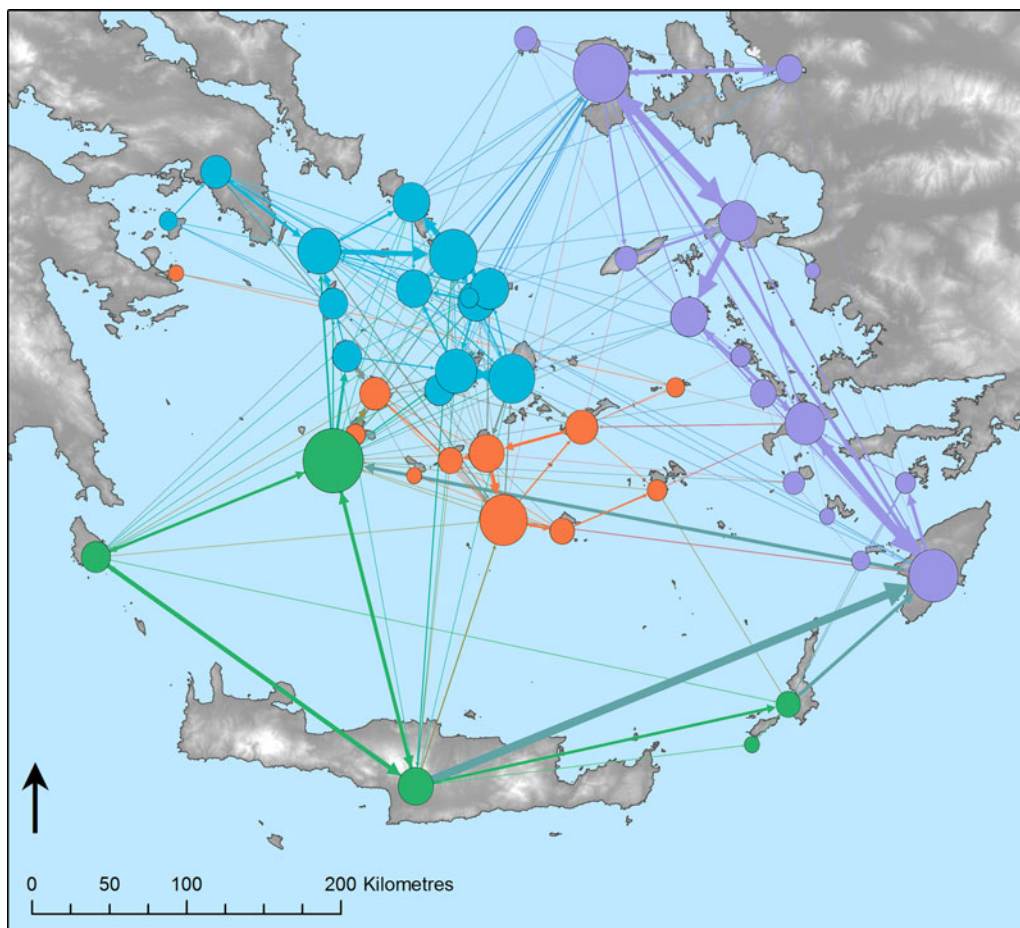


Fig. 8. Results of the SNA betweenness centrality calculation, with nodes coloured according to the node neighbourhoods assigned in modularity analysis.

ROUTES AND NETWORKS, CONNECTIVITY AND MOBILITY

The most frequently travelled routes were identified using a neighbourhood cluster analysis. Neighbourhood analysis distinguishes – independent of other factors such as geographic proximity or betweenness centrality – groups of nodes within a network that are closely associated, based on the number and strength of edges between them (Blondel et al. 2008). The native modularity tool of Gephi was used, and four node neighbourhoods were identified. These were arbitrarily colour coded, and the nodes corresponding to each cluster were designated on the above generated betweenness graphic (Fig. 8), i.e. in this model where edges are proxy for journeys between two sites, these are groups of places that were frequently travelled to by means of the same routes. The identification of three node neighbourhood groups indicates there were three main ‘corridors’ of movement around the Aegean Sea. These areas included the southern extreme of the Aegean, the Cyclades, and the Dodecanese and coast of Ionia.

Patterning suggests that the same routes were travelled again and again by different travellers, and two reasons could account for this. First, it is possible that travellers communicated directly their routes to one another, i.e. that route networks were shaped primarily by human networks. As will be discussed below, there is insufficient evidence to conclude this was frequently the case or that human and route networks were directly associated on a broad scale; but there is evidence that *some* travellers were members of social groups or dining clubs associated with travel and exploration, and it is possible that *some* travellers (either directly or indirectly)

communicated routes to one another through the production of portolan charts and navigation guides. The evidence will be reviewed, but one must also note that such route sharing leaves only indirect and scarce traces of evidence: given the travellers aimed to write with an ‘omniscient’ voice, it was not in their interest to admit that they were following routes already well-trodden. The alternative – and discussed to a far greater extent in this paper – is that travellers relied on the same *sources* for plotting their routes, i.e. that they had far less agency over route-planning than they might first make out. They might, for example, have been required to travel with ships that were already sailing through the Aegean Sea for some other reason, e.g. with long-distance trade ships, or with certain diplomatic missions. Alternatively, even if they were in possession of their own ship, they might have employed the same local pilots or relied on the same local knowledge; but, as is the problem in the writing of the ‘omniscient traveller’, these local people are almost always written out of accounts. The source material is such that travellers often indicated they had complete choice in where they went, and secondary factors are seldom explicitly identifiable. This paper evaluates both of the possibilities outlined above, and it will suggest that while there is some circumstantial evidence for the first practice (i.e. the sharing of route knowledge between social networks), a more important factor in navigation of the Aegean Sea in the early modern period was the ‘piggy-backing’ of travellers on ships that crossed the area for other reasons.

Route corridors

The route between Kythera, Crete and Rhodes (or onwards to Cyprus) was one frequently taken by pilgrim travellers en route to the Christian Holy Lands, i.e. travellers ‘piggy-backed’ through the Aegean off an existing route network. A not insignificant number of (principally French, German and Italian) travellers in the fifteenth and sixteenth centuries made this journey (cf. Malamut 2004 and the statistics listed in Yerasimos 1991; see also Droulia 1980a) and the route was a fairly standard one. Ships would depart from Genoa or Venice for a seven week voyage. After moving down the Italian coast, pilgrims would make for the Ionian islands, and then on to the Venetian fort at Methone. From there, travellers would enter the Aegean basin proper at Kythera, before stopping at Crete and/or Rhodes, occasionally at Cyprus or Alexandria, and then eastwards (van der Vin 1980, 13–18). These routes are clear on the data visualisation maps (Fig. 7c, 7d and 7e), and the large size of the nodes for Kythera, Crete and Rhodes indicates that they were places that were passed through frequently by French, German and Italian travellers.²⁴ These nodes are also prominent on maps for the fifteenth through to the seventeenth century (Fig. 6a, 6b, and 6c), but the linear route between them no longer existed subsequently (Fig. 6d, 6e and 6f). This is surprising, but a direct route from Kythera to Cyprus used from the seventeenth century onwards would not show up in the data visualisation here.

The strong edges between these site nodes indicate that the exact same routes were often used by different travellers. Here, there is some possibility that route-making relied on the sharing of information between social groups, particularly on the passing down of information for safe and navigable paths. Already by the thirteenth century there were texts in circulation of instruction and advice for taking sea routes to Jerusalem and Constantinople (van der Vin 1980, 13–18), and it is possible (although we have no direct evidence) that charts or similar were passed between travellers. These were routes that were well tested, and they could have been taken along navigable currents and weather systems (Williams, Bandindel and Way 1867; Duff 1893;

²⁴ Paradoxically, the most frequently documented journeys in the Aegean Sea of the early modern period only skimmed the edge of this region, and travellers who made these journeys had little interest in moving inwards and seeing the islands of the Cyclades or the Dodecanese (note in particular travellers like de Salignac 1522, Belon 1547, Villamont 1589 and Roasaccio 1598). The value of such accounts for giving detailed topographic or ethnographic information is limited: travellers sometimes did not even get off their boats at these places; or, if they did, they would not travel far inland. Note the suggestion by Bennet and Voutsaki (1991, 367) that, upon a close reading of the texts, it is likely that Wheler and Spon (1682) and Thompson (1744) did not disembark at Keos (amongst other places) and relied on reports from other travellers to help fill their pages.

Lepschy 1966). Moreover, they were known to be relatively safe from pirates and bandits (cf. Eisner 1990, 40; Utterback 2010). More practically, sailing on the same routes allowed travellers to stop at the same *places*, such as those that regularly expected pilgrims and could offer food and water supplies;²⁵ these were places from which travellers could pick up pilots who knew the routes well. These 'local' pilots become largely written out of travellers accounts, but they would have been essential for guiding pilgrims and travellers along commonly charted routes. One imagines that in earlier centuries this was by informal arrangement at places like Chios and Rhodes (i.e. the common stop-over points in the Aegean when heading further east), but by the seventeenth century the practice of employing professional pilots was more formalised on Melos (Tournefort 1715, 117; cf. Murray 1872, 318) and then on Syros. It was infrastructure provided by and knowledge of both places and routes, therefore, that entrenched the same series of journeys into routes taken by different sailors in subsequent centuries. As a consequence, these areas are clearly identifiable in the data visualisation, and they were quite evidently principle corridors of movement.

Another of the main route corridors was around the Cyclades: more specifically, there were two separate route clusters around the northern and southern Cyclades. It was not until the eighteenth century that journeys were made in this region in significant quantity (Fig. 6d, 6e and 6f), and, again, the reason for this change relates to how certain social groups travelled at this time. Until the late seventeenth century, the purpose of travelling, as discussed above, was largely to go from point A to point B, and intermediary stops were functional. From the late seventeenth century, however, travellers set out intending to make lots of short stops, and the purpose of travel was more scientific, to explore and meander (Heawood 1912 *contra* Penrose 1952). To review just a few select examples: George Wheler and Jacob Spon (1682) set out with Pausanias and Strabo in hand to guide themselves to places of classical interest; Bernard Randolph (1689) aimed to document the 'present state of the islands', and to offer a near contemporary history of the people who lived there; Michael Fourmont (1729) travelled for the purpose of documenting inscriptions; and Richard Pococke (1743) sought to write an encyclopaedic volume that reviewed works of architecture, geography and mythology that he found on his travels. What is clear is that each of these travellers went into the Aegean basin with a very set mission statement; travel, for them, was not about passing through but about making a thorough assessment of the places visited (Droulia 1980b, 275–7). The edges of the network were not so important at this time, but rather the nodes themselves. As a result, one sees on the data visualisation a dense cluster of journeys that emerges around this time, in part resulting from this desire to travel more leisurely and to explore a greater number of places.

Furthermore, not only were these islands visited by travellers in a similar order, but in encyclopaedias and guidebooks produced during this period too this same sequence of islands was repeated (e.g. Bursian 1872; Miliarakis 1874). With very few exceptions,²⁶ island groups as written always started with the Ionian islands, then the Sporades, the north Cyclades, the south Cyclades and finally the Dodecanese. Seemingly, the authors of encyclopaedias were mimicking the order in which the islands were usually traversed: travellers either entered at Kythera having

²⁵ This is especially true of pre-1522 Rhodes, and the duty of the Hospitallers to care for pilgrims. Cf. advice offered by de Calvijo (in Le Strange 1928, 44–5).

²⁶ Depending on the context of a study, different classification systems were occasionally used. Alfred Philippon (1901), a geologist interested in the physical classification of the islands, did not so much consider navigability around the islands as much as their absolute geographic position. Therefore he subdivided the Cyclades into a greater number of (taxonomic) categories than any other author: north group (Andros, Tenos, Mykonos, Delos and Rheneia); the west group (Kea, Kythnos, Seriphos and Siphnos); the central group (Antiparos, Paros and Naxos); the south group (Pholegandros, Sikynos, Ios, Naxos and Amorgos); and the southern-extremities islands (Melos, Thera, Anafi and Astypalaia). In another classification system, Hendrick Frieseaman (1789), in editing a text that he intended to be used as a practical guide by traders and navigators, listed the islands in alphabetical order. In fact, there is in the text little discussion of the routes one should take between islands, and it is clear that this handbook was meant to be used as an 'index' once one had arrived on an island, not in plotting routes. People who lived on these islands at this time did not necessarily identify themselves according to these groups; rather, 'clusters' of islands were useful to *authors* for sorting the data, and to *readers* for accessing the information.

passed the Ionian islands (and, in many cases, they would have stuck to the islands on the southern extreme), or they would come via Athens and they made their first stop on one of the northern Cyclades, moving gradually south.²⁷ While the ‘grouping’ of islands taxonomically in encyclopaedias is, to some degree, an entirely arbitrary exercise, this does demonstrate the extent to which the ‘west–east’ view of the Aegean became well entrenched by the eighteenth and nineteenth centuries.

Moving back to the network analysis, the final ‘corridor’ highlighted by the modularity analysis lies to the east of the Aegean, between the coast of Ionia and the Dodecanese islands. These routes appear to have been popular in the fifteenth and sixteenth centuries, and subsequently in the eighteenth century (Fig. 6a, 6b and 6d). Travellers frequently stopped at Rhodes as they did on the way to places of Christian pilgrimage, and, owing to the node’s place in both of these networks, the island has a relatively high betweenness score when compared to its neighbours (Fig. 5b). Many of the reasons given above for the popularity of various routes can also be applied to the east Aegean. On the one hand, it was not so much that travellers wanted to stop here as they needed to make stops on longer routes to either Constantinople (Olivier 1801), Egypt (Belon du Mans 1555 [Glardon 1997]; Sonnini 1801), or the Levant (Tournefort 1715; Galt 1813; Clarke 1818). On the other hand, just as there had been a sudden interest from scholars of the late seventeenth century onwards in the Greek world, British (Turner 1820; Burgess 1835) and French (Chenavard 1849) travellers around the same time and later expressed a certain passion for areas in the east parts of the Aegean (Stoneman 1987, 130–5; Bernard 1988; Barthélemy 1992). The coast of Asia Minor was, as were the islands, both a ‘stopover area’ and a place of learning and exploration: the engagement of travellers with this region varied according to their ideas and preferences at different times.

Social networks and route-making

As discussed above, from the late seventeenth century the reason for travelling became less functional and more to do with exploration. This shift in mentality is not entirely anecdotal, and around this time formal peer networks were created to encourage, finance and publish travel both in the Aegean Sea and beyond. For example, the establishment of the Royal Society in 1660 and the Society of the Dilettanti in 1734 provided a platform for the sponsorship of British travellers:²⁸ members were dispatched to far-off lands, and they were encouraged to assemble publications comprising observation, instruction, and anecdotes that could entertain a wider audience.²⁹ Across Europe there was a growing appetite for antiquity and for the classical past: the *Académie des Sciences* was founded in Paris in 1666, and it fulfilled a similar function in providing backing and instruction for a new cohort of scientists and explorers. In two ways, in particular, these new social networks provided impetus for travel, and for travel to specific places, as seen through the example of the Society of the Dilettanti. First, the Society would

²⁷ Contrast Louis Lacroix (1853), who began his account on the island of Cyprus, and worked his way along the coast of Ionia, around the northern then southern Cyclades, and then wrote of Crete, before finishing on the Ionian islands.

²⁸ Cust 1898; cf. Malakis 1925; Constantine 1984, 104–46; Stoneman 1987, 165–206; Augustinos 1994. Membership of the society was limited to those ‘who can give proof of their having been ever out of the King’s Dominions’, most specifically to Italy (addition to society charter April 1757).

²⁹ Stuart and Revett 1762; Wood 1767; Chandler 1776. General texts like Tucker (1757) sought to provide guidance for those who wanted to travel, and on how to structure travel writing. Armstrong (2005) discusses various French texts that instructed travellers on scientific methodologies to use (e.g. for measuring latitude) and on how to report observations in critical and objective ways. While the general purpose of these texts was to be scientific and to record accurately what was seen, these travellers occasionally wrote (or drew) in over romanticised ways (see the sketches in Pouqueville 1835); cf. Tsigakou (1981), Stafford (1984), Stoneman (1987, 136–47) and Stock (2013) on creating external and ideal views of Greece in both literature and art, specifically in the late eighteenth and early nineteenth centuries. Mitchell (1989) discusses this concept more broadly, as well as the blurring of simulation and reality in Orientalism. Europeans of the nineteenth and twentieth century constructed and reproduced their own views of distant places – particularly those further east.

issue calls for its members to explore, document, and publish on specific places, promising financial sponsorship: membership of the Society (i.e. privileged access to this social network) gave travellers the opportunity to take up these offers. As an example, at a meeting of the society in April 1764, £2000 was promised to a member who could demonstrate they had the qualification to explore Asia Minor. The Society chose Richard Chandler, and he was issued with a list of instructions relating to his point of departure, to his base at Smyrna, to the recording he must undertake, and to financial matters (Cust 1898, 84–7). Second, Society members were encouraged to use the opportunity of travel to make contacts they would not normally encounter in England, and so much is noted in a letter from Joseph Spence to his mother Mirabella dated from February 1741.³⁰ Furthermore, Spence wrote to or had guidance from 33 contacts he met through the Society of the Dilettanti during his travels (Klima 1964 [1747, 1820, summarised in Kelly 2009, 267–9]), exploiting the peer network that membership of the society provided him.³¹ In both of these ways, social networking and travel were very clearly entangled in the early modern period. The creation of societies like these helped to formalise venues at which networking could take place, and this networking had both direct and indirect effects on the route-making undertaken by travellers.

On the other hand, even if peers within a network did not know one another directly, knowledge was inherited and passed on between subsequent generations of scholars and travellers: both copying and reproduction illustrates this concept well. The production of portolan charts in this period goes back at least to the work of the Cristoforo Buondelmonti, a priest from Florence who settled in the early fifteenth century on the island of Rhodes. Buondelmonti travelled at various times around the islands to collect manuscripts and consult documentation (cf. van der Vin 1980, 133–5), and in 1420 he sent to Cardinal Giodrano Orsini an encyclopaedic work entitled the *Liber Insularum Archipelagi*. This volume contained detailed commentary on the situation of the islands, and also maps of the places discussed. The publication of the *Liber* inspired a new genre of writing at this time (the ‘*isolario*’), and over subsequent years similar texts were published both by other Italian scholars (Francesco Berlinghieri 1480 [Skelton 1976]; Bartolomeo dalli Sonetti 1485 [Goff 1972]) and also by Germans (Henricus Martellus Germanus 1490 [Edson 2018]) and French (André Thevet 1584 [Lestringant 1985]). However, it was not just the genre that was transmitted between authors. In 1528, Benedetto Bordone published an *isolario* whose text was based very closely on that of Buondelmonti, and whose maps were copied from dalli Sonetti. Similarly, dalli Sonetti’s maps were reproduced with few additions or alterations by Antonio Millo in 1590 (Tselikas 2006), and again by Marco Boschini in 1658; and the map of the Aegean produced by Tomaso Porcacchi (1572) seems to have been based on a similar prototype of another earlier scholar, Sebastian Münster (1540 [McLean 2007]) – albeit with the rather whimsical addition of dolphins and various mythical sea creatures. Knowledge of the Aegean and its routes was not only transmitted through the ages, but the very same information was repackaged and reinterpreted in different venues. The consequence of this relates to the more general point made above: that certain outlooks on the Aegean, certain ways in which its islands were grouped together, and certain routes suggested between its various parts became progressively entrenched, and that the exchange of information among peer-groups and cultural networks drove this practice. But, more specifically for this

³⁰ ‘One of the greatest advantages in traveling, for a little man like me, is to make acquaintances with several persons of a higher rank than one could well get at in England, and to converse with them more on a foot, and with greater familiarity than one ever could have done, had one stayed always at home’ (quoted in Klima 1964, 356).

³¹ A good example of where *personal* networking was an important element of travel (i.e. where there was no formal society like the Dilettanti providing these networks) is Cyriac d’Ancona. The fifteenth-century humanist made frequent mention of being shown around sites or directed between places by ‘our very good friend’ so-and-so (Bodnar 2003, 17, 31 [with the addition of a local guide], 45, 130). Moreover, during his travels around the Cyclades and Crete, he boarded ships captained by Venetians who were either direct acquaintances or who had been introduced to him via others (Bodnar 2003, 9, 150). On the friends of Cyriac d’Ancona and their role in shaping his travels, see Babinger 1962, esp. 321. As noted above, this is rather exceptional, and most travellers were less explicit about visiting friends or being guided along their way.

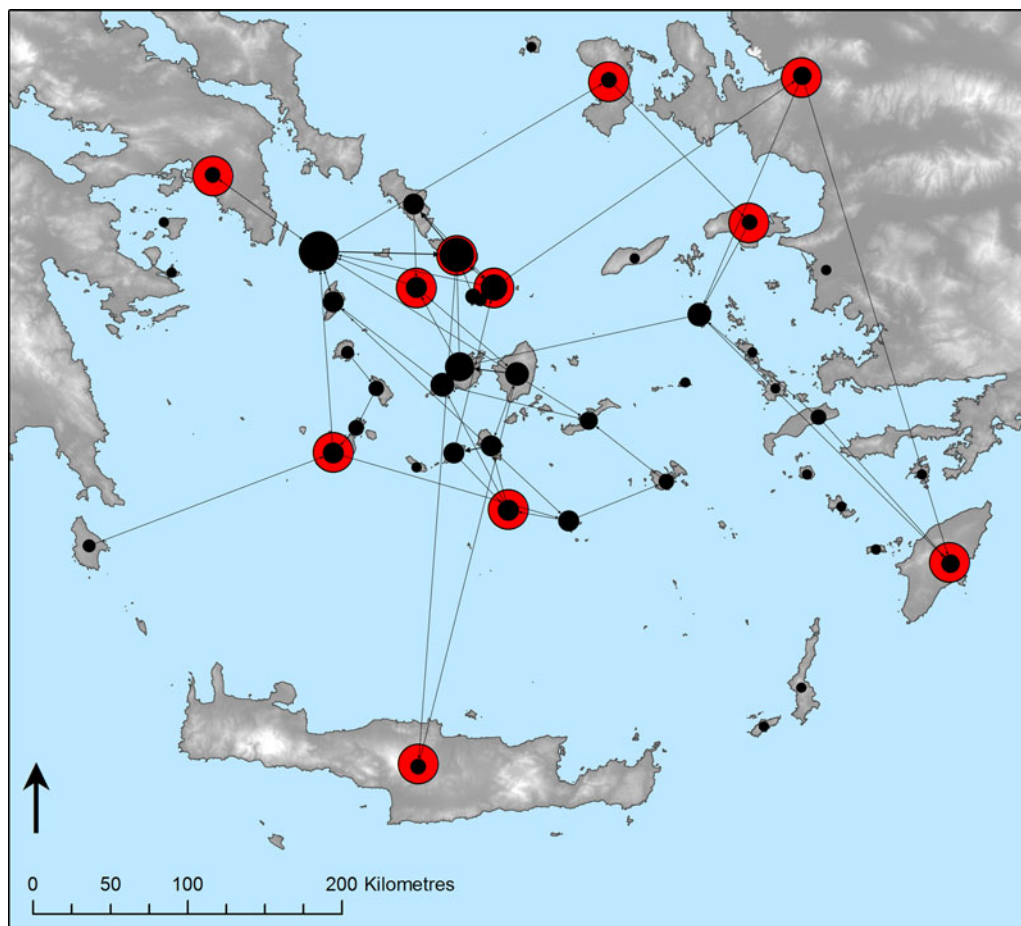


Fig. 9. Journeys made by nineteenth-century British travellers (black, with node size proportional to the betweenness centrality value of the node), and the location of nineteenth-century British consular posts (red).

study, the consequence is that certain routes may be somewhat ‘over-represented’: if the same journey or sequence of journeys is repeated between various texts, they will necessarily have been visualised multiple times in the model used.

Economic and political networks

The previous section reviewed the limited and rather uneven evidence for the relationship between human and route networks. It now remains to move the discussion to a much broader scale and consider how macro economic and political networks opened up or closed off certain corridors to early modern travellers.

Economic factors clearly played a role in shaping sailing routes, and they provided a suitable platform off the back of which route-makers could piggy-back. The location of consular posts is a good proxy for trade interactions, and it is productive to map these against journeys made by sailors of a certain nationality. The distribution of British consular posts in the nineteenth century (cf. Gunning 2009, 189–95), for example, and the journeys taken by British travellers at this time follow a similar pattern (Fig. 9). There was a high number of journeys made around the consular posts of the northern Cyclades, or, via Keos, between the posts on Syros and Tinos and at Athens; journeys around Crete, Melos and Thera also map onto the location of these posts (but journeys to and from Melos could have been made for the benefit of picking up ‘professional’ pilots there, as discussed above); and posts at Chios, Samos and Smyrna picked

up the main flow of traffic around the eastern Aegean. On the one hand, travellers headed for *places* that already had well-established contacts in the Aegean, and, on the other, they could join on the *journeys* that were being made by traders and envoys leaving from these places. Travel depended on these pre-existing networks, and it exploited economic and trade networks. The synthesis of a list of consular trade posts or diplomatic services for all nationalities investigated across all centuries is beyond the scope of this study, however, and this point is made only illustratively of a practice that could have been common across the post-medieval Aegean. Furthermore, without conducting a full and detailed analysis on Capitulations,³² shipping tax, freight laws, quantities of products shipped, and changes in pricing over time, it is only possible to make here general comments on economic and trade patterns.

Furthermore, the Aegean was a cross-roads for European traders. After travelling into the basin via Kythera from the Ionian Sea, merchants could either continue on the north–south corridor up to the Black Sea, or onwards east to Tyre and Alexandria (summarised by Horden and Purcell 2000, 138–41). This afforded traders access to grain from the Black Sea, sugar from Crete and Cyprus, spices brought from India, and silk from China, Iran and Lebanon, and it also gave to Aegean communities access to wool cloth, glass, metals and soap brought from Europe (Parry 1967, 156–63). As a result, numerous ships passed through the Aegean as part of this trade traffic, both individually and as part of more organised *caravane* or groups of ships dispatched to conduct economic transactions as a group (Panzac 2004). Economic historians have noted a general pattern that, progressively from the sixteenth century, Mediterranean markets shifted in favour of those from north-west Europe:³³ smaller quantities of Levantine grain were imported as sources in the Baltic became more preferable; the import of sugar declined; and English and Dutch textiles were traded in greater numbers on Levantine markets than those manufactured in Venice (Cipolla 1968; Rapp 1975; Glamann 1977). Indeed, the establishment of joint stock shipping companies also significantly changed the trade dynamic in the Mediterranean at this time.³⁴ The British–Dutch Levantine Shipping Company was established in 1581 (Parry 1967, 186–7) with a principle outpost at Smyrna, while French activities extending from here further east to Syria developed from 1612. This accounts for the creation of a formal port here and the increase of traffic through from the seventeenth century onwards: ships passed frequently through nodes at which central and large-scale trade activities were organised. Owing to a variety of factors, therefore, there was some shift (especially by the late seventeenth and into the eighteenth century) of trade and shipping dynamics in the Mediterranean, and even if shipping lanes did not disappear they were used relatively less intensively than they were in the medieval period (Tabak 2008).

The existence of these intensively used trade routes indicates that the Aegean basin (like the regions around it) was full of ships, and that there were ships available in sufficient number which travellers could join for their journeys. It has been taken somewhat for granted that if a

³² Agreements made separately between the Ottoman Empire and various nations permitted certain rights (e.g. exemption from local tax) to traders moving through Ottoman territories, and these routes became, as a result, more favourable. Capitulations were struck on a case-by-case basis as the trade activities of certain nations became intensive and east-reaching enough to be of significant interest to the Ottoman Sultan; e.g. Italy with its fleets of Genoese and Venetian ships were the earliest European nation in 1479–1481 to arrange trade agreements (Van Dyck 1881, 15), but it was not until 1579 that English trade was large enough to require a formal capitulation (Van Dyck 1881, 16). See also Pélissier du Rausas (1902), and van den Boogert (2005) for a more long-durée perspective. It is beyond the scope of this study to plot the routes permitted and regulations imposed in each capitulation; but it is sufficient to say qualitatively that these legal agreements will have created paths of ‘less-resistance’ along which traders (and, by extension, travellers with them) were more likely to navigate.

³³ Cf. Pach 1968. This was, to a large extent, because of an increase in the size of ships that had better access directly to north-western European ports, i.e. reliance on Italian ports as intermediary nodes decreased.

³⁴ For a review both of this phenomenon and of literature exploring it, see Bateman (2011, 3–5). The establishment of joint shipping companies also decreased certain aspects of trade through the Mediterranean: the activities of the East India Company (chartered 1600) and the Dutch East India Company (chartered 1602) decentralised the trade of spices away from the Mediterranean and the Levant, and the Genoese and Venetian traders – who had previously held control over this market – saw their control over this commodity decline.

traveller wanted to go to the Aegean (or elsewhere) they would have ships available; but the reality is that travel was costly, and that the price could be well met by transporting together people and goods.³⁵ There is, then, some correlation between shipping lanes and the routes that travellers took, and it is clear that economic networks played a role in influencing which places travellers were able to access more easily. The pilgrimage route that passed by Kythera, Crete and Rhodes was similar in form to the main east–west trade route established in the medieval period; (French) commercial activities on the coast of Turkey might account for the popularity of the area for travellers from the seventeenth century onwards (Mantran 1962); and by the eighteenth century, as the intensification of trade activities in the Aegean basin and the Mediterranean basin as a whole was shifting, fewer travellers accompanied the long-distance trade ships, and they sought new routes. In some senses, it was not so much where travellers *wanted* to go; it was more the case of where they were *able* to go: economic activity and travel in the early modern period were entangled, and the extent of that entanglement shifted over time.

Moreover, the routes along which it was possible to travel depended on political events. Throughout the fifteenth century the Aegean was already well carved up between different groups: Chios, Lesbos and Samos were controlled by the Genoese; the (Venetian-formed) Duchy of Naxos presided over the central Cycladic islands; and the Dodecanese islands were held by the Knights of St John.³⁶ The role that the Knights of St John played in providing services for pilgrims has already been discussed, and also the fact that once the island was under Ottoman rule it was still known as a stopover point on longer voyages. Trade ships were still permitted to pass through the various parts of the Aegean, and, even following the fall of Constantinople to the Ottomans in 1453, there was little disruption to seafaring in the region, owing to negotiations conducted between Genoese and Muslim communication networks (Dauverd 2015). It was in the sixteenth and seventeenth centuries, however, and through the conquering of various Aegean territories by the Ottomans that the face of travel in the region changed most.³⁷ Under Ottoman rule, tensions between locals and the new rulers both on the islands and on the mainland led to a rise in privateering – something that was well known to the European travellers (see discussion in Eisner 1990, 52–67). The consequence of this was that some of the travellers passing by en route to the Levant chose to limit their stops in the Aegean, and because of the risks involved in travelling in this area, there was at this time limited travel *within* the Aegean basin.

Changes in the political-economic environment of Greece in the nineteenth century also had an effect on the way people travelled. Up to the start of the nineteenth century, Greek shippers had for the most part been ‘middleman’ traders in the Ottoman Empire, under the rules and protections of the Capitulations (Harlaftis and Laiou 1988, esp. 17–18). But following the rise of the Greek state, independent Greek trade activities could increase significantly, such that the Greek fleet was the largest set of naval traders in the Mediterranean by the early 1900s (Harlaftis and Kostelenos 2012). The major port of Syros was established in 1822,³⁸ at which the Hellenic Steamship Company (HSC) – for which the National Bank paid sizeable capital investment – was based.³⁹ Soon after, the port at Piraeus received similar expansion,⁴⁰ and the main shipping activities in and around the Aegean were concentrated around only a few key ports that were served by

³⁵ See Braudel 1973, 295–312 on relative sizes and costs associated with shipping.

³⁶ On the colonisation of the Aegean following the Fourth Crusade see Miller (1908).

³⁷ Rhodes and Kos fell in 1522, Koroni and Methone in the early 1530s, Amorgos, Anaphi, and Mykonos in 1537; Chios and Naxos in 1566; Crete in 1669; and, holding out until the eighteenth century, Kythera and Tinos in 1715 (for a fuller description of events at this time see Davies and Davis 2007, 25–7).

³⁸ The port at Syros was established by refugees from Chios, those who had suffered defeat by Turks in 1822 for the part the island played in beginning the Greek Revolution. Syros was a good choice for a new port, owing to its central position in the Aegean, and also because of its protection by the French at this time.

³⁹ Agriandoni 1986, 84–105; Papathanassopoulos 1983, 92–8. Kardassis (1997, 108) provides references to the original Greek legal texts for the agreement between the HSC and the National Bank.

⁴⁰ Piraeus was a small port in the mid-nineteenth century, only representing five percent of all Greek shipping activities in the 1850s (Harlaftis 1996, 118). See Kardassis (1997, 115–23) for the steamer companies established during the second half of the nineteenth century, including those based at Piraeus.

steamers: Andros, Kalamata, Kephallonia Nauplion, Piraeus, Smyrna, Syros and Volos (Kardassis 1997, 115–16). Clearly, given that the journeys of travellers depended on ‘piggy-backing’ off existing routes, the major shift in the organisation of economic networks at this time changed the way traveller routes were planned. The handbook compiled by John Murray (1872, 325–6) from other contemporary travel accounts is instructive in this way, recommending to readers at which (English-speaking) hotels to stay on Syros, and of the weekly steamer timetables according to season. Travellers spent less time meandering around the islands, and they moved hastily through this region, with the aim of travelling much further distances.⁴¹

Summary

What becomes clear from this discussion is that routes in the early modern Aegean were entangled with other sorts of networks. As discussed above, the most effective means of travelling through the Aegean Sea was to join existing voyages, either those that were sailing for pilgrimage (van Ghistele 1482–3; Le Saige 1518; Belon 1547 [all in Yerasimos 1991]) or for trade (cf. Fig. 9). These routes, however, were variously hindered or made more navigable by contemporary political events, yet writers seldom acknowledged that anyone apart from themselves had any sort of agency over route-making.⁴² Notably absent from travel accounts are local people employed as pilots or navigators, those who were necessary for navigation in the early modern period, but seldom acknowledged. Furthermore, there is some circumstantial evidence that knowledge was passed on between travellers. Travellers (or their captains) communicated where to stop over on longer voyages to one another either directly or through the production of portolan charts (dalli Sonetti 1485 [Goff 1972]; Seller 1669 and 1671). And through the establishment of elite travelling clubs and the widespread publication of their travel literature, scholars of a certain class were inspired to travel far and wide (Stuart and Revett 1762; Wood 1767; Chandler 1776). Evidence for the sharing of routes between peer networks is circumstantial and often invisible; furthermore, this practice, even though important on a case-by-case basis, played less of a role than the ‘piggy-backing’ outlined above for entrenching the ‘known’ routes along the maritime highways. Corridors of movement were carved out by other sorts of networks, and travellers merely followed routes that had already been set. To a greater or lesser extent, routes and networks, places and journeys were all intertwined across history: the connectivity of *places* is as much a story of the connectivity of *people*.

CONCLUSIONS

The main interest of this study has been twofold, with both a methodological and a historical interest. This paper began by discussing how issues of connectivity and mobility are currently of concern to the scholarly community, but also noted that abstract concepts are not so easily defined – nor can they be so easily investigated. Computational modelling can go some way to exploring these issues, but the models most frequently used in landscape archaeology are insufficient for discussing maritime spaces. To address this theme, a novel approach has been proposed that uses the library collection of travelogues from the British School at Athens with

⁴¹ That is not to say travellers were no longer interested in seeing these places. By contrast, on the eve of the Greek War of Independence, Europeans were more confident to travel in this region. They, rather anachronistically and colonially, saw the ‘Greek renaissance’ taking place on the ground as something equivalent to the ‘classical ideal’ of their minds (Angelomatis-Tsougarakis 1990; Saïd 2005), and a new passion for Philhellenism drove interest in the Aegean. This certainly helps to account for the increase in the number of travels conducted between the eighteenth and nineteenth centuries. And, thereafter, in the times of Greece’s independence, tourism proper in the region began: this was made possible by the infrastructure and the passage guaranteed by Greece in relative peacetime.

⁴² On Capitulations see Van Dyck 1881; on the financing of ports after the founding of the Greek state see Kardassis 1997, 108–16.

SNA and PPA, one that considers together physical and human networks. Subjecting old data to such methodologies has great potential for bringing new patterns to light. Travelogues provide a wealth of information with good chronological resolution on route-making and mobility, and formal modelling unlocks some of the information not so readily visible when texts are read in isolation. This sort of analysis only takes a broad-scale view of the Aegean and is necessarily reductionist, but there is significant merit in reframing legacy collections, and in looking differently at familiar data.

Furthermore, this study has shed greater light on the Aegean basin of the early modern period and on those who travelled in it. Each traveller had their own motivations, but, nevertheless, broad patterns emerge when their texts are read in light of one another. Specifically, there was a shift around the seventeenth century in how the Aegean Sea was navigated. Prior to this date, a majority of the texts written describe how travellers ‘passed through’ en route to places like Jerusalem or Constantinople; from the end of the seventeenth century onwards, however, the Aegean was explored as a place of enlightenment, learning, and Philhellenism. Nevertheless, the precise routes open to travellers depended on other pre-existing networks, such as trade routes. Travellers had to ‘piggy-back’ their way around the Aegean, something that is not always evident from the texts themselves. This narrative is not substantially new – but what this study shows is that the story is statistically consistent across the available evidence, and it has made more patently clear when and where the gravity of central routes shifted. Furthermore, it clarifies that there is consistency between ‘real’ and ‘imagined’ journeys of travellers and armchair travellers of the early modern period; and also that there is consistency in the collection of the BSA library, representative of the larger narrative of travel writing in this period. Travel texts and maps expressed a western-centric and etic perspective. The people who wrote these texts were all elite and of a certain class; the travelogue record excludes the local people who lived in the Aegean basin at this time, those who would have had a much better knowledge of the Aegean Sea and its navigability. Ironically, these travellers were almost entirely dependent on the people they never wrote about. The results of this analysis demonstrate, therefore, *elite western* mobility, rather than connectivity per se. It now remains to consider how these patterns would change if a larger geographic dataset were investigated (e.g. to include material relating to the northern Aegean or places east or west of the basin), or if more Venetian, Genoan or Ottoman sources were analysed (i.e. more ‘local’ perspectives).

This study has made creative and effective use of the collections and legacy data of the British School at Athens, in line with the scholarly aims of the institution. It has provided a challenge to use data in different ways, and to mobilise texts at different scales in order to see what patterns emerge. The results here have aimed to be historically significant and to help us reframe some of the big debates that currently face the field – the unpicking of big thorny issues of mobility and connectivity.

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Οι ταξιδιώτες της πρώιμης νεότερης περιόδου στο Αιγαίο: δρομολόγια και δίκτυα

Το άρθρο αυτό αξιοποιεί το σύνολο των ημερολόγιων ταξιδιού από τον 15ο–20ο αιώνα μ.Χ., τα οποία έχουν συγκεντρωθεί στην βιβλιοθήκη της Βρετανικής Σχολής, προκειμένου να προσεγγίσει ερωτήματα σχετικά με την κινητικότητα (της τοπικής αριστοκρατίας) στο Αιγαίο Πέλαγο. Αυτοί οι τόμοι προσφέρουν πληθώρα πληροφοριών σχετικά με τα δρομολόγια που επιλέγονταν από τους ταξιδιώτες μεταξύ των διαφορετικών νήσιων και ηπειρωτικών λιμένων, καθώς και την πλοϊμότητα του Αιγαίου Πελάγους. Χρησιμοποιώντας ένα συνδυασμό υπολογιστικών μεθόδων όπως Ανάλυση Εγγύτερου Σημείου και Ανάλυση Κοινωνικών Δικτύων, αυτά τα δρομολόγια απεικονίζονται, και ιδιαίτερη προσοχή δίνεται στο πως η ναυσιπλοΐα διαφέρει ανά τους αιώνες και την καταγωγή του ταξιδιώτη. Προτείνεται ότι οι ταξιδιώτες εξαρτώνται από άλλων τύπων δίκτυα, και τα δρομολόγια επηρεάζονταν από την κατάσταση των σύγχρονων οικονομικών και πολιτικών θεσμών. Τέλος, προτίθεται η ιδέα ότι οι μεθοδολογίες που αναπτύχθηκαν σε αυτό το άρθρο μπορούν να προσφέρουν πολλές ευκαιρίες για την μελέτη της μεγάλης κλίμακας των αρχαιικών συνόλων.