Ancient Ports

The Geography of Connections

Proceedings of an International Conference
at the Department of Archaeology and Ancient
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Edited by
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Abstract
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This volume contains 11 articles from an international conference on ancient ports in the Greek and Roman world from the Classical period to Late Antiquity.

The Graeco-Roman civilization was, to a large extent, built on a constant flow of people, goods and ideas between various parts of the Mediterranean. This volume treats the function, character and connectivity of ports in the Greek and Roman Mediterranean. The following topics are discussed: the role of river and sea ports locally, regionally and Mediterranean-wide; the freighting on rivers; the infrastructure of large harbours; the role of the hinterland; sea-routes; connectivity and the social character of harbour cities through time.

Key words: ports, harbours, harbour network, sea-routes, fluvio-maritime vessels, hinterland, connectivity, transshipment points, port infrastructure, trade, proxeny network, shipsheds, Portus, Ostia, Rome, Naxos (Sicily), Ravenna, Narona, Pistiros, Kos, Halasarna, the Corinthian Gulf, Achaia, Arcadia, the Aegean

Harbours and Hinterland Networks by the Corinthian Gulf, from the Archaic to the Early Hellenistic Period

by

Anton Bonnier

Abstract

Maritime interconnections have long been recognised as a significant component of the ancient economy and the development of Greco-Roman culture, but more research is needed to understand the function of ports as nodes of communication in relation to both sailing routes and hinterland networks of settlements and microregional economies. The current paper deals with patterns of coast-hinterland interconnections in the region of the Corinthian Gulf, in particular the Achaian coastal zone and its mountainous hinterland, from the Archaic to the Early Hellenistic period. During these periods it possible to observe the development of several urban sites (*poleis*) in Achaia, situated on strategic positions either on the coast itself or on elevated positions overlooking the Corinthian Gulf. Settlements were at the same time located in close connection with physical routes, usually in the form of river valleys, which would have provided access to the hinterlands. Finds of non-local pottery and other imported objects at both coastal sites and localities in the interior further point to increasing coast-hinterland mobility and can be sufficiently correlated with traces of ancient roads and indications of movement and the connectivity of microregional economies provided by written sources. Achaian harbours and coastal settlements would thus have acted as nodes connecting sailing routes of the Corinthian Gulf with settlement systems in the uplands of southern Achaia and northern Arcadia.

Introduction

Maritime interconnections in the ancient Mediterranean have been recognized as a significant component of Greco-Roman culture. Studies on ancient harbours have, until recently, been largely focused on port sites as very specific entities within the landscape, and research has generally been concerned with either the structural remains and environment visible at harbour sites, or the broader history of specific harbours. Although such studies have contributed to a greater understanding of the function of harbours in antiquity, more research is needed to understand the function of larger groupings of ports as nodes of communication, not just in relation to maritime routes and shipping lanes but also in regard to hinterland networks of settlements and hinterland economies.

In my recent PhD thesis, I have argued that harbour sites by the Corinthian Gulf and the connections which they maintained with hinterland networks can be examined through a landscape approach, consisting essentially of an investigation of site patterns in the surrounding hinterlands, from the Archaic to the Early Hellenistic period (or a period spanning roughly the later 7th century to the early 3rd century BC).[1]

The methods used to reconstruct patterns of communication between coastal areas and inland environments have been concerned with an examination of archaeological data, regional site patterns and written sources in order to approach ancient settlement structures and patterns of exploitation in the landscape. As will be argued further in this paper, the geographical distribution of sites offers a good framework for approaching regional interconnections, and interaction between harbours and inland communities.

Archaeological data, such as pottery of non-local manufacture, may also provide indications on the movement of goods between harbours and hinterland sites and potentially also regional patterns of consumption of non-local goods. Finally, a combination of archaeological and written sources may be used to understand various production strategies in different ecological settings, and the way in which such production would have been connected to other areas and environmental zones. These different strands of evidence may, through the framework of landscape, provide a more holistic approach to harbours and the networks which they helped to facilitate, develop and maintain.

As a methodological concept, landscape has formed a significant part of archaeological research, starting in the 1960s with the advent of the "new" or processual archaeology. Interests in archaeological landscapes and emphases in archaeological landscape studies have changed throughout this period, from a firm interest in ecological and economic frameworks to a much greater focus on socially constructed environments and aspects of identity as a consequence of post-processual or interpretive theory.[2]

Within Mediterranean archaeology, landscape perspectives have been at the forefront of new research, not least in large survey projects conducted in Greece, Italy and elsewhere. Studies of Mediterranean landscapes have primarily been concerned with aspects of ecology, subsistence, and political change, even if more social and ritual aspects have also been presented in connection with studies oriented more towards the post-processual discourse.[3] In Mediterranean archaeology, landscape approaches have been useful both for dismantling a common urban bias in the study of Classical antiquity, and for providing insight on patterns of rural habitation and exploitation, which were intimately connected to the political, cultural and economic life of urban entities.

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[1] Bonnier 2010; recently reworked and published in Bonnier 2014.
[2] See Tilley 1994; Thomas 2001; Hicks & McAtackney 2007, 16–21.
[3] Alcock 1993 is important to mention here as a study which uses the concept of landscape in order to analyze the socio-political and economic impact of Roman rule in Greece. For a recent post-processual approach to an interpretation of ancient Cretan landscapes, see Wallace 2007.

Networks, connectivity, and the Corinthian Gulf

Coastal areas in the ancient Mediterranean world have been subject to increasing scholarly attention in recent years. The work of Peregrine Horden and Nicholas Purcell has in particular been of great importance in highlighting the long-term implications of interconnections through maritime communication, and networks of varying microregions and microecologies around the Mediterranean Sea.[4] Horden and Purcell stress that interconnections between or the "connectivity of" microregions, should be understood both through smaller clusters as well as the broader webs of communication which these interconnections form, "something approaching the entire Mediterranean".[5]

Such ideas of connectivity may also be related to broader network theory, which has elsewhere been used as part of recent discussions on ancient Greek and Roman networks in the Mediterranean. Recent research on networks in the ancient world has highlighted how smaller systems of networks between two or more nodes are often tied into larger combined aggregate networks, which can have a deep impact on social and economic dynamics over time.[6] This idea of smaller networks coalescing into an aggregate whole is certainly interesting in regard to the Corinthian Gulf, and the build-up and expansion of interconnections between harbours and hinterland landscapes. It will be argued in this paper that by examining individual coast-hinterland networks we can start to develop a clearer picture of the function of maritime routes within the Corinthian Gulf as well as a better understanding of the broader pattern of economic development in this area of Greece.

Previous research on the Corinthian Gulf itself, its harbours, and its regional interconnections has been fairly limited. The most significant studies are those by Klaus Freitag and Catherine Morgan, who have both stressed the importance of multiple maritime interconnections as a significant factor in the placement of settlements and geopolitical developments in the region. The work by Freitag was concerned primarily with the development of coastal areas from the Archaic to the Early Roman period, and did not include an investigation of surrounding hinterlands.[7] Freitag emphasizes the function of the Corinthian Gulf as a *Lebens- und Interaktionsraum* and as a strategic arena for warfare and other forms of political interconnections, thus creating a historical narrative on the *Golfanrainer*. The research carried out by Catherine Morgan has in contrast had a clear focus on the Corinthian Gulf as a region of multiple interconnections, and includes both coastal zones and hinterland, but with a primary interest in the Early Iron Age and Archaic periods.[8]

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[4] Horden & Purcell 2000; see also the various entries in Harris 2005, for recent responses to the study of Horden and Purcell, as well as general discussion on Mediterranean interconnections and the connectivity of coastal areas.
[5] Horden & Purcell 2000, 123.
[6] Malkin, Constantakopoulou & Panagopoulou 2009; Malkin 2011; Knappett 2011.
[7] Freitag 2000.
[8] Morgan 1988; 1990; 2003, 213–222.

The investigation of connected inland networks in relation to coastal zones and maritime routes presented in the current paper is thus reminiscent of the approach adopted by Catherine Morgan, but differs from hers through its focus on the framework of landscape and in terms of the historical periods under study. This is important in regard to the urban development and socio-economic transformation which occurred during the later Archaic, Classical and Early Hellenistic periods. Such developments would have formed rather different patterns of communication between the Gulf and the different hinterlands in comparison to those of the Early Iron Age and Archaic periods.

As in the case with the broader Mediterranean, the Corinthian Gulf consists of diverse environments that would have effected interconnections in various ways. The Corinthian Gulf is surrounded by stretches of alluvial plains, some of which would have been extensively waterlogged in antiquity. Recent geoarchaeological testing in the area of Kalydon in Aitolia has, for example, shown that the plain below the ancient settlement would have consisted of a marsh-like environment, as is evident from lagoonal deposits.[9] There are also several examples of river deltas where rivers flow into the Gulf from mountainous areas in the surrounding regions. The size of these coastal plains would thus have varied to a large extent, and would also have affected patterns of exploitation and the economic systems connected to the harbours. In the Corinthia, western Achaia, and western Aitolia the coastal plain is comparatively extensive while in other parts marine terraces and mountains fall directly on the coast, providing good landmarks for navigation but also a fragmented environment that limits the number of good anchorages.[10]

The mountainous character of the surrounding areas also meant that coast-hinterland communication would in most instances have been channelled along certain routes, either on foot or by carts drawn by animals. In many of the regions, river valleys punctuate the mountain zones, providing access to coastal areas and suitable routes between harbours and hinterland communities. There are also several instances where upland valleys and flat ridges present possible access points between the coastal zone and the more mountainous interior. In certain areas, such as the northern parts of the Euinos Valley in Aitolia, valley floors are deep and narrow and continuously flooded, which can prevent communication along the valleys themselves. In these instances, movement may have been pushed to higher altitudes along level summits and flat ridges, as indicated by early modern paths and tracks, thus providing further possibilities for movement and suggesting that mountains cannot be seen as obvious boundaries to patterns of mobility.

There seems, furthermore, to be a seasonal aspect connected to the patterns of communication. During the winter and spring months, movement along these routes must have been impeded by the harsh winter and spring weather in the upland zones as well as the flooding of river valleys, since

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[9] Dietz *et al*. 2007, 44.
[10] Morgan 2003, 217.

extensive snowfall can occur in many of the areas.[11] In summer and early autumn the diminishing snow and rainfall, and the drying out of rivers would have allowed for greater possibilities for travel between harbours by the Corinthian Gulf and inland centres.[12]

The above description of the Corinthian Gulf environments has been presented in order to emphasize that the physical environment would have had a considerable effect on the patterns of communication between coastal areas and hinterland regions. Such patterns need, however, to be traced in terms of archaeological evidence. An analysis of sites and the physical routes, which may be identified on the basis of topography, can be used to discern the presence of what Yianis Pikoulas has previously defined as "big axis roads", i.e. roads that connect the principal settlements in a region, and lines of communication.[13] By examining the landscape context of larger settlements sites and sanctuaries it is possible to discern potential coast-hinterland arteries and the development of networks connecting sailing routes of the Gulf with major hinterland settlements, microregions and markets.

Eastern Achaia and the uplands of northern Arcadia: a case study

In a paper such as this it is clearly impossible to summarize the evidence relating to coast-hinterland interconnections in all the previously mentioned regions around the Gulf. An interesting case study is, however, offered by coastal Achaia, to the east of the Panachaiko massif, and its interconnections with sites and microregions in the Achaian and Arcadian uplands to the south (*Figs. 1* and *2*). The reason for focusing this discussion on eastern coastal Achaia and its hinterland, rather than the entire ancient political area of Achaia is due to variations of topography. Eastern Achaia largely consists of mountainous terrain that borders directly on the coastal zone and is further broken up by a series of large river valleys. Western Achaia, in comparison, consists of extensive plains, even if the foothills of the Panachaiko Mountains provide enclosed pockets of land around the city of Patras and the Pharai Valley.

The effect of physical topography on coast-hinterland interconnections must therefore have varied considerably, and must also have affected the political history of the region as has been stressed in previous research.[14] Connectivity and the patterns of mobility between harbours on the eastern

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[11] An example of rivers impeding movement in the hinterland landscape of the Corinthian Gulf is, for example, presented by Polybios (4.70.7–10) in connection with a description of Psophis in northern Arcadia and natural features providing the city with further defences. For the climate and environment of Achaia and Northern Arcadia see further Dalongville 1994; 2000; Roy 1999, 321–322. For the climate and physical environment of Aitolia and the north-western region of the Corinthian Gulf, see Deylius 1987.

[12] On the seasonal drought of rivers in Achaia, see Higgins & Higgins 1996, 69; Morgan & Hall 2004, 472.

[13] Pikoulas 1999, 303–304.
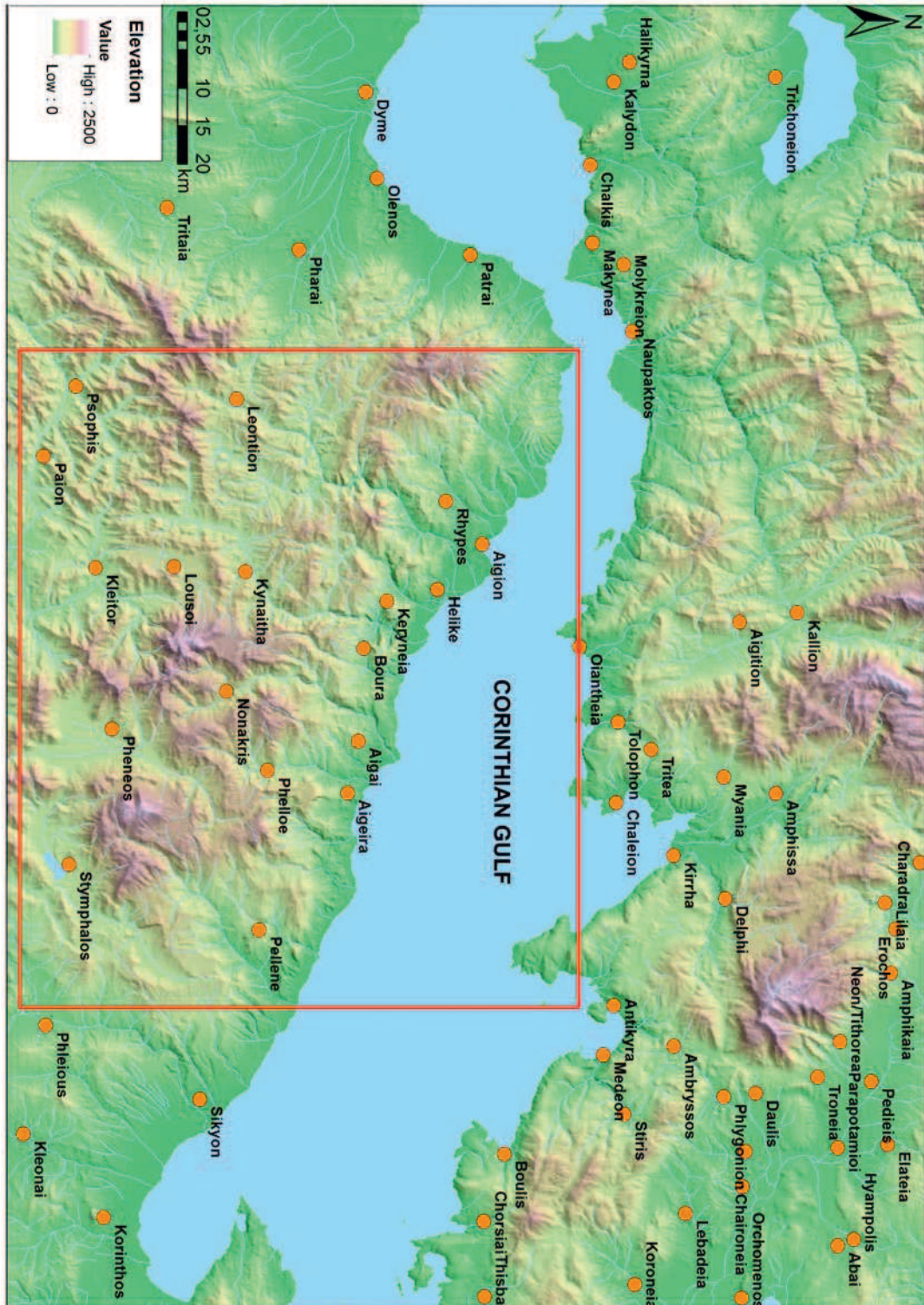
[14] Morgan & Hall 2004, 472–477.

Fig. 1. Eastern Achaia and northern Arcadia in relation to the Corinthian Gulf. All maps have been constructed in ArcGIS 10 based on elevation data for the southern Greek mainland provided by A. Jarvis, H.I. Reuter, A. Nelson, E. Guevara, 2008, Hole-filled SRTM for the globe Version 4, available from the CGIAR-CSI SRTM 90m Database (http://srtm.csi.cgiar.org).
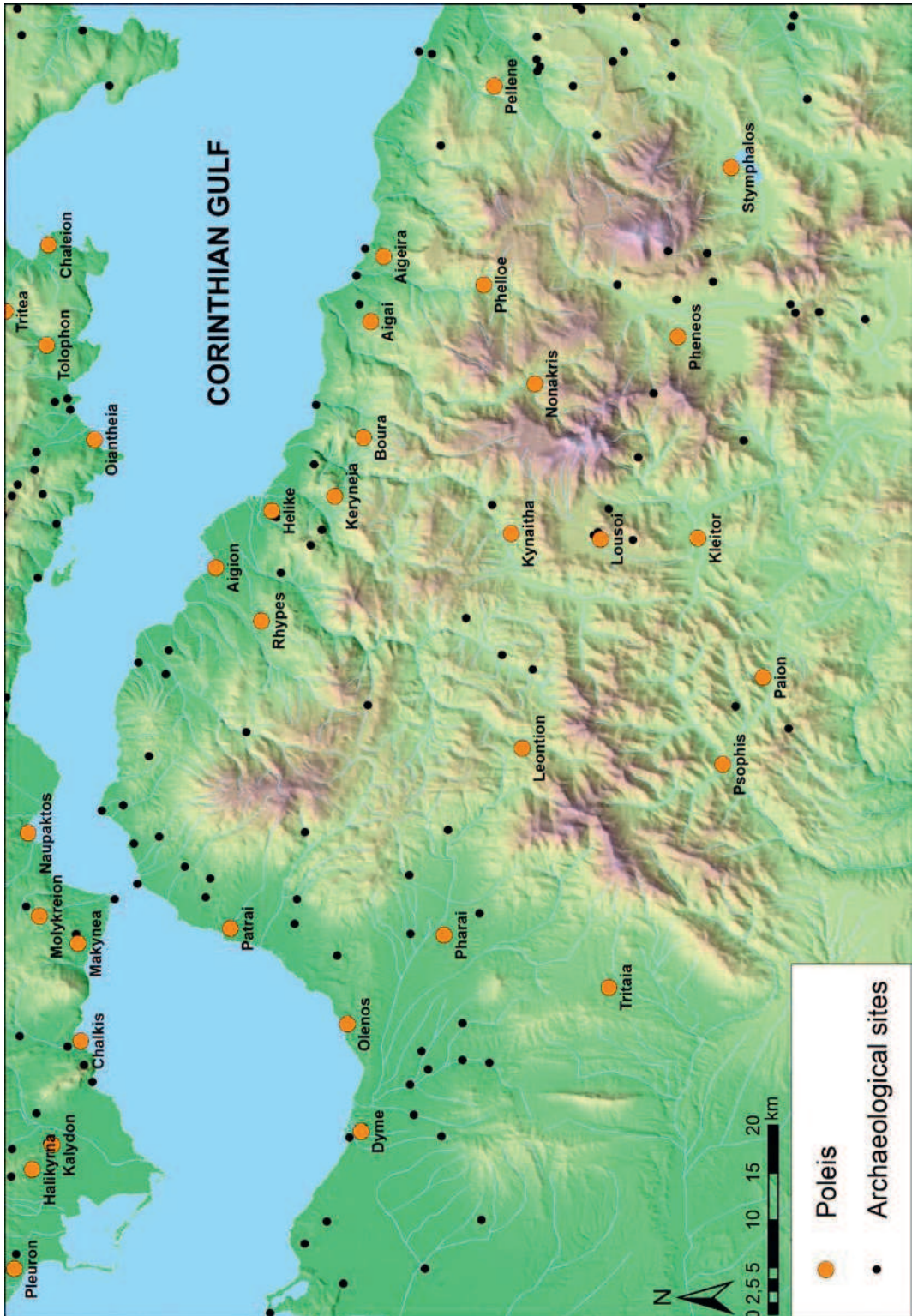
Fig. 2. *Poleis* and archaeological sites in Achaia and northern Arcadia.

coast and its mountainous hinterland to the south will therefore be the focus of this paper.

Although none of the major excavation projects that have been undertaken in the region have yet been fully published, preliminary reports of both research-oriented excavations and rescue work have been made available and provide much data on patterns of ancient activity and habitation in the various landscapes that make up the region. A few surveys have been carried out, including an extensive survey of ancient settlements, fortifications and road networks in the Pheneos Valley, which has been fully published.[15] Going beyond the evidence provided by material remains, the treatment of Achaia and various areas of northern Arcadia by the *Copenhagen Polis Centre* has been of great value in discerning regional settlement hierarchies, and the status held by individual settlement sites.[16]

In the coastal zone it is, however, difficult to establish a full picture of the pattern of habitation and activity due to extensive alluviation burying sites deep beneath the soil. Modern development and associated archaeological rescue work has nevertheless produced some evidence from at least one major settlement site at modern Aigio, which has been securely identified as ancient Aigion.[17] Recent research-oriented excavations carried out at the site of ancient Helike, on the coastal plain between the Selinous and Kerynites Rivers, have also provided some remains of a significant Achaian *polis* situated within the coastal zone.[18] A few other localities have been explored within the narrow coastal plain itself, consisting of smaller burial sites discovered as part of rescue work.[19] It is nevertheless evident from a combination of archaeological and historical sources that several larger settlements from the Archaic period onwards, which were situated at elevated positions overlooking the coastal plain, were in possession of harbours and other satellite sites by the coast.[20]

The larger settlements were primarily located above the many river valleys that often provide the most direct entrance points to the hinterland. Sites such as Aigeira, Keryneia and Helike are also situated in close con-

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[15] Tausend 1999a–c; Erath 1999. For further survey projects in the area of Krios Valley, see reports in Petropoulos, Pontrandolfo & Rizakis 2008a and 2008b.

[16] Morgan & Hall 1996; 2004; Nielsen 2002; 2004; Nielsen & Roy 1999; Roy 1996.

[17] Rescue work at Aigio has been carried out over a long period of time in connection with modern development; finds from the excavations derived from domestic contexts and consisted both of pottery and structural remains. Several burials of Archaic and Classical to Early Hellenistic dates have also been uncovered in the area of the modern town. For a summary of work carried out at Aigio, see Papakosta 1991; Morgan & Hall 1996, 176–177.

[18] Recent work has been focused on the area of the modern villages of Nikolaiika and Rizomylos. Finds include architectural sculpture and terracottas of the Archaic period, as well as remains of structures, tiles and pottery, including transport amphorae and storage vessels, dating to the Classical–Early Hellenistic period, see Soter & Katsonopoulou 1998; Katsonopoulou 2002 and 2005; *AR* 2001–2002, 39.

[19] At Neos Erineos close to the mouth of the Phoinikas River, an Archaic burial has been excavated which contained a Corinthian cylindrical *pyxis* and one black-figure *lekythos* (*ArchDelt* 20, 1965, Chron., 223; Morgan & Hall 1996, 179). Further east, at Pounda Trapeza a Classical burial has been excavated which contained one red-figure *lekythos* (*ArchDelt* 36, 1981, Chron., 171; Trikolas & Kourtesi 2005, 271, fig. 2).

[20] This seems to be the case in terms of Pellene, Aigeira, Aigai and Rhypes. Boura, Keryneia and Helike may potentially also be included in this group of *poleis* with coastal satellites.

nection with possible mountain paths, and would have acted as access points to neighbouring upland environments from the coastal zone.

Ancient Aigiera is the best explored of these sites, due to the long periods of excavation carried out by the Austrian Institute. The main settlement and acropolis is situated on a series of terraces that provide good views of both the coastal areas and the Krios Valley to the south. The city was in possession of a harbour at the cove of Mavra Litharia, at least in the Roman period, though there is good reason to assume that the cove would have served as a harbour in earlier periods as well.[21] Mavra Litharia is one of the few good natural anchorages in the area, and imports from the Archaic period onwards uncovered at the acropolis, such as Attic and Corinthian fine wares, indicate access to goods transferred within the Corinthian Gulf.[22] The inclusion of Aigeira in the *Periplous* of Pseudo-Skylax (42) further emphasizes that the city was closely connected with the sailing routes of the Corinthian Gulf.

Recent excavations at modern Aigeira, to the west of Mavra Litharia and the mouth of the Krios River, have also produced remains of Late Classical/ Early Hellenistic houses that are possibly part of a coastal satellite connected to the main *polis*.[23] It is further possible that the coastal site could have served as the harbour of the neighbouring city of Aigai, but by the late 4th century BC the town of Aigai may already have been incorporated into Aigeiran territory.[24] Pausanias (7.26.1–2) refers to the existence of an upper (ἄνω) city, as well as a city by the sea at Aigeira (ἐπὶ θαλάσσῃ). According to Pausanias the coastal settlement also acted as the port of Aigeira (ἐπίνειον), and belonged to the upper city.[25] Archaic and Classical sources generally do not provide such information on the status of Achaian harbours, but given the remains uncovered at modern Aigeira by the coast it is possible that such territorial structures were implemented before the Roman Imperial period.

The connection between the *polis* of Aigeira and the maritime sphere of the Corinthian Gulf is thus manifested firmly in various sources, but how can we understand the function of the site as a gateway between the Gulf and hinterland networks?

To start with, site patterns in the region provide interesting indications of clusters of habitation from the Archaic to the Early Hellenistic period, which are in close connection with probable coast-hinterland routes. Aigeira is positioned immediately above the entrance to the Krios Valley, which provides good access to the interior, particularly during the dry summer periods when the river partly dries up (*Fig. 3*). The position of the settlement on the foothills by Mount Evrostina would also have allowed access to potential mountain paths leading towards the interior on higher ground above the valley floor, a route that was used by Pausanias (7.26.10) in the

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[21] For work carried out at Mavra Litharia and the identified post-Classical remains, see Papageorgiou *et al.* 1993; Stiros 2001.
[22] Schwarz 1986 and 2001.
[23] *AR* 2009–2010, 66; see further Bonnier 2008 for a discussion on Greek harbours and urban space.
[24] Paus. 7.25.12 and 8.15.19, see also Morgan & Hall 2004, 479.
[25] See Bonnier 2008 for the use and definition of ἐπίνειον in Classical sources and a general discussion on the terminology of harbour types in Archaic and Classical sources.

2nd century AD. Interior settlements were situated in connection with the Krios Valley routes: at Phelloe (located by modern Seliana), which is situated on the western slopes of Mount Evrostina, survey work and small-scale excavation have provided material remains of Geometric to Roman habitation.[26] The most direct route between ancient Aigeira and Phelloe follows the sloping ground above the Krios Valley. Phelloe is furthermore situated in close proximity to potential upland paths, which lead further south into the Pheneos Valley, by modern Sarantapicho (*Fig. 3*).[27]

Our understanding of the Pheneos Valley has been greatly improved by the extensive survey work that has been carried out in the area. Outside of the main urban centre at Pheneos, several smaller settlements and a number of sanctuaries have been examined and the densest pattern of habitation can be dated to the Classical and Early Hellenistic periods, even if Archaic activity is visible at a number of sites.[28] A number of towers and fortifications, which are all located in connection with probable communication routes, have also been recorded.[29] Road remains consisting of wheel ruts carved in rock according to a standard gauge of 1.40 m, and traces of road terracing, have also been documented in the valley.[30]

The position of the road traces suggests the construction of an infrastructure of communication that followed the routes which enter the Pheneos Valley from the Krios and Phonissa Valleys to the north-west and north-east respectively; both of these provide direct access to the coastal zone of the Corinthian Gulf (*Fig. 4*). The road would have extended to neighbouring valleys to the south, towards the city of Stymphalos south of Mount Kyllini, and towards Orchomoenos, and run through a small gorge by the modern village of Mati. Road traces also suggest that a road would also have passed to the south of Mount Chelmos, into the Aroanis and Ladonas Valley and the region of the settlement and extramural sanctuary of Artemis at ancient Lousoi (*Fig. 5*).

Together these interconnected valleys formed a series of communication arteries that connected the Corinthian Gulf with upland regions to the south. Indications of ancient mobility via the routes discussed above are provided by the loci of ancient sites situated in connection with these valleys. The remains of ancient roads further present solid evidence on the use of routes and the development of an infrastructure of communication even if the traces themselves are difficult to date, though we should assume that they are ancient given the correlation with the locations of the ancient settlements in the area. The chronology of development offered by the material remains from the sites situated in connection with these routes nevertheless provides important clues on the periods of construction. It therefore seems most probable that many of these road networks would have been in operation by the Classical period, and thus may be linked to well-established patterns of mobility going back to the Archaic period.

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[26] Trummer 1986; Morgan & Hall 1996, 174.
[27] For further discussion on the topography of this route, see Tausend 1999a, 273–274.
[28] For sites identified in the Pheneos Valley, see Erath 1999.
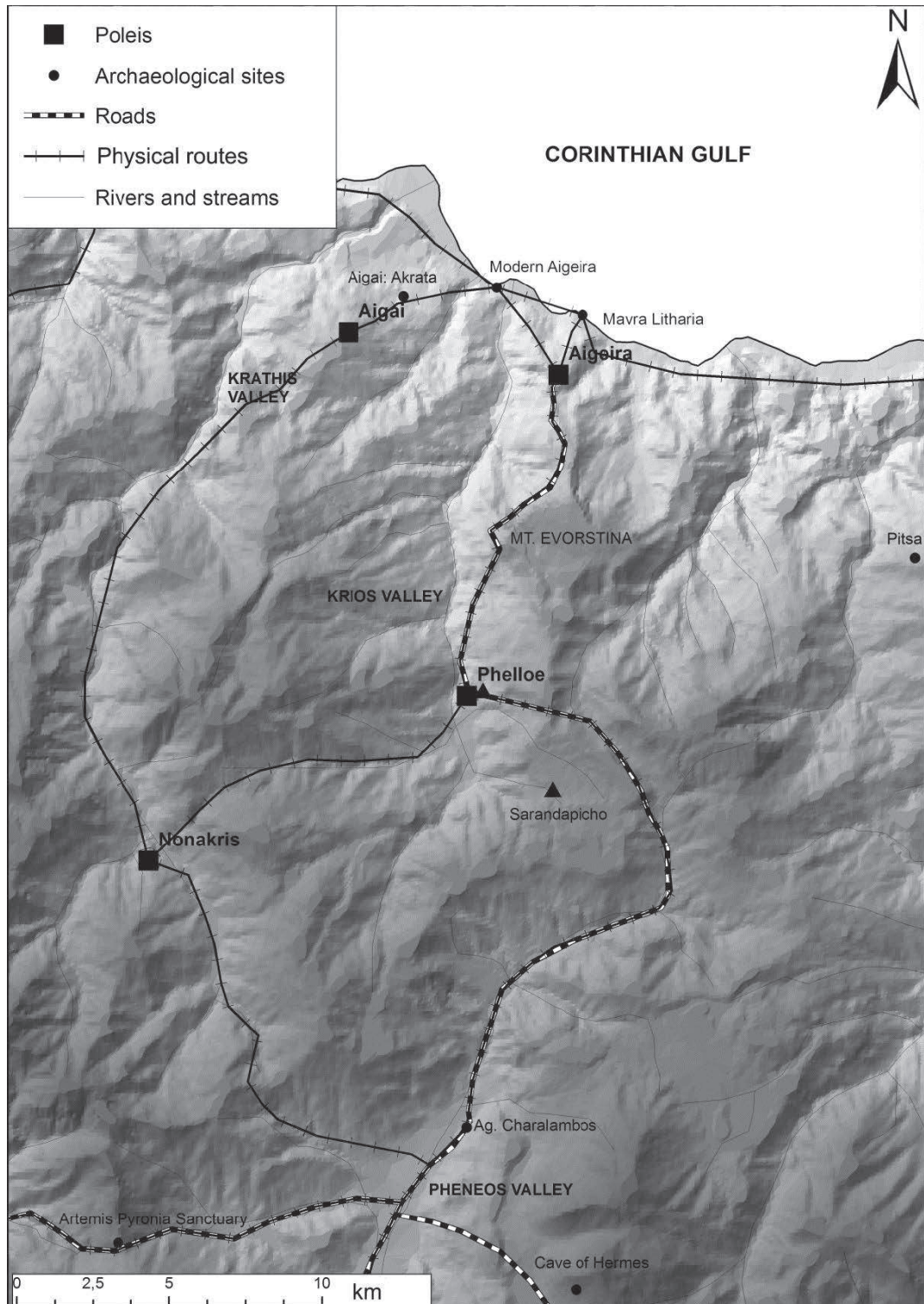[29] Tausend 1999c.
[30] Tausend 1999a and b; 2001.

Fig. 3. Aigeira and the Krios Valley. Roads suggested on the basis of recorded road traces and written sources (after Tausend 1999b; Tausend 2001).
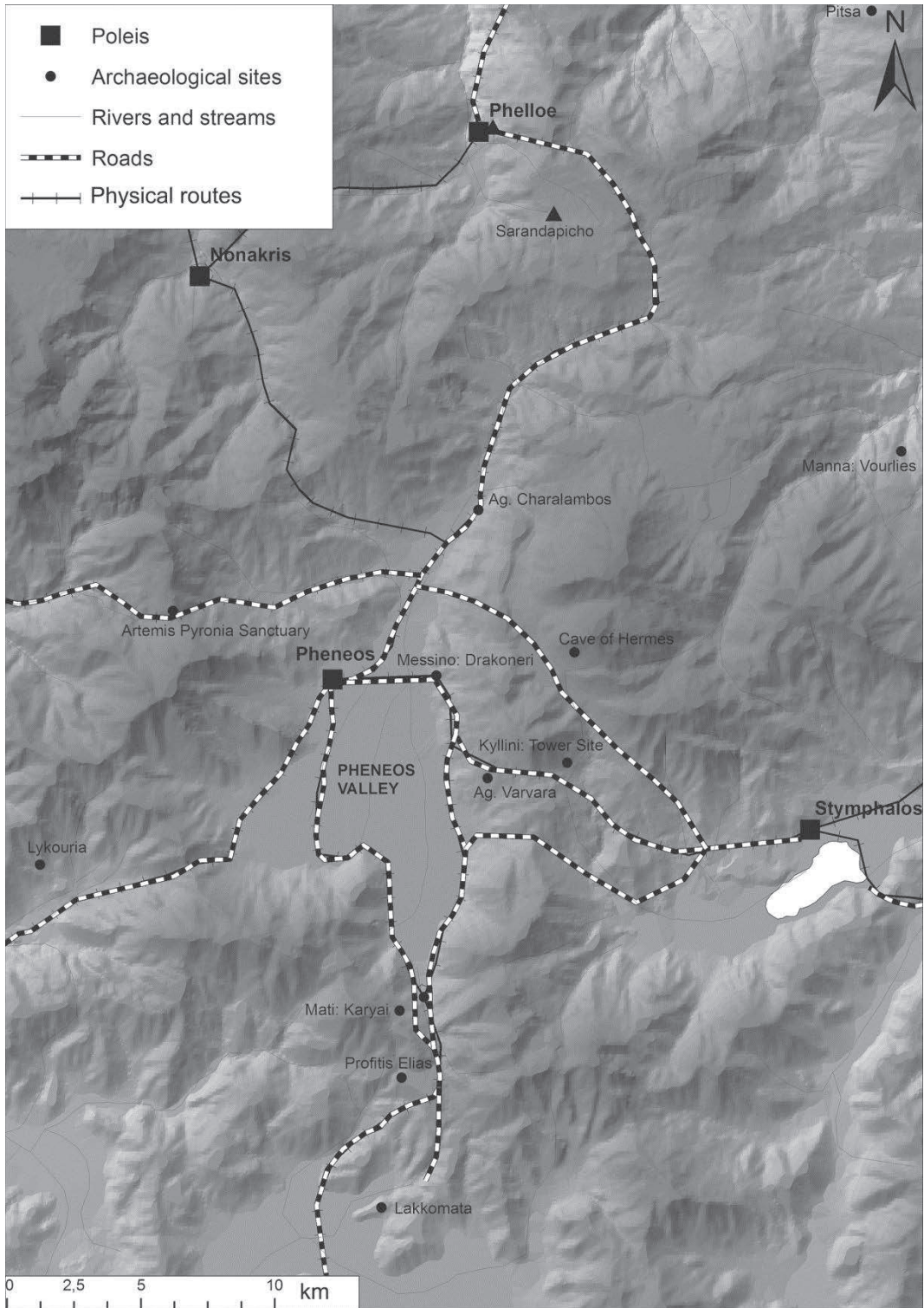
Fig. 4. The Pheneos Valley. Roads suggested on the basis of recorded road traces and written sources (after Pikoulas 1999; Tausend 1999b; Tausend 2001).
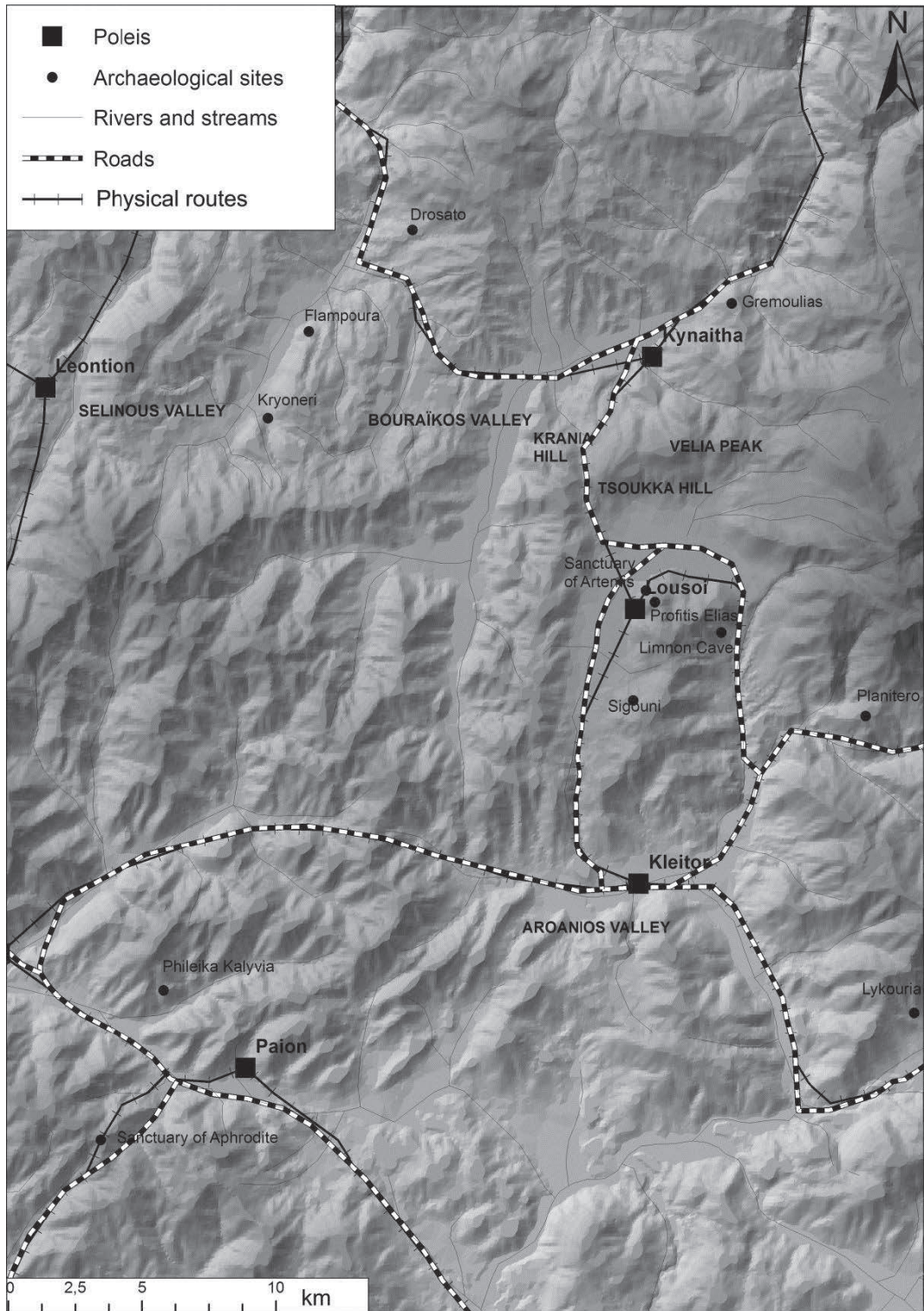
Fig. 5. Lousoi and neighbouring areas to the west of Mt. Chelmos. Roads suggested on the basis of recorded road traces and written sources (after after Pikoulas 1999; Tausend 1999b; Tausend 2001; Petropoulos 2002:15).

Finds of non-local pottery, such as Corinthian and Attic fine wares, provide some indications on patterns of mobility along the same coast-hinterland routes, through the Krios and Pheneos Valleys. Probable imports have been reported from a cistern deposit at the acropolis of ancient Aigeira,[31] at Phelloe,[32] and from sites in the Pheneos Valley.[33] The Corinthian Gulf would have been the easiest route of transport from the places of production, particularly in regard to the Corinthian fine wares, which form the most abundant class of non-local pottery from the region. The similarity in dates and shapes represented in the reported assemblages also suggest that material would have been transferred through similar channels, probably through Aigeira and further into the hinterland.

The quantity of reported non-local pottery is often small, though this may to a large extent be explained by a lack of fully published material assemblages from the investigated sites. It seems probable that with further investigation and the publication of regional pottery distribution, more information on non-local material, particularly of the Classical and Early Hellenistic periods, will be available. The volumes of non-local pottery may, to a certain extent, also reflect small-scale and short-distance transfers along land-based networks through which small volumes of goods (consisting of both perishables and utilitarian objects such as pottery) were moved between the Corinthian Gulf and hinterland areas.

Non-local pottery has furthermore been reported form the sanctuary of Artemis at Lousoi. It consists primarily of Archaic Corinthian pottery as well as a few Attic and Archaic Laconian vessels, which may indicate access to traffic from areas to the north and south.[34] The sanctuary itself is situated in close connection to the routes that provide access to the Pheneos Valley and the Corinthian Gulf, which were discussed above, as well as potential routes reaching further south into the heartland of the Peloponnese, southern Arcadia and Laconia. But Lousoi would also have had close access to other valley systems that were connected with the Corinthian Gulf coast further west. To the north of the sanctuary, entry into the upper area of the Bouraïkos Valley is assisted by low ridges between the Tsoukka and Krania Hills, and by the saddle formed between the Velia and Augo peaks by modern Ano Lousoi (*Fig. 5*).[35]

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[31] At Aigeira, Archaic Corinthian and Attic imports have been documented within a cistern at the site of the acropolis (Schwarz 1986, 329–342; 2001, 90–91). Corinthian vessels consist mainly of *kraters* and open vessels of either Middle or Late Corinthian manufacture (Schwarz 1986, 329–332, nos. 3–8; 2001, 90–91). The Attic material includes black-figure amphorae as well as a single black-figure *lekanis* (Schwarz 1986, 334–342, nos. 9–13; 2001, 91). A small amount of Classical Attic and Corinthian pottery has also been reported from the cistern deposits (Schwarz 1986, 342–345, nos. 14–16; 2001, 91–92).

[32] Reported finds include Early, Middle and Late Corinthian pottery, as well as Attic red-figure sherds (Trummer 1986, 320, 323–324; see also Morgan & Hall 1996, 174).

[33] At the Hermes Cave site, Protocorinthian and Early to Late Corinthian material has been published (Erath 1999, 243–244). At Lakkomata pottery of Early Corinthian to Late Corinthian manufacture has been recorded, though dating is difficult due to the fragmentary state of the surface material (Erath 1999, 229–234).

[34] For non-local fine wares recovered at the sanctuary, see Mitsopoulos-Leon 2001, 134; Schauer 2001, 158–159.

[35] For a discussion on these routes, see Tausend 1999a, 263–265.

A significant habitation site in the area of the upper Bouraïkos Valley was Kynaitha, which is probably to be equated with the modern town of Kala-vryta.[36] Few archaeological remains have been published that can securely identify the exact location of the ancient town, but some material evidence is provided by monumental architectural remains recently excavated at the Gremoulias saddle, situated immediately to the east of Kalavryta. The re-mains consist of a Doric limestone temple with a marble roof that can be dated to the 6th century BC, with a second construction or re-construction phase occurring probably in the 4th century BC.[37] The dates provided by the material remains from the Gremoulias site thus suggest that the sanctuary would have been tied to a political community which was in existence dur-ing these periods.

Kynaitha/Kalavryta is itself situated at the southern terminus of the Bouraïkos gorge, which connects directly with the coastal zone to the north, but it is difficult to determine if the gorge would have acted as an important coast-hinterland route in antiquity. The gorge is rocky and steep in parts, and during winter and spring the amount of water flowing would certainly have prevented travel through it. Due to these conditions the Bouraïkos route must have been unsuitable for wheeled traffic, but would probably have been able to accommodate mule paths through the gorge during dryer periods; stable ground within the gorge as well as surrounding ridges would have been utilized, as indicated by travel accounts of the 19th century.[38]

The region of modern Kalavryta and the upper Bouraïkos Valley is also topographically linked to potential routes from the Corinthian Gulf coast, further to the west, following the Selinous and Meganitas Valleys, and up-land paths through the Panachaiko Mountains. A number of sites have been identified along these routes, consisting both of settlements and other site-types (*Fig. 6*). In the southern part of the Selinous Valley remains of burials and surface scatters of archaeological material point to expanding habitation from the Archaic to the Late Classical and Early Hellenistic periods.[39]

In the immediate hinterland of Aigion and Helike, ancient sites have been located that point to increasing activity along coast-hinterland routes. Much information can for example be drawn from fieldwork carried out at the substantial settlement situated on the Trapeza Hill, which should possibly be equated with ancient Rhypes, as well as the sanctuary of Artemis at Ano Mazaraki (Rakita), which is situated further inland (*Fig.6*).[40] The Trapeza Hill settlement overlooks the eastern bank of the Meganitas River, and is conveniently positioned in relation to natural routes going into the eastern

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[36] Nielsen 2004, 516, no. 278.
[37] *AR* 2003–2004, 35–36; *AR* 2006–2007, 31–32; *AR* 2007–2008, 44.
[38] Leake 1830, vol. 2, 111–112, vol. 3, 297–298; cf. Anderson 1954, 76.
[39] *ArchDelt* 42, 1987, Chron., 163–164; *ArchDelt* 51, 1996, Chron., 239.
[40] For work carried out at the Trapeza Hill site and its immediate environs, see *ArchDelt* 50, 1995, Chron., 238–239; *ArchDelt* 51, 1996, Chron., 240–241; *ArchDelt* 52, 1997, Chron., 299; *ArchDelt* 54, 1999, Chron., 264–265; Vordos 2001; Vordos 2002. For material remains re-corded at Ano Mazaraki (Rakita), see *ArchDelt* 39, 1984, Chron., 103; *ArchDelt* 50, 1995, Chron., 220–225; *ArchDelt* 51, 1996, Chron., 237–238; Morgan & Hall 1996, 177–179; Gado-lou 2002; Petropoulos 2002.
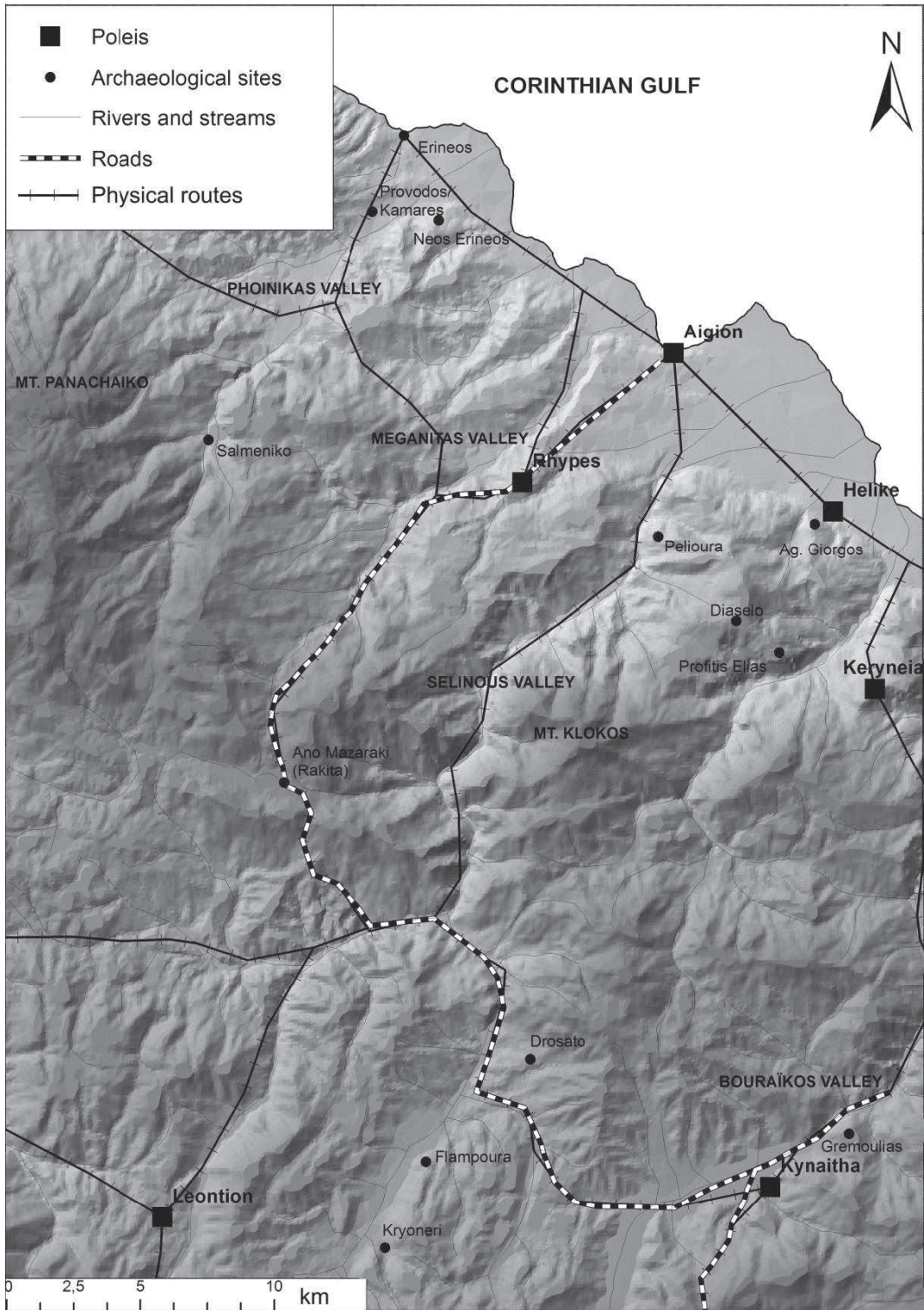
Fig. 6. Aigion and its hinterland. Roads suggested on the basis of recorded road traces and written sources (after Petropoulos 2002:15).

part of the Panachaiko massif, where the sanctuary at Ano Mazaraki (Rakita) is situated within an upland valley, above the Selinous River which cuts through the mountains to the east of the site.

As in the case with the material remains documented at Aigeira and its hinterland, published finds point towards established patterns of mobility between Achaian harbours and the localities mentioned above. Archaic and Classical Corinthian pottery has for example been reported from the Trapeza Hill site, and indicates the transfer of goods into the hinterland, possibly via the harbour at Aigion.[41] Previous discussions on the Ano Mazaraki (Rakita) site have also emphasized the way in which archaeological finds point to established links between the sanctuary and Aigion during the Late Geometric period, on the basis of finds of pottery and other small finds that indicate contact with both the wider milieu of the Corinthian Gulf and areas of northern Arcadia.[42]

Interestingly, the use of these routes also in later periods is suggested by the remains of a road running to the south of the Trapeza settlement, which was discovered during the recent excavations carried out at the site. The orientation of the remaining road traces suggests that it would have followed the Meganites route into the Panachaiko Mountains and gone further south towards Lousoi, thus forming an important part of the interconnected valley-systems that connected the Achaian coastal zone with the interior uplands to the south.[43]

Site distributions documented in eastern Achaia thus help to provide a picture of expanding settlement networks and lines of communication between the coastal zone and the mountainous hinterland to the south, from the Archaic into the Early Hellenistic period, during which there is a notable increase of sites in the region. Further categories of material remains, such as non-local pottery and road traces, also help to demonstrate the build-up of integrated communication arteries. Although the publication of material remains is often incomplete, the various strands of evidence help to identify the uses of the potential coast-hinterland routes that were suggested on the basis of physical topography.

It must be stressed that mountains and upland terrain do not seem to have formed a physical boundary that would have hampered communication, instead these mountains tended to channel communication along certain routes. It is thus important to recognize that Achaian harbours were not only closely connected to the sailing routes of the Corinthian Gulf, but they also acted as important maritime connection points for land-based settlement networks that stretched into the interior uplands. The role of these arteries must therefore be considered in regard to the wider maritime networks of the Corinthian Gulf, and beyond.

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[41] *ArchDelt* 50, 1995, Chron., 238–239; *ArchDelt* 54, 1999, Chron., 264–265; Vordos 2002, 222.
[42] Early imports at the sanctuary consist of Protocorinthian and Thapsos pottery as well as impressed wares that occur elsewhere in the northern Peloponnese and at Delphi. The locally produced pottery also points to possible connections with Corinth and Argos (Morgan & Hall 1996, 177–178; Morgan 2003, 176–178, 221; Gadolou 2002; Petropoulos 2002, 148–150 and 157).
[43] *ArchDelt* 52, 1997, Chron., 299; Vordos 2002, 226–227; Petropoulos 2002, 157.

Regional economies and connectivity

Having presented the evidence for coast-hinterland interconnections connected with harbours in eastern Achaia, I now want to explore the way in which production strategies and regional economies can be linked to the communication routes and pattern of regional interconnections suggested above. Economic networks may be viewed as the way in which production was directed at both local and external markets, as well as the way in which goods entered the hinterland through harbours. Patterns of economic interconnections will be related now to individual coast-hinterland arteries, as well as the full area formed by the Gulf and the aggregate whole of various networks in the broader region. This follows quite closely the ideas presented by Horden and Purcell, where connectivity is understood specifically as the connectivity of microregions and microecologies.[44]

The varying physical landscapes that make up the various regions connected to the Corinthian Gulf are important when considering patterns of production and exchange. Different forms of exploitation in various topographic zones can be identified through different types of ancient sources (both textual and material), and would have interacted with maritime communication in different ways. The area comprised of eastern Achaia and northern Arcadia is, as we have seen, mountainous in character. Limited cultivation is possible in the region, and also in the uplands, but environmental conditions must have restricted production, and it seems improbable that arable agriculture would have been able to create any substantial surplus which could have been exported to markets beyond the local region.[45] The regional production strategies of these uplands mean, however, that they should not be seen as economically marginal. There is evidence that specific upland resources were exploited and transferred within the maritime trading networks, making uplands an integral part of the inland networks tied to Achaian harbours.

The movement of upland resources through Corinthian Gulf harbours to external markets can for example be demonstrated by inscriptions from Delphi relating to the construction of the 4th-century BC temple of Apollo. One of these texts lists the purchases of wood from the Peloponnese for the construction, stating in particular that cypress timber was acquired from Sikyonian and Corinthian merchants at substantial cost.[46] The inscription does not specify where these resources had originally been obtained, but given the origin of these merchants it is probable that the timber had been extracted from the forests on the mountains in southern Sikyonia or possibly northern Arcadia. The exploitation and export of similar raw materials in these uplands is suggested by another inscription from Delphi that also relates to the construction of the 4th-century temple of Apollo.

The second inscription states that an Arcadian of Kleitor, an Achaian of Ascheion and citizen of Kroton supplied fir timber for the temple.[47] The source of the timber is not listed, but, as in the case with the text discussed

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[44] Horden & Purcell 2000, 123.
[45] For aspects of agricultural production in Arcadia, see Roy 1999, 324–328.
[46] Meiggs 1982, 430–433; Freitag 2000, 247–248.
[47] *FdD* III:5, 25, col. III B; Meiggs 1982, 432.

above, the origin of the individuals suggests that these resources would have come from uplands south of the Peloponnesian north coast. One of these men was an Achaian of Ascheion, a place which has not yet been identified on the basis of material remains.[48] The fact that this city is not included in the itinerary of Achaian coastal localities provided by Pseudo-Skylax (42) suggests that it would have been an inland settlement.

The other individual was, according to the text, a citizen of Kleitor, which has been identified in northern Arcadia, south of Lousoi and close to the Chelmos Mountains and the Pheneos Valley (see *Fig. 5*). The inland location of this site thus suggests that that the citizen had local knowledge of possible timber resources in the uplands close to the city, and possibly owned land on which such resources were exploited. The geographic location of Kleitor also gives further weight to the assumption that Ascheion would have been an inland settlement rather than a coastal town. The fact that these men are listed as jointly supplying the fir timber emphasizes the point that the coast-hinterland routes running through Achaia and into northern Arcadia would have been used for this type of bulk transfer by the 4th century BC. Thus, timber must have been cut in the mountainous region of southern Achaia and northern Arcadia, and then transferred from these uplands to the Achaian coast, before being shipped to Kirrha and transported overland to Delphi. The textual evidence indicates that mountainous areas would have been able to produce valuable resources, even if they were marginal in terms of arable agriculture production.

It is also interesting to observe that building enterprises carried out at significant religious or political centres within the broader Corinthian Gulf region, such as Delphi, stimulated the extraction and export of resources in these uplands and provided a market for such activities. The two inscriptions from Delphi are important because they highlight the clear connections between the specialized exploitation of resources in the hinterland of the Gulf and existing maritime networks.[49] The evidence relating to the exploitation and transfer of timber resources in these uplands should certainly also be connected with the material evidence for established coast-hinterland mobility. The above discussion of the eastern Achaian coast and its southern hinterland showed that different types of archaeological material demonstrate the development of the settlement networks that would have connected Achaian harbours with settlement loci in the interior uplands as early as the Archaic period. Although finds of non-local pottery point to the movement of certain goods along these arteries, these cannot be taken as wares that

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[48] For the status of Ascheion as a *polis* in the Classical period, see Morgan & Hall 2004, 480, no. 232.

[49] The bulk transfer of building material from other regions to Delphi is furthermore demonstrated by the itineraries related to the construction of the 4th-century temple of Apollo. Limestone is, in one part of the text, listed as having been extracted in the Corinthia and later transported to the harbour at Kirrha, from where it was moved "from the sea to the temple" by specialist stone transporters called *lithagogoi* (Rhodes & Osborne 2003, no. 66, i, 40–42; ii, 80–82; Salmon 1984, 122–125; Rothaus 1995, 294; Freitag 2000, 220–222; see also Burford 1960 for a discussion on the logistics of transport). Archaeological remains of ancient limestone quarries in the Corinthia have recently been studied by Chris Hayward (2003), who shows that some of these were linked with the harbour at Lechaion through coast-bound roads (Hayward 2003, 31).

would have stimulated the transfers between the Corinthian Gulf and the neighbouring uplands. The inscriptions discussed above instead present some of the significant resources available in the mountain zones, and assist in the formulation of coast-hinterland networks as an important part of the connectivity of the upland areas, and help to explain the significance of the networks suggested on the basis of material remains.

Further economic activities within the interior uplands of Achaia and northern Arcadia also need to be considered in relation to the pattern of mobility between harbours and hinterlands. The extraction and exportation of timber must be taken as an economic enterprise that was directed at specific markets connected to the wider interaction sphere of the Corinthian Gulf, such as Delphi; but more regular production in uplands would also have formed part of harbour-hinterland interchange.

One aspect of production within mountainous environments, which has been the subject of much discussion, is that of animal husbandry and pastoralism. In the case of eastern Achaia the site patterns show that several hinterland settlements were positioned in close connection with upland terrain where winter temperatures are cold and the soil cover is generally thin, due to seasonal streams from the mountains flowing into the coastal plain and causing erosion.[50] In northern Arcadia upland basins and valleys are often flooded by these seasonal streams because of a general lack of outward surface drainage. These waterlogged valley floors may not be conducive to cultivation but can provide good grazing grounds for herds.[51]

The upland landscapes are consequently able to sustain only a limited amount of agriculture, but we can see that settlements are positioned close to terrain that could have offered good pasture for sheep and goats. The position of the recorded settlements thus seems to indicate that the regional economic strategies of the Achaian and northern Arcadian uplands had a strong pastoral component.

Similar interpretations on the connection between pastoral production and rural sites positioned in upland terrain have been presented by Hamish Forbes in relation to data from the Methana survey. Forbes stresses that the geographic context of such sites signifies pastoral activities in connection with larger agricultural estates that were engaged in other forms of production.[52] This suggestion seems attractive in light of the evidence from the hinterland of eastern Achaia, given the number of stable settlements which connected diverse topographic environments, including upland and lowland pasture.

There are, however, few types of archaeological remains that can be used as direct evidence for pastoral production. Some possible data relating to animal husbandry in the area of Lousoi has been produced by excavations of a Late Hellenistic peristyle house at the site. The investigations of the building produced large quantities of animal bones, primarily from cattle, goats and sheep, as well as a smaller number of bones from pigs.[53] It is difficult to

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[50] Dalongville 1994, 185; 2000; Roy 1999, 329.
[51] Roy 1999, 324.
[52] Forbes 1995, 336–338.
[53] Forstenpointner 1990, 37–50; Forstenpointner & Hofer 2001.

specify under what circumstances the animals were slaughtered and consumed, though it should be assumed that they were pastured in the local area and the bones themselves may reflect butchery linked to the religious activities at the nearby sanctuary.[54]

Written sources provide a greater body of evidence and there are several references to pastoral production in the area of northern Arcadia. Polybios (9.17.6) refers to a type of sheep that produced good wool being grazed in the area of Kynaitha, as well as a sacred herd being kept by the sanctuary of Artemis at Lousoi (4.18.10–12). Ulrich Sinn has convincingly argued that the sacred herd at the sanctuary should be interpreted as animals placed under the protection of the sanctuary by neighbouring residents at times of war, rather than a permanent herd kept at the sanctuary within a closed area.[55] An inscription from the site dating to the 3rd or 2nd century BC also informs us of a man from Charadra (possibly to be equated with a north Phokian *polis*) who was appointed as *proxenos* and *theorodokos* and granted the right to pasture (ἐπινομία) in the area of the sanctuary of Artemis.[56] These references to herds being kept in the area of Lousoi and Kynaitha can therefore be linked to the strong pastoral component of the economy in the uplands south of the Achaian coast.

There has been some debate on the nature of ancient Greek pastoralism, with some scholars rejecting the practice of extensive pastoralism involving transhumance, arguing instead that animal husbandry would have been carried out as part of "agropastoralism", which involved arable farming, animals grazing on fallow land, and the cultivation of fodder.[57] Others have suggested that pastoralism involved some degree of transhumance, and included the movement of flocks over comparatively short distances between upland and lowland pastures.[58]

The environments of the Achaian and Arcadian uplands would certainly have been suitable for extensive pastoral strategies involving some degree of transhumance, though it should be stressed that this mode of transhumance may have been carried out over quite short distances, e.g. moving flocks from lowland to upland pastures. A pure farm-based agro-pastoral approach would have been difficult to maintain because the production of fodder for winter periods would have had to compete with other forms of agricultural production in an area where the physical environment generally presented several limits to cultivation.

Pastoral production and the maintenance of flocks, such as those at Kynaitha, must have involved investment in larger herds that would have required pasture both on mountainsides and within the valleys in summer periods, and possibly also the Achaian coastal plain to the north during the winter period. This is not to deny that agriculture formed a component of the regional economies: written sources indicate that cultivation was to a certain

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[54] The possible use of these animals for sacrifices is suggested by the small number of sacrum bones and caudal vertebrae which were burnt as part of the ritual (Forstenpointner & Hofer 2001, 175).
[55] Sinn 1992, 180–185.
[56] *IG* V 2, 389; Chandezon 2003, 353, no. 85.
[57] Halstead 1987; Hodkinson 1988.
[58] Skydsgaard 1988; Chaniotis 1999.

degree maintained within the uplands and could have provided for at least part of the local consumption.[59] Pastoral production should instead primarily be linked to investment tied up with economic networks, which were dependent on access to maritime outlets such as the Achaian harbours to the north.

Part of the critique against the existence of extensive pastoral regimes in ancient Greece has been that such production has, in other historical settings, been tied to very specific markets where large of volumes of pastoral products such as cheese, meat, and, most importantly, wool could be sold.[60] The evidence for the existence of such markets is not as straightforward compared to the medieval or Early Modern period, but the coast-hinterland routes formed potential arteries along which pastoral products may have been transferred. Wool is probably the most important of these products since it is a basic raw material for weaving and cloth production. Recent work by Alain Bresson has shown that the production of textiles in the ancient Greek world was carried out both at workshops and as part of smaller scale domestic activities, and that it was a valuable component of the ancient economy.[61] Bresson further argues that raw wool was often transferred from grazing areas to urban manufacturing centres that produced textiles both for local consumption and further export.[62] In light of this argument it is important to stress that the possibilities for trading wool may well have stimulated investment by rich individuals in larger herds of sheep, investment specifically directed at the demand created by textile production.

There is archaeological evidence to support the production of textiles at sites connected with the sailing routes of the Corinthian Gulf, though not in the upland areas, but at coastal settlements. Remains of dyeing tubs, which are often situated within structures where large quantities of loom weights were found, have been reported from excavations at Corinth, the Rachi settlement at Isthmia, and at Tenea further to the south.[63] Outside of the Corinthia similar remains have also been identified at the site of Chorsiai in the coastal zone of southern Boiotia. Although sheep were probably kept in these regions, the remains suggest workshops that were engaged with large-scale textile manufacture, and it is possible, if not probable, that wool was, at least in part, also imported from outside regions. Raw wool from the Achaian and Arcadian uplands, shipped from Achaian harbours, may have formed part of the raw materials imported for the production of textiles at these workshops.

Demands for sacrificial victims presented at sanctuaries would probably also have stimulated investment in pastoral production. Sanctuaries also inform us about the secondary products of animal sacrifices, such as hides, wool, bones, and even dung, which could be sold in a market environment. The sale of hides by sanctuary authorities in Athens is, for example,

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[59] Roy 1999, 328.
[60] For discussions on the connection between pastoral economies and markets, see Skydsgaard 1988, 81; Garnsey 1988, 203–204; Horden & Purcell 2000, 86; Nixon & Price 2001, 397.
[61] Bresson 2007, 196–198.
[62] Bresson 2007, 198.
[63] Kardara 1961; Wiseman 1978, 93; Salmon 1984, 119–120; Alberti 2007, 60–61.

described by the 4th-century BC *Dermatikon Accounts*,[64] and at Tegea dung was sold as manure according to an inscription dating to *c*. 400 BC.[65] Religious practices and the presence of large sanctuaries such as Lousoi must therefore have stimulated investment in pastoral production, both by sanctuary authorities and private individuals, and at the same time the sanctuaries themselves acted as important nodes for the further distribution of sacrificial by-products.

The importance of inland routes tied to harbours by the Achaian coast should, however, not solely be seen in the light of goods and foodstuffs produced in upland areas being moved to the coast for further transfer along the sailing routes of the Corinthian Gulf. Access to these waterways would also have presented a means of acquiring vital staples which could not have been locally produced in sufficient volumes. The limitations to extensive cultivation in many of the more mountainous areas suggest that a certain amount of staples must have been imported to supplement those produced locally, particularly in times of drought and crop failure. In these instances, Corinthian Gulf harbours would have offered good entry points for the needed products. It is significant that both literary texts and inscriptions allude to the transfer of grain within the Gulf, suggesting that interior communities had access to imports distributed along the maritime routes.

Thucydides (3.86.4), for example, refers to grain shipments from Sicily to the Peloponnese in the early years of the Peloponnesian War. There are also references to grain being shipped to Corinth from Epirus via Leukas in the 4th century BC, through the sailing routes of the Gulf (Lycurg. *Leoc*. 26).[66] In a much-cited inscription on grain exports from Cyrene during a period of drought on the Greek mainland, several *poleis* connected to the Gulf are mentioned among those who purchased grain. Corinth, for example, is listed as having imported 50,000 *medimnoi*, while Sikyon and inland settlements such as Phelious, to the south of Sikyon, and Plataiai, in Boiotia, received smaller quantities. These texts indicate that grain was shipped through the sailing routes of the Corinthian Gulf, and exported to hinterland communities connected to Corinthian Gulf harbours.

The importance of coast-hinterland routes for the transfer of staples is also hinted at by Xenophon, who states that citizens of Phleious acquired grain from Corinth when Phleiasian territory was ravaged during a conflict with neighbouring Argos in the 360s BC, and the Phleiasians went to the market at Corinth (ἐπὶ τὴν ἀγορὰν) in order to purchase grain (Xen. *Hell*. 7.2.17.4–5).[67] The grain purchased by Phleious may in turn have been imported to Corinth from outside of the Peloponnese, given the occurrence of such imports to the city in the Classical period. The normality of the transfer of imported staples, agricultural surplus and other goods between the coast and the hinterland is further demonstrated by the speech given by the

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[64] *IG* II², 1496; Rosivach 1994, 48–64.
[65] *IG* V 2, 3; Morgan 2003, 149.
[66] See further Salmon 1984, 129.
[67] Salmon 1984, 131.

Corinthian delegates at the congress of the Peloponnesian League in 432 BC, urging the member states to go to war against Athens:

> τοὺς δὲ τὴν μεσόγειαν μᾶλλον καὶ μὴ ἐν πόρῳ κατῳκημένους εἰδέναι χρὴ ὅτι, τοῖς κάτω ἢν μὴ ἀμύνωσι, χαλεπωτέραν ἕξουσι τὴν κατακομιδὴν τῶν ὡραίων καὶ πάλιν ἀντίληψιν ὧν ἡ θάλασσα τῇ ἠπείρῳ δίδωσι (Thuc. 1.120.2).
>
> ... those who dwell more in the interior and away from any trade-routes should be warned that, if they do not aid those who are on the seaboard, they will find it more difficult to bring the products of the land down to the sea and to get in return what the sea gives to the mainland.[68]

From the speech of the delegates we can surmise the importance of the flow of goods between maritime trade routes and hinterland polities, and its importance to the economic life of the region. It seems suitable to link this passage with that of Xenophon, dealing with the purchase of grain at Corinth by the Phliasians, in order to further emphasize that such trade in foodstuffs also occurred in times of peace. Previous discussions on the passage have stressed the propagandistic and exaggerated nature of the speech given by the Corinthian delegates, and that the presented importance of coast-hinterland transfers should be seen as un-realistic.[69]

When linked, however, with the archaeological evidence of coast-hinterland networks and other written accounts on the transfer of goods, the previous passage can be better understood. While the speech given by the Corinthian delegates should be seen as probable partisan rhetoric, the transfer of staples seems to have been a common feature of coast-hinterland communication in the northern Peloponnese.[70]

Even in areas where agricultural production could have met the local demands, periods of dearth and/or increased military activity would have enforced the need for access to outside food sources. Urban consumption demands at settlements such as Corinth would have presented significant markets for staple goods, even at times when agricultural production in the surrounding territory was sufficient for basic subsistence. Corinth was probably also a major market for the further transfer of grain and other commodities to communities elsewhere in the Peloponnese, as in the case of Phleious.

In terms of Achaian and Arcadian settlement centres, communication with the Corinthian Gulf should be seen as an integral component of economic strategies because the Achaian harbours would have provided the necessary outlets for a range of products produced locally while also *providing* imports of necessary staples for settlement centres in the mountainous hinterland.

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[68] Translation by C.F. Smith (Loeb) 1928 (2003).

[69] Salmon 1984, 131 and 306–307.

[70] The transfer of staples to cities in the Peloponnese should not be solely linked with maritime routes in the Corinthian Gulf. On the basis of Herodotos (7.147) we can also note that grain was brought to the island of Aigina and the Peloponnese from the Black Sea in the early 5th century BC.

Conclusion

The topic of this paper has been harbours by the Corinthian Gulf, in particular those on the eastern Achaian coast, and how they acted as gateways to interior settlement centres and microregions. Through an examination of site patterns and the topographic contexts of several settlements it has been possible to discern a pattern where loci of sites are situated in connection with potential coast-hinterland routes that can be identified on the basis of landscape morphology. In the mountainous hinterland of eastern Achaia, connected valley systems seem to have played an important role as communication arteries between the coastal zones and the upland environments to the south. The continuous use of these routes can further be seen through finds of non-local pottery and remains of cart roads, highlighting the presence of an infrastructure of communication.

Overall the archaeological evidence suggests that the mountainous areas bordering the Corinthian Gulf should not be seen as limits to connectivity. Instead, the flow of goods and people between harbours and hinterland communities seem to have been channelled along specific lines of communication in these regions, both along smaller mountain paths primarily, and along more significant physical routes formed by inland valleys. Coast-hinterland interconnections must be interpreted using a wide range of different interconnections at varying levels of intensity and scale. Coastal *cabotage* and everyday links established through small- and medium-scale transfers of commodities between the coastal zone and its hinterlands would have occurred throughout the Archaic and the Classical–Early Hellenistic periods. The build-up of such small-scale interconnections together with long-distance maritime links and the large-scale transfer of goods would have helped to formulate and expand coast-hinterland networks in the broader Corinthian Gulf region. Such interconnections would in turn have had an impact on the pattern of settlement and urban development in hinterland regions.

In terms of the regional economies and production strategies, the upland zones seem to have acted as very important components for the connectivity of these regions. Specialized products such as timber, and probably also raw wool, were exported through Achaian harbours and transferred further through the exchange networks of the Corinthian Gulf. Harbours on the Achaian coast were integral to the mountain economies of the interior because they provided outlets for goods produced in these regions. At the same time the harbours also provided opportunities for importing necessary staples that could not always have been produced in sufficient quantities in the uplands. Arable farming would certainly have been carried out in the region, though it would normally have been complemented by other food sources in order to sustain local consumption at hinterland settlements, and some of these foodstuffs, primarily grain, wine and oil, must have been derived from outside of the local region.

By adopting a landscape approach it has been possible to assess these interconnections, and the impact which surrounding areas had on patterns of communication within the Corinthian Gulf, as well as the way in which the Gulf affected hinterland settlement structures and production strategies. The

discussion shows that the Corinthian Gulf, as a significant maritime communication route, must be understood in relation to the overall patterns of settlement, exploitation, and production in the surrounding hinterlands, as well as the connectivity of hinterland landscapes which surrounded these sailing routes and their harbours. In most instances ancient harbours must be seen as nodes that faced a seascape and also connected hinterland landscapes. The history and function of ancient Mediterranean harbours cannot be fully understood unless all of the networks which they maintained—both maritime and land based—are studied.

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