Mediterranean Horizons

Archaeological Studies in Honour of **Søren Dietz**

Pernille **Bangsgaard**, John **Lund**, Peter **Pentz** & Lasse Vilien **Sørensen** (eds)

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Archaeological Studies in Honour of Søren Dietz

edited by
Pernille Bangsgaard, John Lund,
Peter Pentz & Lasse Vilien Sørensen

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Editorial Preface

By Pernille Bangsgaard, John Lund, Peter Pentz & Lasse Vilien Sørensen

We are delighted to present this volume to Søren Dietz in honour of his life-long engagement in the Mediterranean archaeology. The title: *Mediterranean Horizons: Archaeological Studies in Honour of Søren Dietz* reflects the recipient's career and wide-ranging research interests, as outlined by Per Kristian Madsen, former Director of the National Museum of Denmark and former Chairman of the Board of the Danish Institute at Athens, in his *Opening Tribute* and demonstrated by Søren's impressive bibliography.

To celebrate Søren's lifetime scholarly achievement, we invited a select group of his friends and former colleagues to contribute essays on topics related to his archaeological fieldwork and academic legacy. Most of the chapters were originally presented as papers at a conference held in Søren's honour at the Danish Institute at Athens from April 26th to 27th 2022. This venue was especially fitting, given Søren's leading role in the founding of the institute in 1992 and his tenure as its first director until 1997. Mogens Pelt, who was director of the Danish Institute in Athens at the time of the conference, read the keynote lecture *Søren Dietz, Gösta Enbom and the Greek World*.

The volume opens with a section reflecting on Søren's interest in the Aegean Stone Age, which is reflected by his investigation of the 4th millennium BC site Pangali in Aitolia in 1995 and 1996. It begins with Ioannis Aslanis' magistral comparison of rapid climate changes in Greece from the Holocene to the start of the Bronze Age survey, which is followed by a chapter by Lasse Vilien Sørensen, Frederik Vingaard, Mads Lou Bendtsen and Pernille Bangsgaard entitled *The Neolithic Odyssey – the emergence of institutionalized journeys and exploitations of rare raw materials in the Aegean*, and Fanis Mavridis' review of *Cycladic prehistory and cave research*, which offers new insights into societal practices of the islands from the Neolithic period to recent times.

The next section addresses the Aegean Bronze Age, which has been central to Søren's research since the early 1970s, when he participated in the Swedish excavations at Asine in the Argolid. Joseph Maran discusses the Early Helladic period in *The Levantine Connection: Reassessing the Geographical Origins of Some Near Eastern Innovations of the Early Helladic "Period of the Corridor Houses"*, and Kristian Kristiansen investigates relations between Southern Scandinavia and the Aegean in *Middle Bronze Age decorated antler horse bits: bridging Denmark, Hungary and early Mycenaean Greece*. Flemming Kaul then demonstrates the continuation of such connections into the Late Bronze Age in *Following glass beads, razors and amber Long-distance exchange of commodities and ideas during the Bronze Age, connecting the Mediterranean and Denmark*. Jack L. Davies and Susan R. Stocker in *'Ear picks' and a 'cosmetic box' from the Grave of the Griffin Warrior* provide striking new evidence for links between the Greek mainland and Minoan Crete in the 15th century BC. This part of the volume concludes with Michael Lindblom´s *The Argolid at the Transition to the Mycenaean Age Revisited*, a reassessment of Søren's doctoral thesis from 1991 in light of current knowledge.

The third part of the volume takes us to Mainland Greece in the 1st millennium BC. John Bintliff opens with *The Paradox of Regional Studies: Distinctive Introverted Communities with histories and prehistories of internal and external population mobility. The case of Boiotia, Central Greece in the Iron Age*. This is followed by Sanne Houby-Nielsen's analysis of *The*

first-generation settlement in Archaic Chalkis in Aetolia: courtyard houses, feasting and weaving. It builds on Søren's excavations of the site from 1995 to 2001, when he switched to investigating nearby Kalydon in collaboration with the ephorate of Patras. His work at the latter site was continued by Rune Frederiksen, whose contribution concerns *The theatre at Kalydon*, and by Søren Handberg, who discusses "*Kalydon inside the walls" Re-examining the urban fabric and demography of the ancient city*.

Stine Schierup's chapter on *Vroulia Ware cups* and Peter Pentz' on *Buildings in Medieval Rhodes* reflect Søren's enduring interest in the archaeology of Rhodes. He co-directed a survey in the area of Katavia in 1994 together with the Ephorate of Antiquities of Dodecanese.

The focus of the final part of the volume shifts to Tunisia in the Western Mediterranean, where Søren directed excavations in Carthage between 1975 and 1984. John Lund's contribution *The dawn of the Danish involvement in the archaeology of Carthage*, traces the incipient Danish involvement in the archaeology of Carthage back to the early 19th century. Jesper Carlsen in *Town and country in Africa Proconsularis – Segermes in context,* re-evaluates the findings of the Tuniso-Danish *Africa Proconsularis* project (1987-1989), of which Søren was co-director.

The volume concludes with an evocative essay by the leading Danish artist and longtime friends of Søren, Peter Brandes. His piece *Light's 'Doubt', the Truth of Photography* serves as a fitting *coda* challenges the notion that photographic images represent objective truths. He is inclined to think that Søren would agree that this holds true also for archaeological interpretations.

We extend our sincere thanks to the *Consul General Gösta Enbom's Foundation* for generously funding the Athens conference in 2022 as well as the present publication. We are also grateful to Sanne Hoffmann, the current director of the Danish Institute, for kindly including the volume in the Institute's Monograph Miscellanea Series. Special thanks go to Patrick Marsden for his expert linguistic revision, and last but not least to the editorial assistants Tilde Yding Abrahamsen and Andreas Jæger Manøe Schäfler for a job well done.

In addition, we are most grateful to Silke Müth-Frederiksen and Maja lisa Engelhardt for making it possible to include the contributions of Rune Frederiksen and Peter Brandes, who sadly passed away during the editing of this volume.

Pernille Bangsgaard, John Lund, Peter Pentz and Lasse Vilien Sørensen
Copenhagen, 5th of November 2025

Søren Dietz and Kalliopi Sarri in the Danish Institute at Athens, April 2022. Photo: Lasse Vilien Sørensen.

The bibliography of Søren Dietz[1]

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2021

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2018

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1 Compiled by John Lund with the assistance of Tilde Yding Abrahamsen and Andreas Jæger Manøe Schäffler.

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Opening Tribute

by Per Kristian Madsen

Dear Søren,

Our first meeting occurred at the very beginning of 1999. I had taken up my first position at the Danish National Museum, and almost every morning on my way to work I met a distinguished gentleman crossing the Boulevard of Hans Christian Andersen, which runs through the central part of Copenhagen.

These silent meetings lasted for only a few seconds. We then became acquainted in Athens, a few years later, when I suddenly realised who the unknown gentleman was, and what he had been heading for: the Ny Carlsberg Glyptotek.

It was in Athens I got to know you, Søren, and found out who you really were and are. This mainly involves archaeology. For you, it all began more than fifty years ago. Shortly after passing your final examination for an MA in Danish Prehistory in March 1969, you began your career at the National Museum as curator at the Collection of Classical Antiquities. You remained there – with some long breaks – until 1998.

Your lasting involvement in archaeology was successfully documented in the Swedish-Danish excavations in Asine in the Peloponnese. It was probably there you met a very important person: Gösta Enbom, the Danish Consul General in Athens, a native Swede who became a successful businessman in Greece after the Second World War. His interest in classic archaeology is clearly demonstrated by the foundation, he created before his death in 1986. It is called Consul General Gösta Enboms Foundation and its aim is to fund archaeological research in the Eastern Mediterranean, with Classical Greece as its absolute focal point. The foundation has had a significant impact ever since, particularly to the benefit of the Danish National Museum and the Danish Institute at Athens. I feel quite sure that you, Søren, were the inspiring genius of Gösta Enbom, when he wrote his last will. We, the present board members, are happy to join in celebrating your academic achievements, which are amply documented in this volume.

After Asine, your work continued on the island of Rhodes and in present day Tunisia, with the Punic and Roman city of Carthage as well as in Segermes. Still more will be published about that, I know.

In 1991, you achieved the highest scientific grade (dr.phil.) at the University of Copenhagen. Your doctoral thesis is entitled "The Argolid at the Transition to the Mycenean Age". Greece was certainly not forgotten.

This was swiftly followed by a very effective period in Athens. In many respects, you were the real founder of this Institute. I know about this based on the archives of the Carlsberg Foundation, which you successfully persuaded to finance the founding of this new institute. You served as its very first director from 1992 until 1997, which was a period of great prosperity. One of the many results is the auditorium, which was added to the two older main buildings towards Herefondos Street due to generous support by the Velux Foundation.

Then in 1997, you went back to the National Museum, only to leave it for good in 1998, in order to become the Director of Ny Carlsberg Glyptotek in Copenhagen. You held that position until 2002 – which was the period when we met without knowing it. After the Glyptotek, you returned to Athens on a permanent basis.

This means there is a lot more to tell. But allow me only to mention your great and enthusiastic engagement and success with the later publishing

of your excavation campaigns in Greek Chalkis and Kalydon, both in the western part of the Greek mainland – in a fine collaboration involving a whole range of specialists from Greece and Denmark.

For many years you have been permanently based in Athens together with Kalliope Sarri, a distinguished fellow archaeologist. Links back to Denmark have by no means been forgotten, and in 2015 the University of Copenhagen gave you a special professorship: Adjunct Professor of Classical Archaeology.

The aim of this publication is to contribute in a distinctive and scholarly way to the many congratulations you received on your 85th birthday in 2025 by presenting a series of studies within those broad fields of classical archaeology, which have benefitted so very much from your own contributions.

One thing is certain: if you ever choose a motto, it should reflect your most irrepressible optimism when introducing, planning, managing and financing a project until its very end. Your motto should be something like 'it will all end well'. This is borne out by the fact your friends and colleagues have all come together to honour you with this publication for what you have done for and within classical archaeology.

Søren Dietz, Gösta Enbom and the Greek World

By Mogens Pelt

I came to know Søren more than 30 years ago, in 1992. We met at the National Museum in Copenhagen, Søren's workplace until he became Director of the Danish Institute at Athens. We met a short while after I had been offered a position at the Danish Institute at Athens. It was a time when positions were still advertised in the printed media and it was the first and only time that I saw an advertisement in Denmark for a person with a background in modern Greek history. In this way, we complemented each other's expertise, as Søren was an archaeologist. But I should add that archaeologists with long experience in fieldwork also become specialists in modern Greek affairs. It is therefore no coincidence that history tells us that, in periods of war or marked international tensions, archaeologists are often recruited by various parts of the state of the great powers to provide information about the places they are familiar with.

In hindsight, I can certainly say that when I met Søren it was a period of very low international tensions, whilst Søren's engagement in modern Greece and the Greek people were evident. But there was more to it. Winnie, Søren's wife, told me that Søren had been born under a lucky star. I did not quite understand what she was referring to – to the fact that Søren had married her? Winnie was a very sweet and attractive person, so perhaps that what was she was saying, I thought. But soon it became clear to me that she was thinking about someone else: Gösta Enbom.

The following happened a short while after the Danish Institute at Athens had moved to the building at Herefondos 14. One morning, I saw a portrait of a very distinguished-looking gentleman on one of the shelves in our library and with a bronze plaque bearing his name. This was Gösta Enbom. It was Søren who had placed the portrait of him on the shelf. Enbom had donated his fortune to a foundation, the Consul General Gösta Enboms Foundation – a foundation that supports archaeology. A short while afterwards, I also learnt that there were rituals associated with Enbom. Each year, on the occasion of the annual meeting of the Danish Institute at Athens, the board of the Enbom foundation would go the First Cemetery of Athens. Their destination was Enbom's burial place and they would take cigars and whiskey with them. When they arrived, they shared the cigars and the whiskey with Enbom.

On the guest list for the annual meeting of the Danish Institute there was also a noble lady, Sybille Schack, who was a dear friend of Enbom and had known him for years. Apart from this, she was also a kind of a link between Enbom and the world of archaeologists, and especially Søren. This is how I got the impression that Enbom must have been charismatic person and a bon vivant. Later stories only confirmed this impression, perhaps in particular the one that he had Mercedes parked in Copenhagen, which he used for travelling to Frederikshavn to deal with his business interests there.

Søren Dietz and Gösta Enbom have many things in common in relation to Greece. Both spent long periods of their lives there and their combined life stories relating to Greece cover a period of over 80 years of Greece's history as an independent state – or over 40 % of the total of its existence. Søren's activities connect Greece to the wider Greek world through his research. Enbom's connect Greece to the wider Greek world through his lived experience and professional career.

Their combined professional expertise covers a vast timespan, extending from the Neolithic to the post-war period. Enbom was fascinated by Søren's ventures into the long history of the Greek world

and decided to support his archaeological activities. Søren was clearly captivated by Enbom's personality and his close personal acquaintance with the modern Greek world.

In the following, I will introduce you to the world which shaped the man who came to play such an important role for Søren and thus also for all those of you who have worked with Søren.

How did Enbom become a Levantine?

Enbom was born in 1895 in Bergslagen, Sweden. In his late teens he left Sweden and went to Germany. While he had not been especially fond of going to school, it was in Germany, in Mannheim and at the Mercedes factories where he learned the basic skills he could draw on during the rest of his life: those associated with engineering. But there was more to it than the skills that he had acquired, there were the circumstances in which he used those skills. If we examine these circumstances, we can understand what he was up against.

Enbom's early career took off in a period of radical instability when, in 1914 at the outbreak of the First World War, he began his training as a machine engineer in Germany. Global instability was also the reason which he left Germany. As a result of the Wall Street crash in 1929 and Great Depression, he left Germany and took up a job as a travelling engineer in the Middle East, representing German and Swedish firms.[1]

At that time, the whole Mediterranean, from the Middle East to Spain, was affected by waves of instability: Italy waged a savage war in Libya which ended in 1932 and soon afterwards attacked Abyssinia in 1935. In 1936, the British Mandatory Palestine was the scene of strikes and armed clashes between Arab and Jewish groups, involving the British authorities. Furthermore, in 1939 Turkey annexed Hatay or the province of Alexandretta, which was also claimed by Syrian nationalists. Spain was devastated by a civil war which involved direct German and Italian intervention, while Iraq and Egypt were rearming and also making connections with Germany. Hitler's waves of revisionism in Europe, especially his anti-Jewish measures and the conquest of Central Europe in 1938-39, which included Austria, resulted in the movement of Jewish refugees across the Mediterranean to the shores of Palestine.

It was under such circumstances that Enbom established himself in the port of Piraeus in 1939.[2] This marked the end of one period in Enbom's life and the beginning of new one – his life in and his attachment to Greece. We do not know many details about his activities in the Middle East. But in more general terms, we know that German firms were very active in the region during the late period of the Ottoman Empire, constructing the Berlin-Baghdad railway, and were stepping up their activities in the Middle East in the 1930s. The Germans and representatives from neutral states like Sweden were also well liked by many of those in power in the Middle East. The Germans were looked on favourably because they were regarded as victims of an unjust peace, in the same way as many Arab nationalists saw themselves as victims of Britain and France's partition of the Middle East into mandate territories. This status, in some cases, gave German firms an edge in their competition with British firms in particular. On the other hand, after 1938 in the wake of the Munich agreement, and the partition of Czechoslovakia in 1939, fear of war, and the fact that most of the countries in the Middle East were formally connected to Britain and France, made it more difficult for German firms to do business.[3]

These new circumstances may well have been the reason why Enbom moved to Greece and established himself in Piraeus in 1939. As we shall see, this decision would have a profound impact on the rest of his life.[4] This is despite the fact that in 1940, after Germany's occupation of Denmark and Norway and Italy's attack on Greece in October 1940, Enbom moved back to Sweden. We do not know why he decided to leave, but the dire circumstances of the war in Europe in general and for Greece in particular may well have prompted him to return to his homeland. But he did not stay for long.[5]

Germany's invasion of Greece in April 1941 brought the country under the control of the Axis powers. However, this also cut off overseas provisions to Greece due to the Allies' blockade. This, combined with a breakdown of the usual transportation lines between the big cities and the countryside, led to famines in

1 Bigaard, Dietz & Schepelern 2011, 158-69.
2 Ibid.
3 Nicosia 2015.
4 Bigaard, Dietz & Schepelern 2011.
5 Ibid.

many parts of Greece during the winter of 1941-42, notoriously in Athens, where more 100,000 people died of hunger and disease.[6]

This caused the Red Cross to react and attempt to bring in food from neutral countries. Supplies shipped from Turkey in 1941 were followed by larger supplies in the spring of 1942 involving the Swedish Red Cross. This required protracted and complicated negotiations with hostile countries. In March 1942, the vessel M/S Hallaren set out from Gothenburg with Enbom on board as a controlling officer. He would soon become a head of the Swedish Red Cross' transportation and relief organisation in Greece and the Eastern Mediterranean.[7]

Here, his long experience of the general business conditions in the Eastern Mediterranean and his contacts in this region might well have helped him. Furthermore, due to his many years in Germany and working with German firms, he must have had networks which enabled access to relevant Germans. Although the 1942 action did alleviate the situation, the supplies to Greece remained in a precarious state. When the Swedish Red Cross ended its activities in Greece after the liberation in 1944, Enbom worked for the United Nations Relief and Rehabilitation Administration (UNRRA), which was in charge of the relief programme in post-war Greece in 1945-1947.[8] The civil war of 1946-49 meant that food was extremely scarce in Greece. This scarcity in turn stimulated a black market and provided a fertile ground for profiteers, which meant that the actors had to deal with both well-meaning relief workers and criminals, and were not always able to tell these apart.

Occupation and civil war were followed by reconstruction and a need to rebuild an infrastructure that had been destroyed by war. It was this new need that made Enbom become a factor in Greek business. Looking at all the destruction, he concluded that coastal traffic, consisting of small ships and boats, would become the backbone of post-war Greek communication. It was against this background that he established Gösta Enbom & Co. Ltd. In Piraeus, he placed faith in the Danish firm B&W and its company in Frederikshavn Alpha Diesel. It was from this platform that he expanded his business activities in Greece, and as a result of his success endeavours was made Consul of Denmark in Piraeus in 1952. [9] His success was to a great extent based on his ability to navigate in the business world of the Eastern Mediterranean and his long experience. He must have known the right people and institutions to get in touch with, in order to make an agreement or a contact.

Agents and networks in the world of shipping in the Eastern Mediterranean

In the following, I will introduce a key figure who played an important role in the shipping business in the interwar war years and early post-war period in the Eastern Mediterranean and in the port of Piraeus.

A report from 1954 gives us an impression of how a Scandinavian company perceived the business conditions in the port of Piraeus and the challenges Enbom faced. The report was commissioned by *Unionen,* a collaboration between three Scandinavian marine salvage companies. The report is an insider's account of this branch of business and of the key person in this business, Alexandros Davaris, who had worked for *Unionen* since 1912 in Greece and Turkey.

The main aim of the report was to inform the board of *Unionen* about the pros and cons of retaining Mr Davaris as their agent. His ethics were focused on. The main concern of the Scandinavian board was whether Mr Davaris could be trusted, and, according to the report, there were good reasons to doubt this: "One never knows when Mr Davaris speaks the truth and when he lies."[10]

Unionen suspected that in some cases Mr Davaris had neglected to inform them of business opportunities and passed the information on to competitors. On the other hand, he had considerable experience and was extremely well connected, or to put it as Lloyd's agent in Piraeus, Mr Saunders, did: "He is a dangerous but a very useful man". Cables from London for competing salvage companies would reach Mr Davaris as quickly as they reached the firm for which they were meant. Mr Davaris was clearly the key person for success in the world of shipping in the port of Athens. Among other things, he was able to predict precisely where and when "a certain shipping

6 Clogg 2008.
7 Bigaard, Dietz & Schepelern 2011.
8 Ibid.
9 Ibid.
10 'Rapport vedrørende bjergningsforholdene i græske farvande, oktober og november 1954' in the archive of Gösta Enbom, the National Museum) of Denmark.

company would have decided to make its over-insured vessel vanish." Although Mr Davaris was not of high social standing, he had connections with all layers of society and everybody listened with great interest to what he had to say.[11] He spent most of his day in the cafes of the port, picking up information, but his secretary could get hold of him within minutes. His office was the venue for frequent visits by civil servants, captains of ships and engineers, and many other people from all strands of society. It is therefore not surprising that he was well informed about almost everything that went on in shipping in Piraeus. Mr Davaris, the report continues, also had 56 agents in his service, who provided him with information. Meanwhile, he obtained other important pieces of information by bribing civil servants working for the radio and telegraph service, or from officers employed by competing companies or the merchant navy.

All this left *Unionen* "between the devil and the deep blue sea" because if it kept Mr Davaris in employment he would cheat them, but if it sacked him, it would face an experienced and dangerous enemy – "and it will take ages to establish a network like the one of Mr Davaris." Therefore, the report concludes, the real choice *Unionen* is facing is between giving up its salvage business in Greece altogether or working out a compromise, which will secure Mr Davaris' employment but reduce his role.[12] The report also makes clear that the person who would have to deal with all of this on a daily basis was Enbom.

Mr Davaris is not person who you will often come across in written prose – like in the report I have just mentioned. But we do encounter him in another accounts – and that is what I will focus on in the following. This involves an account written at a later date about business and networks in the Eastern Mediterranean during the last years before the outbreak of the war.

The account is written by William R. Perl – a Zionist activist who was affiliated to the armed Revisionist Zionist splinter group Irgun. In the second part of the 1930s, Perl was leading a group, *die Aktion*, which worked to get Jews out of Vienna and ship them to Palestine, in an effort to save lives and strengthen the Jewish community in Palestine.[13] He was thus also a leading agent in the so-called Aliyah Bet. Aliyah Bet was a Hebrew term for the unauthorised immigration of European Jews to Palestine, which was estimated to have brought tens of thousands of Jews to Palestine during the 1930s.[14] But what has that to do with Greece?

In the summer of 1938, a British agent reported that there was a significant move in Athens to smuggle arms to Jews in Palestine. The same source also stated that "Richard, the well-known smuggler of arms, is now in Athens" and this "coupled with the presence of Stavsky, Dr Perl and confederates and the large sum at the disposal of Krivoshein tend to confirm the view that with the next shipload of immigrants arms will be smuggled to Palestine."

It also stated that "the arms will in all probability be supplied by the firm of Bodosaky [*sic*], the notorious smuggler of war materials to Spain. He is a powerful person and uncrowned King of Greece. He is the managing director of almost all the important enterprises in Greece and has been decorated by the Greek Government for his contribution to the economic welfare of the country."[15] This account is far from fiction. The agent was sent to Greece in 1938 to investigate the routes for the illegal transportation of Jews to Palestine.

The smugglers' own accounts only add a broader dimension to the report. William Perl confirms that he, Abraham Stavsky and Moses Krivoshein indeed used Piraeus to smuggle Jews from Vienna to Palestine and that their Greek connection was a shipowner named Davaris.[16]

Perl's Greek connection dates back to the early efforts of his group to rescue the Jews of Vienna from the clutches of Adolf Eichmann, then a lieutenant in the SS, who was in the process of cleansing Austria of Jews. With the majority concentrated in Vienna, the future of the Jews in post-Anschluss Austria became a matter of great urgency both for the new Nazi authorities there and for the Zionists who strove to save them. [17] Perl had begun his rescue operation in 1937, before the Anschluss, but it took off in earnest after he persuaded Eichmann to agree to accept money

11 Ibid.
12 Ibid.
13 Perl 1978, 14.
14 Medoff & Waxman 2012, 91.
15 28 September 1938, Colonial Office, TNA, FO 371/21888.
16 Perl 1978, 95.
17 https://encyclopedia.ushmm.org/content/en/article/austria; https://encyclopedia.ushmm.org/content/en/article/jews-in-prewar-germany

in exchange for Jews, provided that he got them out of Vienna and shipped them to Palestine. It was a daring mission that required hard currency, captains willing to take risks and dependable shipowners. It is particularly significant that Perl's people were allowed to exchange Reichsmarks into hard currency, such as pounds sterling, which could then be used, for example, to pay the smugglers.

The connection to Davaris was established after Perl's group had been cheated by some swindlers, who had pretended to be the owners of a vessel which Perl's group had hired to bring 200 Jewish refugees, who were in Fiume, out of Italy. This trick meant that the group lost all its hard currency – 2,000 pounds – and that 200 Jewish refugees were stranded in Fiume, while 800 refugees from Vienna remained locked in their wagons on the border between Austria and Italy, because the Italian authorities would not let them in before the Jewish refugees in Fiume were shipped out. In other words, the operation was in danger of collapsing. It was in this situation that Perl states that Mr Davaris appeared as a deus ex machina.

It happened when a Jewish refugee in Athens brought Perl's group into contact with the Greek shipowner. In the words of Perl, Mr Davaris proved to be a "blessing for our entire undertaking". Mr Davaris immediately sent his representative to Fiume, and he arrived within 48 hours after the first contact was made. Perl and his people not only encountered a well-dressed man, whose good looks and charm impressed them, but Mr. Davaris' representative "was extremely generous as far as money went", because, as Perl continues, we concluded "the most unbelievable deal" with him. Mr Davaris was willing to send a ship to Fiume right away and as a down payment accepted the 2,000 British pounds that Perl's group had lost to the swindlers in Athens, because as Mr Davaris' representative said: "You have no chance of getting the money back […] but we have a much more powerful organization. We will get it from that small fry."[18]

This alone indicates that Mr Davaris was a self-confident player who believed he belonged to a powerful network. And this was not without reason, because the vessel which Mr Davaris sent to rescue the Jews trapped in Fiume, S.S. *Draga*, was owned by Bodosakis. The latter was the powerful person and uncrowned king of Greece mentioned previously by the British agent, and the notorious smuggler of war materials to Spain.

All this also indicates that Perl was cooperating with serious players in the business of illegal transportations. This is obvious from the quality of the network: Mr Davaris was connected to Bodosakis. In this way, at every stage there was someone who was sufficiently powerful to handle the various aspects of the business. Mr Davaris' agent took care of representation and Mr Davaris himself the logistics of the sailing operations. Meanwhile, it is reasonable to assume that it was Bodosakis who would ensure that the highest echelons of the police and ministries would not interfere with the operations.

And it worked. Perl's group now placed their trust in Mr Davaris, and it marked the beginning of a long working relationship which was of mutual benefit to both parties.

In September or October 1938, Perl went to Athens to meet with one of Davaris' representatives. During a conversation in a small cafe in Omonia Square, on the corner near the station on the railway line that connects central Athens to Piraeus and the main road to the port of Athens, the idea emerged of using the Danube River, rather than trains via Yugoslavia to Greece, to ship the refugees out of Vienna. The Danube was a free waterway, which meant it was possible to reach the Black Sea without the use of transit visas. From there, the smugglers could pick them up and head for Palestine.[19]

From now on, Romanian and Bulgarian Black Sea ports became the hubs for smuggling Jews to Palestine, whilst Greek ports, with the single exception of Corinth in March 1939, were no longer used. Greek vessels, however, continued to play an important role,[20] as well as Bodosakis' network and Mr Davaris. Years after his operation, Perl estimated that it had transported 40,000 Jews, aboard cattle boats, dilapidated freighters and sailing boats, on 62 clandestine voyages to Palestine from Romania, Greece, Yugoslavia and elsewhere in Southern Europe.

Perl held Mr Davaris in high regard. He was also impressed by most of the Greek captains and sailors he met. Perl would probably recognise the Mr Davaris from the Scandinavian report. But he would consider those aspects of Mr Davaris' ethics, which seemed dubious to a board that was used to the norms and

18 Perl 1978, 91-6.
19 Ibid., 106.
20 Ibid., 367-71.

business conditions in Scandinavia, as strengths and merits. Perl would have understood the need to pay off clerks and civil servants to make them turn a blind eye to what the law might have to say. He would also have appreciated Mr Davaris' extremely well-developed networks and the fact that Mr Davaris was able to also deal with competitors, and extract information from almost everybody involved in the shipping business. Perl needed exactly this sort of person – a man who would not allow his missions to be impeded by laws and regulations. This is because, under the dire circumstances of crisis and imminent danger to him and his fellow Jews, what Perl needed was a man who would go to great lengths to support him and his operation and in this, as Perl put it: "Davaris proved honourable in all his dealings with our organization."[21]

Conclusion

The cooperation between Mr Davaris and Perl demonstrates how groups with widely different interests, under conditions of extreme stress, were able to combine forces and form strong networks, based on a considerable degree of mutual trust that lived up to the expectations of both parties.

Mr Davaris was offering his services in places where uniform rules imposed by a single, powerful state or sustained by international agreements were absent or not enforced. Such conditions left room for the agency of non-state actors and created fertile conditions for coalitions between freewheeling agents and state representatives. Regarding the network in question, it connected individuals who were delegated power by the state in one place, to agents who knew how to circumvent state power in other places, like Perl's group, who made deals with Eichmann in Austria and cheated the British in Palestine. Such transactions also attracted a wide range of fortune seekers, like the swindlers who cheated Perl's people in Piraeus. For business reasons alone, a powerful and serious actor like Davaris would need to mete out justice and deal with the loss suffered by Perl's group, in order to eliminate the damage that freewheeling con men could do to the reputation of his business.

While Davaris may have been representative of the mode of business in the chaotic interwar years and early post-war period, business conditions must have changed in the climate of the unfolding Cold War, something which is reflected in the Scandinavian report about Enbom's dilemma. Under these circumstances, the business ethics which had made Mr Davaris so valuable to Perl would now have been regarded as dubious.

The Cold War divided the world to an extent that had not been seen before and also made the international environment more stable. It reduced the demand for free agents like Mr Davaris and others, who had seen instability create business opportunities. The emphasis was now on reconstruction and the development of post-occupation and post-Civil War Greece, and it is against this backdrop that Enbom's business took off.

It was based on his Scandinavian connection, but it is also fair to assume that his connections included locals he had met in the 1930s and 1940s, when in the absence a single, powerful state or international agreements, trust was the most valuable currency around. In this way, Enbom had acquired life-long business friendships, forged by a trust which had proved its durability and strength during the most testing times of his life, the turbulent decades from the late 1930s to the early 1950s.

It is clear that this special quality possessed by Enbom was recognised not only by his partners in business, but also by the Danish state, which was looking for someone to take care of the business interests of its citizens who wanted to trade with Greece. Thus, on 9 October 1952, he was appointed Consul to the Port of Athens, Piraeus. It is equally clear that the Danish state was very satisfied with Enbom's services, because when he reached retirement age in 1965, he continued in his post, and two years later, in 1967, was appointed Consul General and retained this position until 1975. In the tasks he dealt with, it is also possible to follow the development of the nature of Greek-Danish relations, as more and more of the tasks involved tourism. It is also clear that his great expertise was required during the politically difficult years of the Greek dictatorship in 1967-1974.[22]

This merely emphasised the wide range of Enbom's capabilities regarding all things Greek, due to his personality, but also the fact that he came of age in a period of great instability and proved himself to be capable of not only navigating, but also completing his tasks under such difficult circumstances.

21 Ibid., 102.

22 Bigaard, Dietz & Schepelern 2011.

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Prehistoric Communities in Greece from the Early Holocene to the Beginning of the Bronze Age in the 'Shadow' of Rapid Climatic Changes (RCC Events)[1]

by Ioannis Aslanis

At the end of the 20th century, research in the field of palaeoclimatology identified repeated rapid climate changes (hereafter referred to as RCC events), usually lasting a few centuries, which interrupted the course of the continuously improving climate in the early Holocene. During the first 20 years of this century, much of the interdisciplinary research of palaeoclimatologists and prehistoric archaeologists has focused on the Mediterranean region, in order to study the effect these climatic events may have had on the evolutionary course of prehistoric communities. The research has also focused on SE Europe.

Based on the results of the above research, in this article an attempt is made to investigate in greater detail the effects of RCC events on the evolutionary course of communities, especially in Greece. In order to obtain comparable data on the level of the effects of the RCC events, it was necessary to compare the prehistoric communities of Greece with contemporary communities in other regions that were affected by the same climatic events.

In this respect, Thessaly in Greece and Mesopotamia, with its neighbouring regions (Syro-Palestine and SE Asia Minor) in the Middle East, were chosen as representative regions. The first, because the largest lowland area in Greece is located there and the second, which is mainly lowlands, because the evolution of communities during the early Holocene was continuous. Moreover, both selected regions, together with southern Asia Minor, were generally located in the same climatic zone and experienced the same RCC events, which exerted the same strong pressures on the predominantly as agricultural includes livestock economies.

The research was also limited in chronological terms to the period from the beginning of the Holocene to the end of the 4th millennium BC, including the Neolithic and Chalcolithic periods. It is thought that during these periods, prehistoric communities had a simpler social and economic structure and more limited technological capabilities in comparison to the subsequent Bronze Age. As a result, they were more vulnerable to climate changes, and therefore the effects can be more easily detected.

The article begins with a brief presentation of the evolutionary course of prehistoric communities in the areas that will be discussed, both during and in the intervals between the RCC events. The reader will notice that in the section 'Between the 8.2 and 6.2-5.0 ka cal BP RCC events in Greece' the term 'Chalcolithic' is prefixed to the terms 'Later Neolithic' and 'Final Neolithic'. This was the author's idea, as the research indicates that the first elements of this period appeared in Greece at this time. The Otzaki, Dimini, Rahmani and other phases are still used. For the characteristics of the Chalcolithic, see the same section.

The author's comments, opinions and observations about the impact of the events on the prehistoric communities of the discussed areas are presented in the 'Discussion' and 'Conclusion' sections.

The presentation is preceded by a brief, but necessary, description of the climate of the Eastern Mediterranean.

1 I would like to thank the organisers for the invitation to participate in this volume in honour of Soren Dietz. I consider it a special honour. Many and warm thanks go to Nick Boroffka, Helmut Kroll, Kostas Zachos and Kalliope Sarri for, each in their own way, helping me complete of this article. I would like to say a special thank you to Bernhard Weninger for his patience and willingness to answer my endless climate-related questions.

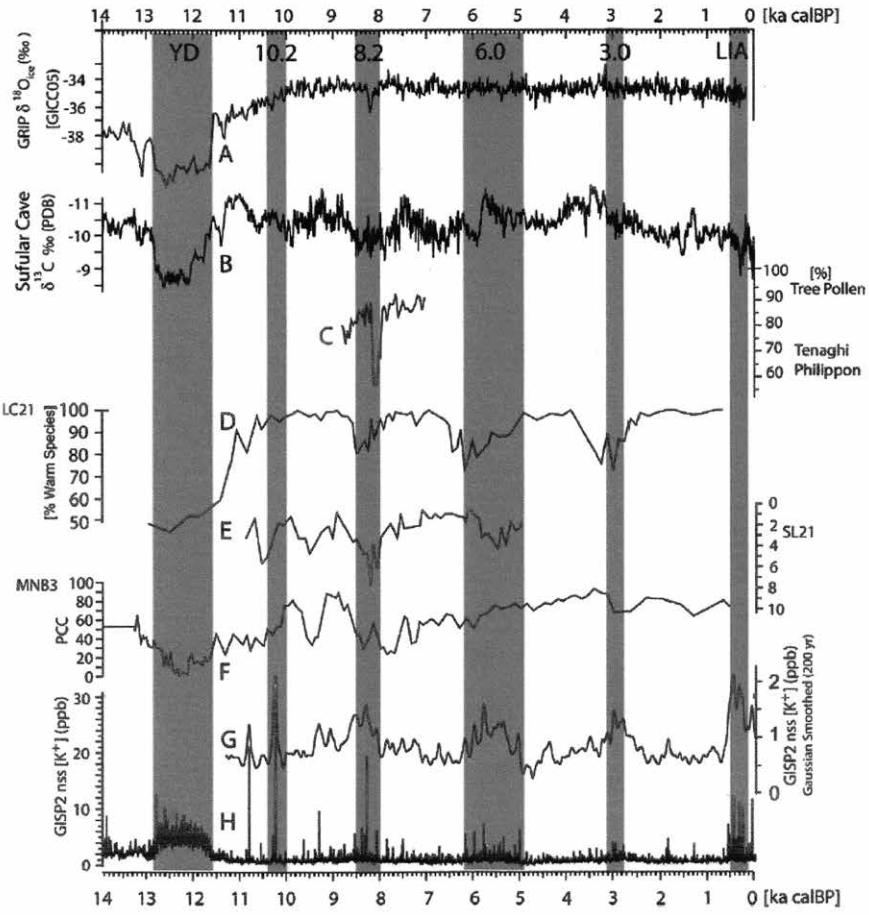

Fig. 1: *Set of Northern Hemisphere palaeoclimate records showing Holocene rapid climate change (RCC); from Weninger & Clare 2011, Fig. 3. D Eastern Mediterranean core LC21 (SE Aegean), marine fauna as proxy for SST variations (seasonal: winter/spring); Rohling et al. 2002.*

From the Pleistocene to the Holocene – the climate

Around the middle of the 13th millennium cal BC, the end of the last glacial maximum (LGM), which was characterised by a cold and dry climate, was followed by a period of milder climate with frequent rainfall, known as Bölling-Alleröd (12,500-11,000 cal BC or 14,500-13,000 cal BP). This was followed by a period of return to glacial conditions, known as the Younger Dryas (YD) phase, which lasted about a millennium (11,000-9500 cal BC or 13,000-11,500 cal BP)[2] (Fig. 1.YD).

The end of this period around 9500 cal BC (11500 cal BP) marked the Holocene, a new climatic period, which in the Mediterranean was characterised by a gradual change of climate, from dry and cold to wet and warm, with a gradual increase in temperature. This process reached its peak (Climatic Optimum) at the end of the 6th and beginning of the 5th millennium cal BC. The new climatic period, Holocene, which is still in progress, was interrupted by repeated drought phenomena combined with a drop in temperature. These phenomena were associated with Rapid Climatic Change events (RCC events) with significant peaks before they became less marked and the climate returned to a milder one.

In the period between 9500 and 3000 cal BC discussed in this article, palaeoclimatologists have identified the following three RCC events, which are determined by their peak times (the 10.2, 8.6-8.0 and 6.2-5.0 ka cal BP RCC events) and lasted for the approximate timespans 8250-8000, 6650-6050 and 4250-3000 cal C respectively[3] (Fig. 1).

As mentioned above, the areas discussed in this article are located in the same climatic zone. The climate in these areas is affected, amongst other things, by the presence of a natural geographical corridor, which brings the flow of cold polar air from Siberia and the Ukrainian steppes to the Black Sea and from

2 Mayewski et al. 1997, 26345-66.
3 Weninger et al. 2009, 7.

there over the Balkans, Eastern Thrace and the Sea of Marmara to the Aegean.[4]

In the Aegean area, the mixing of the cold air masses from the north with the water vapours of the warmer Aegean causes frequent rainfall during the winter and spring months, even snowfall, from the northern Aegean to Crete. This phenomenon results in all the islands of the Aegean (including the currently arid Cyclades) and the northern and eastern coasts of mainland Greece (e.g. Pelion and Euboea) being covered in rich forest vegetation. Today, the same stream of air in the summer is known as 'meltemi'.

On its way to the south, the cold stream of air splits into two from the mountain mass of Psiloritis in Crete. The eastern stream is initially directed to the southeast and then to the east, transporting the water vapours of the Eastern Mediterranean to South and SE Asia Minor, Syro-Palestine and Mesopotamia.[5]

Prehistoric communities until the end of the Younger Dryas (9700 cal BC)

The following provides a brief overview of the prehistoric communities before the beginning of the Holocene, but is restricted to the Middle East region, as data for the Greek area is limited.

In the Middle East (Syro-Palestine, Mesopotamia and SE Asia Minor) the progress of prehistoric communities towards the productive stage had already begun by the Bölling-Alleröd climatic phase, during which the predominance of mild climatic conditions in the area affected the flora and consequently the fauna. Plant species disappeared and animals adapted to the hitherto colder and drier climate moved further north to colder areas, resulting in the reduction of available resources. Those of the hunter-gatherers who did not follow the movement of animals and remained, began to organise themselves into small communities and from the Sinai to the Middle Euphrates created semi-permanent or short-term permanent installations with semisubterranean dwellings of stone and wood. The communities of the Natufian period,[6] as it is called, were forced to select new plant species, including durum wheat and barley, which were native to the region and thrived in the new climate (Fig. 2A).

This was followed by the Younger Dryas rapid cooling climate phase, which had a negative effect on the environment, as it did not favour the growth of indigenous cereals, resulting in a shift to animal husbandry.[7] However, some believe that, despite the cold and dry climate prevailing in the broader Mediterranean area, in the southern Levant, especially the Jordan Valley, the climate was milder and enabled durum wheat and barley to be cultivated. For this reason, the Natufian period is regarded as a precursor of the Neolithic in the region.[8]

Prehistoric communities from the beginning of the Holocene (9700 cal C) to the 10.2 ka cal P RCC event (8200 cal C)

With the end of the Younger Dryas cold phase around 9700 cal BC, the Holocene period began, characterised by the retreat of cold and drought, and a gradual increase in temperature and humidity (Fig. 1). The new climatic conditions from the Levant to the Middle Euphrates favoured the cultivation of cereals. Together with animal husbandry, they shaped the economic conditions of the Neolithic period, which, until the 10.2 ka cal BP RCC event occurred, included the Pre-Pottery Neolithic A (PPNA) phase.

The Neolithic Age in Mesopotamia – Early Pre-Pottery Neolithic A (PPNA) (9700–8700 cal BC)

This period is considered to be the beginning of the Neolithic era, mainly based on innovations in building construction as opposed to changes in the economy. It is located in the northern Levant, as 'Khiamian' and Mureybetian, and in the southern Levant, as 'Khiamian' and 'Sultanien' (Fig. 2B). Important sites are as follows: Mureybet (layers IB and II) in the

4 Weninger & Harper 2015, 477.

5 Regarding the presence of RCC events in the Aegean and the Eastern Mediterranean, see Weninger et al. 2009, 7. Concerning the climate in South Asia Minor, see Massa & Şahoğlu 2015, 61., and Rohling et al. 2019, 38, including further literature.

6 Named after the Wadi en-Natouf (Shuqba Cave) valley on the West Bank, where they were located by the British archaeologist Dorothy Garrod in 1928. Bibliography on the Natufians: Darvill 2002; Belfer-Cohen 1995, 9; Parslow 2009; Bar-Yosef 1998, 159; Willcox et al. 2009, 151.

7 Bar-Yosef 1998.

8 This view was probably based on uncertain carbon samples that affected radiocarbon dating, as in the stratigraphy of the excavated sites Natufian deposits are always below PPNA counterparts, see Weninger et al. 2009, 20.

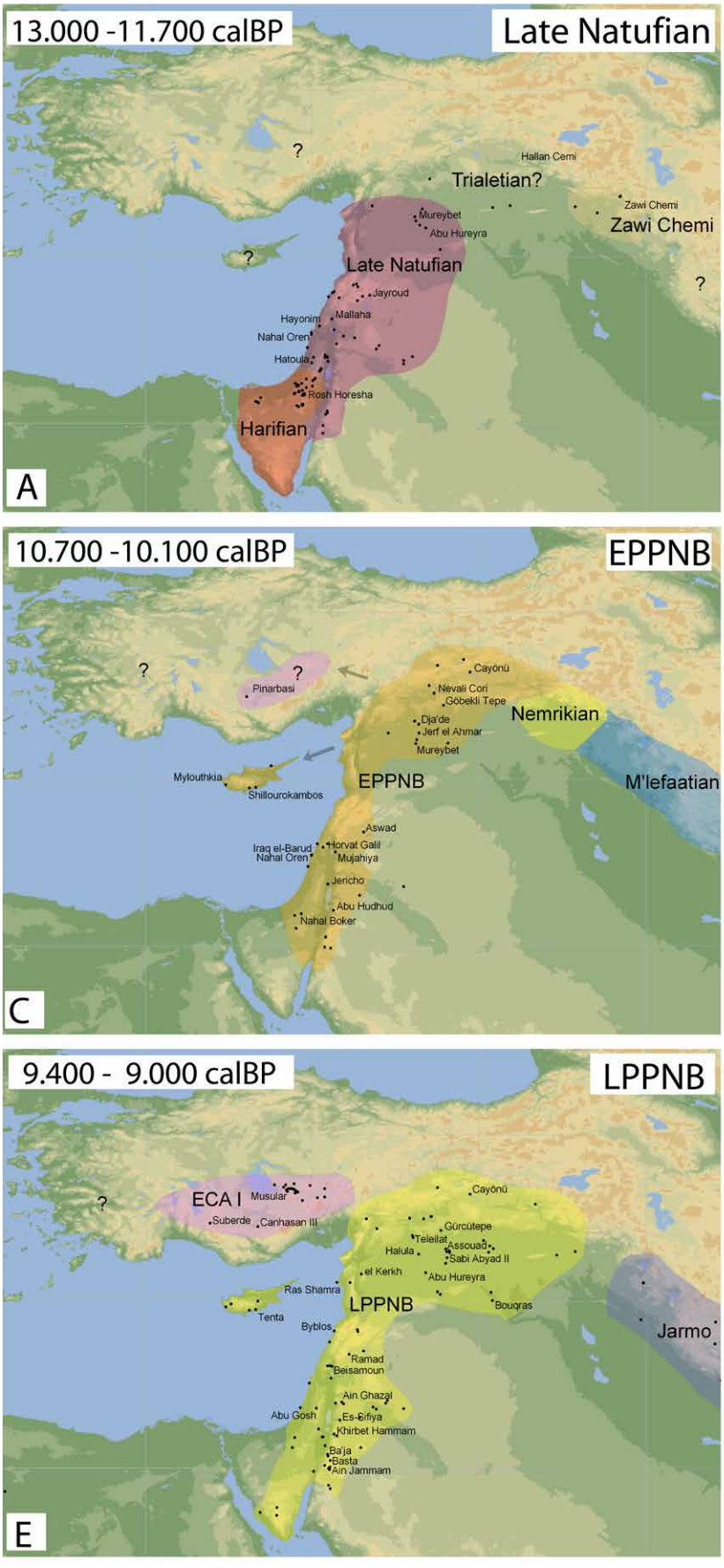

Fig. 2: *The geographical distribution of cultural units referred to in the text. A: Late Natufian, B: PPNA = Pre-Pottery Neolithic A, C: EPPNB = Early Pre-Pottery Neolithic B, D: MPPNB = Middle Pre-Pottery Neolithic B, E: LPPNB = Late Pre-Pottery Neolithic B, and F: PPNC = Pre-Pottery Neolithic C and Early PN = Early Pottery Neolithic. From Weninger et al. 2009, Fig. 9.*

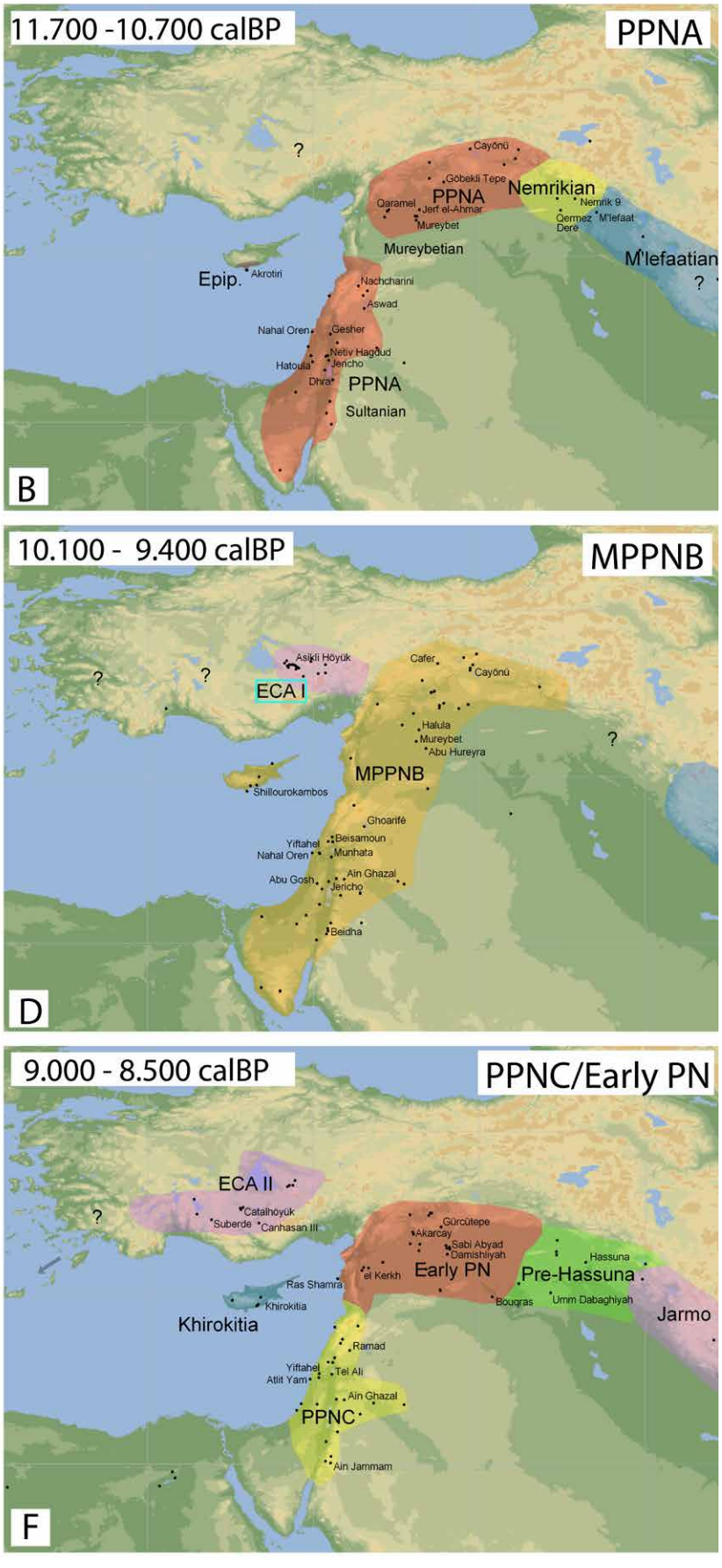

Fig. 2: *Continued.*

Middle Euphrates area; Jericho in the Jordan Valley; the sites Salabiyah IX and Hatoula in the Judean Hills; and Göpekli Tepe (Level III), near present-day Urfa, in SE Asia Minor.[9]

Innovations of the new era included the appearance of rectangular buildings (Mureybetian in the Middle Euphrates), the development of monumental religious architecture in SE Asia Minor (Göpekli Tepe Level III) and the construction of the massive wall and tower at Jericho, probably for flood protection.[10]

In contrast to the development in architecture, in northern Mesopotamia and SE Asia Minor animal domestication occurred at a slower rate than further south, from Sinai to the Middle Euphrates, although domesticated cattle appeared as early as 9600 cal C and in Syro-Palestine by 9200 cal BC.[11] The selection of the plants for cultivation also occurred at a slow pace and was mainly undertaken in the next EPPNB phase. [12]

The next Early Pre-Pottery Neolithic B (EPPNB) (Fig. 2C) lasted from 8700 to around 8100 cal BC, a large part of it (c. 8500-8000 cal BC) covered by the 10.2 ka cal BP RCC event, in the context of which it will be presented.

The Mesolithic period in Greece

In mainland and Aegean Greece, hunter-gatherer sites dating to as early as the Palaeolithic period have been identified and these continued into the Mesolithic period, mainly in caves (e.g. Franchthi in Argolis), but also in the form of open-air sites (e.g. Maroulas in Kythnos). However, the picture of these periods of development remains unclear, as the habitation sites on the extensive coasts of mainland Greece and the islands have been flooded by sea level rises of 40-50 m up until the present day.[13]

By the beginning of the Holocene, the prehistoric communities in Greece had entered the Mesolithic period.[14] Remaining at the same stage of development, they suffered the effects of the 10.2 ka cal BP RCC event (8200-8000 cal BC) and continued in the new period of warm and humid climate, Sapropel 1 (S1), until 6600 cal BC, when a new 8.2 RCC event period of drought began.[15]

The evolution from the Upper Palaeolithic to the Mesolithic and the beginning of the Neolithic era is represented by the stratigraphy of the Franchthi Cave in Argolis.[16] Based on the development of lithics in the Mesolithic period, three phases have been identified (Lower, Upper and Final Mesolithic).[17]

The Lower Mesolithic (c. 9600/9500-7500 cal BC) began with the predominantly mild climate after the Younger Dryas cold phase, and ended shortly after the 10.2 ka cal BP RCC event. It has mainly been identified in the caves of Sarakinou, Franchthi (phase VII) and Theopetra in mainland Greece, and the Cave of Cyclops on the island of Giura in the Northern Sporades, but also at the open-air sites of Maroulas in Kythnos and Kerame I in Ikaria.[18]

The flora of the Mesolithic period was different from that of the Upper Palaeolithic. The low vegetation of the steppe plains and the limited forest cover at a higher altitude during the Upper Palaeolithic was replaced by dense vegetation and the expansion of deciduous forests (e.g. Theopetra). Similar dense vegetation covered the Aegean islands.[19] At the Lower Mesolithic sites, the presence of seeds and fruits increased, especially wild lentils, peanuts, almonds, figs, wild wheat and wild oats.[20]

The dominance of the mild climate had an impact on the fauna of the area. The equids and goats of the Upper Palaeolithic disappeared (possibly migrated) and animals adapted to the new environment pre-

9 Weninger et al. 2009, 23; Schmidt 2007; Dietrich 2011, 12.
10 Bar-Yosef 1986, 161.
11 Regarding the domestication of cattle, see Arbuckle 2014, 53.
12 Concerning the selection process and the characteristics of domesticated plants, see Weide 2015, 381.
13 Sampson 2010, 83; Kraft et al. 1982, fig. 93.
14 The first traces of habitation in this period appear in the Sarakinos Cave in the continental hinterland, around the middle of the 10th millennium BC (9680-9270 BC and 9870-9360 BC), see Sampson 2010, 31. Regarding chronology, see Sampson 2010, 152-5.
15 Weninger et al. 2009, 14-5, fig. 9.
16 Jacobsen 1969, 342f; 1973, 45; Jacobsen & Farrand 1987.
17 Perlès 1990.
18 Radiocarbon chronologies from more Mesolithic sites in Greece have contributed to the establishment of not only the time frame of the Mesolithic, but also the dating of each phase of its development, see Sampson 2010, 152.
19 Sampson 2010, 141.
20 The information about the collection and consumption of fruit by hunter-gatherers during the Mesolithic period mainly comes from the few excavated sites and especially from the Franchthi Cave, see Hansen 1991.

dominated (red deer, cattle, small mammals and various birds).[21] The presence of wild boars and goats, in a transitional stage of domestication, has been placed in the second half of the 9th millennium and will be discussed in the next section. Throughout time, fishing using hooks or nets, and collecting oysters and molluscs, have played an important role in the diet of the Mesolithic inhabitants of island and coastal sites.[22]

A unique find for the Mesolithic period of Greece are the circular constructions discovered on the Maroulas peninsula in the northern part of the island of Kythnos, dating to the beginning of the Lower Mesolithic (8800-8600 BC), before the 10.2 ka cal BP RCC event began. These were used as living quarters and the smaller ones probably as storage spaces.[23]

The 10.2 ka cal BP RCC event (10,200–10,000 cal BP or 8200–8000 cal C)

This is the first RCC event that has been recorded after the beginning of the Holocene, and was characterised by intense drought and cold conditions. It began gradually from 8500 cal BC, peaked around 8200 cal BC and lasted until around 8000 cal BC.[24] It spanned the second half of the 9th millennium, corresponding with much of the EPPNB period, and affected the Early Neolithic communities of the region. The rapidity of the onset of the 10.2 ka cal BP RCC event was probably mainly caused, like the other RCC events, by an abrupt outflow of (fresh) meltwater into the North Atlantic, which disturbed the circulation of this ocean.

The Neolithic in Mesopotamia – Early Pre-Pottery Neolithic B

The Early Pre-Pottery Neolithic B (EPPNB) (Fig. 2C) lasted from 8700 cal BC until around 8100 cal BC. For most of this timespan (c. 8500-8000 cal BC), it developed in the climatic conditions of the 10.2 ka cal P RCC event, in areas of higher altitude, initially in northern Syria and then in SE Asia Minor, in contrast to the PPNA period, which mainly developed in the lowlands. It is characterised by architectural structures in Level II of the older site Göpekli Tepe, the new sites of Nevali Çori, near present-day Urfa, and Çayönü near Diyarbakir.

During this phase, at settlements that were continuously occupied (Çayönü, Nahal Hemar 3-4, Cafer Höyük, Ain Ghazal and Beidha), selected cereals have been recorded, which perhaps not coincidentally can withstand drought. Wild Emmer has been found at settlements from 8500 cal BC, wild barley at those from 9000/8800 cal BC and Einkorn at settlements dating to around 8500 cal BC.[25] Cultivated barley was found at the Nevali Çori settlement, dating to around 200 years before the 10.2 ka cal BP RCC event. These cereals would have been increasingly cultivated after the end of the climate event.[26] During this period, pigs (Sus) (from around 8600 cal BC) and goats and sheep (around 8200 cal BC in the Zakros mountain range) were domesticated, the latter because they could withstand the dry climate of the RCC event.[27]

Some EPPNB settlements (e.g. Çayönü and Jericho) continued into the next PPNB period, but in the case of Jericho, the available ^{14}C dates from layer X indicate that there was a possible break in habitation lasting for about 300 years.[28] A similar brief interruption of habitation has also been identified at Çayönü, between EPPNB and MPPNB phases.[29]

The above suggests that in the Early Pre-Pottery Neolithic A and B periods (EPPN A-B) there was a significant development in the construction techniques associated with buildings, including ones with a religious function. In the area of agricultural economy, the selection of plant species suitable for cultivation and the domestication of animals were undertaken. It is no coincidence that drought-resistant animals and plants were selected throughout the duration of the 10.2 ka cal BP RCC event.

21 Jacobsen 1973, 45; Sampson 2010, 69.
22 Sampson 2010, 143.
23 Sampson 2010, 91.
24 Weninger et al. 2009, 11-5, fig. 9.
25 Asouti & Fuller 2013, 299.
26 Nesbitt 2002, 113, table 1; Weninger et al. 2009, fig. 6.
27 Regarding the domestication of cattle, see Arbuckle 2014; pigs (Sus), see Weninger et al. 2009, 24, fig. 13; and sheep and goats (Ovis/Capra), see Zeder & Hesse 2000, 2254.
28 Weninger et al. 2009, 23, fig. 10-2, table 2.
29 Weninger et al. 2009, 26, fig. 13.

The Mesolithic in Greece – the Lower Mesolithic

Research in Greece seems to have identified some changes in the development of Mesolithic communities during the 10.2 ka cal BP RCC event, related to the attempts to domesticate animals. In the Cave of the Cyclops on Gioura and at Maroulas in Kythnos, remains of wild boars with traits of domestication have been found.[30] At the same time (9th millennium BC), goats have been identified in a transitional stage of domestication in the Cave of Cyclops. Their presence coincides with the domestication of sheep, goats and cattle in SE Asia Minor, especially in the second half of the 9th millennium, around 8200 cal BC, when there was a movement of farmers from South Asia Minor to Cyprus.[31] In contrast, it is proposed that sheep, probably domesticated, were present in Aegean Greece at the end of the Lower Mesolithic (8000-7500 cal BC), after the end of the 10.2 ka cal BP RCC event.[32]

Between the 10.2 ka cal BP and 8.2 ka cal BP RCC events (8000–6600 cal BC) – Sapropel (S1)

With the end of the 10.2 ka cal BP RCC event at around 8000 cal BC, the climate changed. This change has been confirmed in the Levant, with the abrupt rise in the level of the Dead Sea and at the bottom of the East Mediterranean Sea, and the formation of dark-coloured sediments rich in organic material (sapropels), caused by the increased amounts of freshwater on the sea surface. The presence of these sediments reflects the dominance of a mild climate with increased humidity and temperature.

A generally warm and humid climatic period, known as Sapropel (S1), lasted from 8200 cal BC to approximately 4800 cal BC.[33] It can be observed in numerous marine cores from the bottom of the East Mediterranean Sea, with the formation of dark-coloured sediments rich in organic material (sapropels). These were caused by the increased presence of freshwater on the sea surface. These sediments indicate the prevalence of a mild climate with increased humidity and temperature. Due to the long duration of moist climatic conditions, this period was decisive for the development of prehistoric communities in the Eastern Mediterranean.

Sapropel S1 is subdivided into two subperiods (S1a and S1b), which are separated from one another by a short interruption associated with the influx of extremely cold air masses into the Aegean (originating from the Polar regions) between 6600 and 6000 cal BC. At the end of this interruption, the already quite extreme cold/dry winter conditions were then greatly accentuated around 8.2 ka cal BP (6200 cal BC) by the abrupt outflowing of (fresh) post-glacial meltwater from the Hudson Bay into the North Atlantic.[34] Due to the long (c. 600 year) duration of generally cold/dry climatic conditions, this RCC period was decisive for the development of prehistoric communities in many regions of the Eastern Mediterranean, as well as in Southern Europe as a whole.

The Neolithic period in Syro-Palestine and Mesopotamia – PPN B–C and EPN

The period between 10.2 and 8.2 ka cal BP RCC events (Sapropel 1 (S1), 8000-6600 cal BC), includes the Pre-Pottery Neolithic B and C periods (PPN B-C, 8000-7000 cal BC) and Early Pottery Neolithic (EPN, 7000-6000 cal BC) (Fig. 2.D-F). During their existence, the mild and humid climate favoured the development of crop cultivation and livestock farming, as well as the establishment of permanent and often large settlements.

Around 7000 cal BC, handmade pottery, which defines the Early Pottery Neolithic (EPN) period of the region, first appeared.[35] In NE Mesopotamia, pottery with incised or painted decoration prevailed, and in Syria Dark Burnished Ware.[36] The spread of decorated pottery resulted in the formation of the Hassuna culture (7000-6000 cal BC) in NE Mesopotamia and the Samarra culture (6500-5700 cal BC) a little further south.

The efficiency of the Neolithic way of life led to population growth and the creation of new and larger

30 Trantalidou 2003, 146.
31 Sampson 2010, 68.
32 Trantalidou 2010, 163.
33 Weninger et al. 2009, 15.
34 Weninger et al. 2009, 15, fig. 5-6.
35 The need to make clay vessels probably arose from the increase in population, so that more utensils were required to transport solid and liquid foods, including water.
36 el-Mesih Bagdo et al. 2009, 121; Balossi – Restelli 2006; Kopanias 2013, 45.

(mega) sites. Characteristic settlements include Çatal Hüyük East in SE Asia Minor, Beidha and Basta in Syro-Palestine, and Jarmo in Mesopotamia. These settlements were densely built up with rectangular Houses. Public buildings and sanctuaries were yet not present.[37]

This brief presentation of the transition to the Neolithic way of life, and the development during the Neolithic period in the region of Syro-Palestine, SE Asia Minor and Mesopotamia, has shown that the development from the small establishments of the Natufians to the mega sites of the advanced Neolithic took a long time. However, it also involved fluctuations, mainly due to the effects of the 10.2 ka cal BP RCC event.

The development of prehistoric communities during the same period in Greece will be presented below.

The Upper and Final Mesolithic in Greece (7500–6500 cal BC)

In between the 10.2 and 8.2 ka cal BP RCC events, the Upper and Final Mesolithic developed in Greece. The Upper Mesolithic dates from around 7500 to 7000 cal BC and is stratigraphically identified in the caves of Cyclops (island of Gioura), Theopetra (Thessaly) and Franchthi (phase VIIII) (Argolis).[38]

The diet of hunter-gatherers in this period mainly consisted of peanuts, almonds, capers, lentils and wild barley. All Lower Mesolithic species are represented in the wild fauna of the period, but differences are observed in the frequency of their presence at the excavated sites. Pigs are present in the Cave of the Cyclops and in significantly fewer numbers in Maroulas, whilst goats are smaller in size.[39] The island and coastal settlements are characterised by the intensification of fishing, especially of tuna.[40]

The Final Mesolithic lasted between 7000 and 6500 cal BC and seems to have corresponded to the aceramic period of the Early Neolithic.[41] It has been stratigraphically detected in the Cave of Cyclops on the island of Gioura, and the caves of Theopetra and Franchthi (phase XI) in mainland Greece.

The diet of the inhabitants of the period included wild oats, capers, lentils and almonds (Franchthi Cave), wild barley and Einkorn (Theopetra Cave), and possibly (due to mixed excavated deposits) bitter vetch and peas (Schisto Cave).

The 8.2 ka cal BP RCC event (8600–8000 cal BC or 6600–6000 cal BC)

In the second half of the 7th millennium, the warm and humid period, also known as Sapropel 1, was interrupted by the 8.2 ka cal BP RCC event.[42] The cold and arid climate (8.2 ka cal BP RCC period) of 6600-6000 cal BC affected the environment of both Mesopotamia and its neighbouring regions, as well as Greece.

Continuity of the Neolithic in Mesopotamia and its neighbouring regions

During the onset of the drought period, the cultures of the Early Pottery Neolithic (EPN), Hassuna (7000-6000 cal BC) in northern Mesopotamia and Samarra (6500-5700 cal BC) a little further south continued, while in southern Mesopotamia, around 6600 cal BC, the Neolithic way of life appeared and the long-lasting Ubaid culture (subperiods Ubaid 0-2) is emerging.

During the drought period (6600-6000 cal BC) in southern lowland Mesopotamia (Ubaid culture) irrigation canals were constructed for cultivating fields.[43] From SE Asia Minor to Syro-Palestine, many settlements were abandoned and destroyed,[44] and towards the end of the Neolithic – the beginning of the Chalcolithic in northern Mesopotamia and SE Asia Minor – fortified settlements appeared.[45] The presence of malachite at the Yarim Tepe I settlement is regarded as evidence of copper metallurgy.[46]

37 Kopanias 2013, 40. including extensive bibliography.
38 Sampson 2010, 152.
39 Trantalidou 2003; Sampson 2010, 68.
40 Sampson 2010, 143.
41 Gallis 1996a, fig. 3.
42 Weninger et al. 2009, 15, figs. 5-6; Weninger & Lee 2019, 11, fig. 6.
43 Traces of irrigation have been found at the Choga Mami settlement in eastern Iraq, Helbaek 1972, 35.
44 Nissen 1999, 26; Kopanias 2013, 44.
45 See next section 'Mesopotamia and neighbouring regions – the Chalcolithic period'.
46 The presence of malachite is known from the Yarim Tepe I site in northern Iraq of the Hassuna culture and some researchers believe this indicates that copper casting occurred at the settlement, see Kopanias 2013, 56; Pigott 1999, 61.

The Neolithic way of life spread from the southern and western coasts of Asia Minor (along the rainfall zone) to Greece and the Balkans, and in central Asia Minor the domestication of animals began.[47]

The beginning of the Neolithic period in Greece

With the onset of the drought period around 6600/6500 cal BC, Greece was in the final stage of the Mesolithic period (or the aceramic phase of the Early Neolithic).[48] The ambiguity of the transition to the Neolithic is indicated by both the abandonment of many caves[49] and the apparent absence of open-air sites on the coast, which as at the end of the Mesolithic these were around 40 m lower, today they have been covered by the gradual rise sea in sea level. It is generally accepted that the transition to the Neolithic period occurred in the second half of the 7th millennium (6500-6000 BC).[50]

Early Neolithic (6500–5800 BC)

In Thessaly, the largest lowland area in Greece, settlements dating to the Early Neolithic (EN) have been found (Sesklo, Achilleion, the Argissa magoules, Soufli and Gentiki).[51] The absence of pottery in the earliest deposits at these sites has raised the question of the existence of an aceramic Neolithic phase in Greece before 6500 cal BC.

During the long-lasting (ceramic) Early Neolithic, three phases of development have been identified: the Achilleion culture, the Protoseskло culture and the Vorseskло or Magoulitsa culture, which are defined by the variations in pottery.[52] Throughout this period, settlements began to rapidly appear, not only throughout Thessaly, but also the entire Greek area. Locations were chosen near water and on soils suitable for growing cereals, mainly Einkorn or durum wheat and barley, as well as for the breeding of domesticated animals. (Fig. 3.A) The houses are quadrilateral with a pitched roof, built with piles and clay, and where suitable material was available, with stone foundations. These buildings were sparsely arranged, with empty spaces between them, in which there were hearths and ovens.

During the various phases of the EN period, certain elements of the material culture, although isolated, represent an activity that is perhaps unexpected in a new era in which, at least at the beginning, Neolithic communities were mainly preoccupied with adapting to new living conditions. These elements are as follows:

- The appearance of pintaderas from as early as the first phase and the interpretation of their use in other areas do not match the level of social structure and economic status of the Early Neolithic communities in Greece.
- In terms of burial customs, as well as the typical foetal position in a pit, from the first phase onwards (Soufli Magoula) the deceased were also cremated.
- A sloping clay construction with hearths at Achilleion III (transition from EN to MN) perhaps indicates that ritual activities occurred there.
- On the other hand, the presence of obsidian blades reflects the maintenance of the network for the distribution of Melian obsidian in mainland Greece, which had been established as early as the Mesolithic period.

Between the 8.2 and 6.2–5.0 ka cal BP RCC events (6000–4250 cal BC)

Following the end of the climatically highly variable 8.6-8.0 ka cal BP RCC period, a new period of mild, warm and humid climate began around 6000 cal BC (Sapropel 1b). As we have seen in the previous sections, the Neolithic communities in Syro-Palestine and Mesopotamia developed at a different rate to those in Greece, as they were ready to enter the Chalcolithic period. The same mild climate also affected Greece, greatly favouring the Neolithic economy.[53]

A brief presentation follows, in which the development of prehistoric communities in the previously mentioned areas are compared between the 8.2 and 6.2 ka cal BP RCC events.

47 In relation to Asia Minor, see Arbuckle et al. 2009, 129. Regarding Greece and the Balkans, see Krauß et al. 2017.
48 The transition to the Neolithic (with pottery present) is still a matter of debate, as it has not yet been stratigraphically confirmed at an excavated site (cave or open-air settlement), see Sampson 2010, 154; Katsarou & Sampson 2010, 175.
49 In Greece, but also in the broader Mediterranean region, see Sampson 2010, 152-5.
50 Gallis 1996a, 30.
51 Aslanis 1992a, 52.
52 Gallis 1996b, 61.
53 Weninger & Clare 2011, 11, fig. 2.

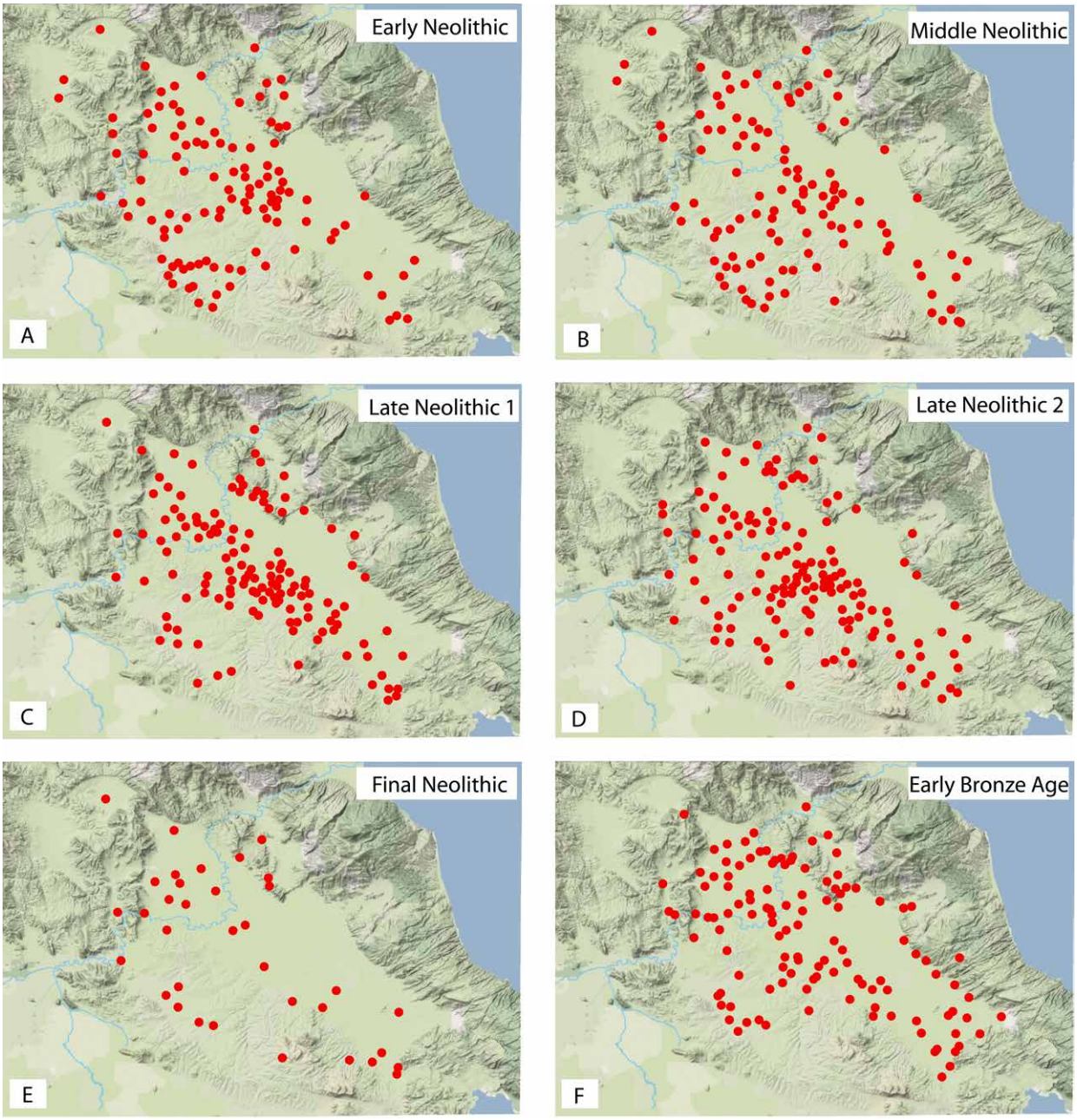

Fig 3: *Distribution of prehistoric settlements in Thessaly, Greece. From Weninger & Harper 2015, Fig. 5.*

Mesopotamia and neighbouring regions – the Chalcolithic period

After the decrease in the effect of the 8.2 ka cal BP RCC event and with the improvement of the climate, there were a series of innovations in social organisation, economy, technology and ideology-burial customs in Mesopotamia and SE Asia Minor, in other words areas which determined the arrival of each new period, in this case the Chalcolithic.

The Chalcolithic in Mesopotamia and SE Asia Minor spans from the beginning of the 6th to the end of the 4th millennium BC, and includes the Early (6000-5500 cal BC), Middle (5500-4250 cal BC) and Late (4250-3200 cal BC) periods.[54]

54 For the absolute dating of the Chalcolithic, High Chronology is used, see Schoop 2005; 2011; Novák et al. 2017, 150.

The Early Chalcolithic (6000-5500 cal BC) is represented in northern Mesopotamia by the Halaf culture and in southern Mesopotamia by the Ubaid culture (mainly the Ubaid 2 subperiod).

It had an agricultural economy, but also a number of innovations, which characterised the Chalcolithic and will be briefly described:[55]

- The agricultural economy includes remains of irrigation canals at the settlement of Choga Mami[56] and technological developments may have involved the use of copper, based on the presence of carinated ceramic forms copying metal originals.[57]
- The distribution of goods is attested by the presence of obsidian from Lake Van, oysters from the Indian Ocean and the movement of Halafian pottery from the Persian Gulf to the shores of the Mediterranean.[58] In addition, the appearance of pintaderas (Yarim Tepe I) alludes to the concept of the ownership of goods.
- From the end of the previous to the beginning of the new era, the spatial organisation included fortifications (Tell Es-Sawwan phase IIIA – moat and wall; and Hacilar V and Curuçay 11 – strong wall),[59] but also rectangular buildings, probably for public purposes (Tell Es -Sawwan phase IIIA and Tell Arpachiyah Haus TT6), in contrast to the circular dwellings.[60]

The end of the Early Chalcolithic in northern Mesopotamia was marked by the decline of the Halafian culture, due to the spread of the Ubaid culture from southern Mesopotamia.

The Middle Chalcolithic (5500-4250 cal BC) corresponds with the longest part of the climatic period Sapropel 1b. During its duration, the Ubaid culture (subperiods 3-5) of lowland southern Mesopotamia was also dominant in its mountainous northern part. Since the beginning of the period, in southern Mesopotamia had been marked demographic growth, with increasing numbers of settlements, often larger, probably as a result of a short-term change in climate, which led to an increase in the extent of the cultivated lowlands.[61] The centre of Ubaid culture was apparently the city of Eridu in southern Mesopotamia. The spread of cultural material, especially pottery but also other products, after the Ubaid 3 subperiod, is impressive. In the west it reached as far as Cilicia, in the east as far as the Zagros mountains and in the northeast to Lake Urmia in northern Iran.[62]

During the Middle Chalcolithic (5500-4250 cal BC), almost all the elements that distinguished the Chalcolithic as a distinct period now appeared:[63]

- In terms of the economy and technology, metallurgy developed significantly and the first die-cast copper chisels appeared. The end of the period was characterised by gold and the use of the wheel in pottery production. Trade developed in southern Mesopotamia due to a lack of raw materials, assisted by the addition of sails to boats used to transport goods along rivers.
- The spatial organisation changed. The settlements were large (1000-3000 inhabitants), with roads, independent buildings and storage areas. Monumental buildings with buttresses and recesses appeared for the first time, which have been interpreted as temples, centres for the management of goods or the residences of a special group of people (elite). At the end of the period (4250 cal BC), when many settlements were destroyed and abandoned, fortifications reappeared.
- As far as social organization is concerned, the formation of social stratification is considered possible, based on the specialisation of work and development of trade. A central, religious or secular authority (elite) is also indicated by the presence of monumental buildings and the clay figurine from Eridu.[64]

In the Ubaid 5 phase, the number of settlements in Mesopotamia, Syro-Palestine and SE Asia Minor decreased as a result of destruction or abandonment, while others were fortified. This phenomenon coincided

55 Regarding the Chalcolithic period in Mesopotamia, see Kopanias 2013, 67, including comprehensive bibliography.
56 Helbaek 1972, 35.
57 Concerning the presence and interpretation of carinated pottery, see Mellaart 1966, 120.
58 Mellaart 1966, 125.
59 Regarding Tell Es-Sawwan, see Bernbeck 1994, 243. Concerning Hacilar V and Kuruçay 11, see Duru 2012; Clare & Weninger 2016.
60 Peregrine & Ember 2002, 54.
61 Regarding the city, see Kopanias 2013, 85, pl. 104-5.
62 Mellaart 1967, 39.
63 Some of these are described here. Regarding others, see Kopanias 2013, 77, with full bibliography.
64 It represents a male figurine holding a sceptre and was found in a female burial with no other particular finds, see Kopanias 2013, 98.

with the end of the Ubaid civilization around 4250 cal BC and the peak of the 6.2-5.0 ka cal BP RCC event.

The Ubaid culture was succeeded by the Uruk culture, which represented the Late Chalcolithic in the region and developed during the 6.2-5.0 ka cal BP RCC event (4250-3200 cal BC).[65]

The Neolithic (Middle and Late I) and Early Chalcolithic (or LN II) in Greece

Between the 8.2 and 6.2-5.0 ka cal BP RCC events (6000-4250 cal BC) in Greece, the Middle Neolithic (5800-5400/5300 cal BC), Late Neolithic I (5400/5300-4900/4800 cal BC) and the Early Chalcolithic (or Late Neolithic II and early FN) (4900/4800-4250 cal BC) periods developed.

The Middle Neolithic succeeded the Early Neolithic smoothly after the end of the 8.2 ka cal BP RCC event, as attested by several settlements (e.g. Sesklo, Otzaki, Pyrassos and Prodromos II), and dates to between 5800 and 5400/5300 cal BC.[66] In Thessaly, the Sesklo culture developed, covering the entire Thessalian plain. It is distinguished by three phases (Sesklo I-III), which are based upon the development of pottery over time.[67] The forms and decoration seem to have been influenced by the ceramics of the Halaf culture. During the MN in Thessaly, there were some changes in the spatial organisation, the economic and social structure, as well as the beliefs of the farmers. These emphasise the evolutionary continuity with the previous Early Neolithic (Fig. 3.B). In the Sesklo III phase (around 5400 cal BC), several settlements were destroyed by fire and many were abandoned, including Sesklo, which was repopulated after around 400 years. Some settlements were, however, immediately re-established (e.g. Tsangli) and continued along with those that were not affected by the disasters (e.g. Platia Magoula Zarkou).[68]

Late Neolithic I (LN I) in Thessaly stratigraphically succeeds the Middle Neolithic, at least at the settlements of Tsangli and Platia Magoula Zarkou. It is differentiated from it mainly by the end of the Sesklo culture, but also by the emergence of a series of innovations in the various areas of activity of the Neolithic communities, including in ceramic production. This period includes the pre-Dimini phases of Tsangli-Larissa and Arapi, which can be stratigraphically distinguished from one another at settlements throughout Thessaly, but show a continuity in ceramic production with only minimal changes.[69]

Despite the destruction of several settlements at the end of MN III, the development in the Thessaly region in LN I was continuous and was even enhanced by some elements which peaked in the subsequent LN II period:

- In terms of spatial organisation, many new settlements were established, mainly in the lowlands of the Thessalian plain, where this dramatic demographic increase has been recorded (Fig. 3.C). Clay models of houses attest to the existence of two-storey buildings.[70]
- The development of pyrotechnology was a technological step that improved the quality of ceramic production in the LN (or LN I) and decisively contributed to the development of metallurgy in the following period.[71]
- For the first time, cemeteries were found in Thessaly. They were located outside the settlements of Platia Magoula Zarkou and Soufli Magoula and characterised by the use of everyday vessels as cremation urns.

The Late Neolithic II (LN II), which succeeded LN I, has been stratigraphically attested at several settlements in Thessaly (e.g. Aghia Sophia (layer 4), Argissa and Pysasos) and is best represented by the excavated settlements of Otzaki and Dimini. It comprises three phases of development, which are only distinguished by a preference for certain categories of otherwise homogeneous pottery.[72]

However, a more careful study of the material from this period leads to the conclusion that changes in the activities of the communities, which had tentatively begun in the LN I period, were completed in LN II. As well as these there were innovations in the rest of Greece, which together, according to the author,

65 See next section about the 6.2-5.0 ka cal BP RCC event – The Late Chalcolithic in Mesopotamia – the Uruk period.
66 Absolute datings come from the most recent establishment of a large number of radiocarbon chronologies, see Tsirtsoni 2016, 32.
67 Gallis 1996c, 120.
68 The phenomenon of destruction and abandonment of settlements coincides with the 7.4 RCC event, which is still being studied, see footnote 60.
69 Gallis 1996c, 120.
70 e.g. Nikaia 12 Larissa, see Gallis 1992, pl. 30, fig. 18.
71 Technological innovations are generally dated to the LN, and more rarely the LN I (Neolithic pre-Dimini) or LN II (Chalcolithic Dimini) phases.
72 Gallis 1996c, 122.

brought Greece into a new period, the Chalcolithic, as early as 4900/4800 cal BC. The transition from the Neolithic occurred an orderly way, and integrated the region into the unified framework of development in SE Europe.[73]

Innovations identified in Thessaly and attributed to the Early Chalcolithic (or LN II) were associated with all of the activities of the communities:

- In Greece, the presence of metal (originally copper and gold) is known from small objects, mainly of malachite, at a limited number of locations as early as LN I. Its systematic use was, however, established by the Early Chalcolithic (or LN II). In Thessaly, the presence of copper and gold artefacts (with the exception of a gold pendant) is attested from the LN II period.[74] The small number of metal crafts in this period at settlements with long-term habitation, should be mainly related to the recyclability of the metal and less to its limited use
- The emergence of metallurgy as a specialised activity had a significant influence on the social structure of the communities.
- The considerable increase in the numbers of new settlements observed in the previous period did not continue in the Early Chalcolithic (or LN II)[75] (Fig. 3.D). Settlements were now smaller in size, but were usually densely built up. Some probably functioned within groups, with central and peripheral neighbouring settlements controlling production and raw materials.[76] Clusters of three-four settlements with Dimini ceramics, located along natural geomorphological passages from Thessaly to Western Macedonia, can be included in this model of intercommunal relations and control of exchanges.[77] Some settlements were surrounded by double enclosures. The same phenomenon can also be observed in other areas of Greece.[78]
- In terms of agriculture, as well as leguminous plants (lentils and peas), beans and chickpeas were also now grown in this period (or LN II). The cultivation of barley, mainly of the six-row type, which was widespread in Thessaly and Macedonia, increased in Thessaly, as well as the rest of Greece, especially on the Cyclades.[79]
- The presence of a burial tumulus and ritual space at the settlement of Hagia Sophia near Larissa at the beginning of the Early Chalcolithic (or LN II) is perhaps the only evidence of a religious event in this period in Thessaly.[80] Small cemeteries have, however, been identified in areas outside Thessaly.

At the beginning of the Early Chalcolithic (or LN II), around 4900/4800 cal BC, the humid and warm period Sapropel 1 was coming to an end.[81] With the end of the 'classic Dimini' phase of the Early Chalcolithic, around 4500 cal BC, there were significant changes in the development of communities, such as the collapse of the Dimini culture and its replacement by the Rachmani culture.

The 6.2–5.0 ka cal BP RCC event (4200–3200 cal BC)

From the second half of the 5th millennium cal BC, an intense climatic event occurred, known as the 6.2-5.0 ka cal BP RCC event. It lasted a very long time, reached a peak around 4200 cal BC and ended around 3200/3000 cal BC. The event was characterised by prolonged drought and low temperatures, mainly during the winter and spring.[82] After its peak, during the 4th millennium, there fluctuations in its intensity (Fig. 1.6.0).

73 To determine the characteristics of the Chalcolithic, the author adheres to the viewpoint that the characteristic features of the Chalcolithic should be based not only on the appearance of a new material (copper), but on all the activities of prehistoric communities (spatial organisation, social structure, economy, technology and ideology), which also apply to the Bronze Age and Iron Age. For the types of criteria that define the Chalcolithic period, see Neustupný 1981, 177. For more information, see Lichardus 1991 and Aslanis 2003, 37, including a further bibliography.

74 Zachos 2010, 77.

75 Gallis 1992b.

76 The possible operation of such settlements is described by Chourmouziades for the area of Dimini, see Chourmouziades 1979, 161.

77 Aslanis 1992b, 203; 1997, 83; Chrysostomou et al. 2007, 53.

78 For the operation of enclosures, see Aslanis 1990, 19; 2008, 35.

79 Trantalidou 1996, 97. However, the emphasis on the cultivation of barley and leguminous plants which thrive in dry soils could be interpreted as an indication of the beginning of climate change, even though the pulses also constituted an alternative for fertilizing the fields.

80 Milojčić et al. 1976, 6.

81 The end of Sapropel S1 is dated to 6806±240 cal BP, see Weninger et al. 2009, 15.

82 For the description of the RCC and its effects, see Weninger et al. 2009, 34; Weninger & Harper 2015, 475.

The Late Chalcolithic in Mesopotamia– the Uruk period

The occurrence of the new climatic event coincided with the decline of the Ubaid culture and its gradual replacement by the Uruk culture between 4250 cal BC and 4000 cal BC.

In contrast to the Eastern Mediterranean, which was affected by drought, Syro-Palestine and Southern Mesopotamia, after the beginning of the 4th millennium, were subjected to increase in rainfall, which favoured the rural economy and the development of the new culture.[83] The settlements increased in number and often in size, both in the south (e.g. Uruk) and in northern Mesopotamia (e.g. Tell Brak). The undisturbed continuity from the Ubaid to Uruk period is stratigraphically attested at Tell Awayli (or al-Oeulli) and in Uruk.[84]

The Uruk period covers the entire Late Chalcolithic period of the Middle East and is characterised by two phases of development, early (4250-3600 BC) and late (3600-3100 BC), whilst a tripartite development into early (4250-3600 BC), middle (3600-3400 BC) and late (3400-3100 BC) Uruk has also been proposed.[85] During this, all the innovations that appeared in the Early and Middle Chalcolithic were developed. At the same time, new ones appeared, which also characterised the Chalcolithic.[86] During this period:

- The plough was introduced for use in the cultivation of the fields.
- Metallurgy flourished, particularly in northern Mesopotamia, where copper alloys containing silver (Ag) or nickel (Ni), and bronze and iron were present in small quantities.[87]
- Trade developed and trading posts were established in distant regions. Carriages with wheels appeared. Cylinder seals replaced simpler seals for controlling tradeable products (in the second half of the 4th millennium).
- At the end of the period (3200-3100 BC) the first signs of writing, in the form of symbols (pictograms), appeared and were the precursor to cuneiform writing.[88]
- The settlements, which were now fortified, were developing at different rates, with some becoming populous cities.
- Social stratification was accepted and the social structure was completely hierarchical, as is also apparent from the burial customs.[89]
- Power, especially economic, was concentrated at the monumental temples, the Ziggurats, which developed into financial centres. A typical example was the city of Uruk, where religious and political power was concentrated in the hands of the supreme ruler, who has been called the "Priest-King" by scholars.[90]

At the end of the 4th millennium (3200-3000 BC), there was limited rainfall. In southern Mesopotamia, the lowering of the water table contributed to the drying out of lowland, previously marshy areas, which were now cultivated with the help of irrigation.[91] The fortification of the most important cities indicates there were local conflicts.[92] Despite increased production, the city of Uruk lost its influence in the neighbouring regions, perhaps because other cities were also developing. In contrast, in the north, there was probably a raid in the area of Zakros.[93]

This was followed by the short and controversial Jamdet Nasr period (3200-2900 BC), which was characterised by the extensive reconstruction of the central part of the city of Uruk.[94]

With the next first dynastic period, Mesopotamia entered the Bronze Age, with the emergence of city states. The basic elements which characterised the new era were gradually discovered and developed during the Chalcolithic, with the most important of all the concentration of religious, economic and political

83 Kopanias 2013, 100; Nissen 1999, 40.
84 Kopanias 2013, 87, with further bibliography.
85 For literature, see Kopanias 2013, 99, footnotes 381-2.
86 Kopanias 2013, 87, with further bibliography.
87 Parzinger 1993, 347, footnote 58-9.
88 They depict animals and objects or scenes of everyday life (on tablets at the Eanna sanctuary in Uruk), Kopanias 2013, 105, footnote 418, fig. 146.
89 The cemetery of Tepe Gawra includes graves containing rich offerings, Kopanias 2013, 96, footnotes 374-5.
90 Kopanias 2013, 108.
91 Staubwasser & Weiss 2006, 372; Kopanias 2013, 100.
92 Nissen 1999, 41; Kopanias 2013, 100.
93 Kopanias 2013, 108.
94 It is not known why this reconstruction was undertaken, Kopanias 2013, 109; Nissen 1999, 49.

power in the hands of the priesthood. In the Bronze Age, all power was transferred to the supreme lord of the city states.

The continuation of the Chalcolithic (or Final Neolithic) in Greece

In Greece, the 6.2-5.0 ka cal BP RCC event occurred during the Chalcolithic (Final Neolithic (FN) in southern Greece) (4500-3200 BC).[95] During this period, there were significant changes in the material culture and in all areas of the activities of the communities, especially in spatial organisation and the economic sphere.

The period 4500–4000/3900 cal BC

In Thessaly, there are several variations in the continuity of the Chalcolithic. The transition from the Dimini phases (ECh or LN II) to the Rachmani phase (FN) is stratigraphically confirmed at only a few settlements (e.g. Pefkakia and Rahmani), where the classical Dimini phase is succeeded by the Rahmani I phase. The main feature of this phase is the beginning of a continuous decline in the quality of the material culture, as the very high-quality ceramics of the Dimini phase are gradually replaced by lower quality ceramic categories, such as crusted ware, with simpler decoration and shapes. The Rahmani phase apparently lasted until around the beginning of the 4th millennium BC (about 3800 BC).

Especially on the Thessalian plain during the Rahmani I phase, the following occurred:

- The settlements became smaller and were fortified, and gradually decreased in numbers.[96] The new settlements were deliberately established in semi-mountainous areas, in naturally fortified positions and on promontories, and for the first time after the MN, also in mountainous areas[97] (Fig. 3.E). Activity continued in the Theopetra Cave, corresponding with the tendency of the more intense use of caves from this period in Greece.[98]
- Concerning agriculture, the intensive cultivation of barley (mainly six-row) and pulses continued, a trend that had already begun in the previous period (Dimini phases).
- The figurines were made schematically, and the acrolith figurines, with a head with a neck added to a clay body, appeared for the first time.

Based on the above, it is evident that a different course of development was followed by the Chalcolithic communities during the Rahmani phase in Thessaly, which continued even more intensively during the 4th millennium. The gradual abandonment of the Thessalian plain and the establishment of new settlements in the mountainous parts of Thessaly are notable elements. The gradual movement of the settlements to higher altitudes is particularly evident on the neighbouring, mountainous island of Euboea.[99]

Unlike the hinterland, which was subjected to desertification until the end of the Rahmani phase, settlements were apparently concentrated on the eastern coast of the mainland and the Aegean islands.[100]

The period 4000/3900–3400/3300 BC

The picture of the Chalcolithic in Thessaly from the beginning of the 4th millennium to the beginning of the EBA (approximately 4000/3900-3400/3300 BC)[101] is unclear. Excavation data from continuously occupied lowland settlements is sporadic and does not substantiate the undisturbed continuity of the development of prehistoric communities on the Thessalian plain.

The characteristics of this period only appear fragmentarily and do not support the idea of an evolutionary course of the Chalcolithic period, which began with the Dimini culture at the beginning of the previous millennium.

- The settlements in the lowlands of Thessaly were few in number and of short duration (e.g. Mikrothives and Petromagoula).[102] Towards the end of the period, settlements that were abandoned at the end of the 5th and beginning

95 Gallis 1996a, 30.
96 Aslanis 2010, 49.
97 Gallis 1996a, 30.
98 Kyparissi-Apostolika 1996, 67.
99 Sampson 1981.
100 Gallis 1996a, 37.
101 Tsirtsoni 2010, 93.
102 Adrymi-Sismani 2007, 73; Hatziangelakis 1984, 75.

of the 4th millennium (Sesklo, Dimini and Rahmani II-III) were re-inhabited.[103] In Rahmani, there is an apsidal building (house Q, 10x4 m),[104] a building type known mainly from the EBA.

- The presence of bronze daggers at Microthebes, indicates not only the possible social differentiation of the owners and their families within the community, but also the position of the man in the Chalcolithic society.
- The presence of similar daggers and a stone seal at Microthebes reflect the commercial relations of the settlement with neighbouring areas, mainly on the Aegean coast, but also with the wider Eastern Mediterranean area.[105]

It is evident from the above that the movement of settlements to higher altitudes and the selection of naturally protected locations, which had begun in the Rahmani phase, was completed by the beginning of the 4th millennium BC. Afterwards, the largest lowland area of Greece, despite the presence of short-term settlements (e.g. Petromagoula and Mikrothebes), was apparently abandoned. The causes and consequences of this will be discussed in the next section.

Just before the start of the EBA in Greece, people returned to some abandoned settlements (e.g. Sesklo, Dimini and Rahmani). The first two of these were in the form of citadels with megaroid buildings, courtyards and impressive central gates, whilst Rahmani (phases II-III) included an elongated apsidal building, heralding the spatial organisation of the settlements in the following EBA.[106]

Discussion

The discussion mainly focuses on the activity of the prehistoric communities of *Mesopotamia* and *Thessaly* during the first three RCC events after the beginning of the Holocene. Reference will be made to the intermediate periods of mild climatic conditions, when this is considered necessary, in order to better understand the developments in each region. These three phenomena are the 10.2 ka cal BP, 8.2 ka cal BP and 6.2-5.0 ka cal BP RCC events, which, apart from the peaks in their intensity, had an initial and final timespan (RCC **period**) that lasted for the following: 8500-8000, 6600-6000 and 4500-3200 cal BC respectively.[107]

The data from Mesopotamia and its neighbouring regions and Thessaly during the first two RCC events leads to some remarkable conclusions about the behaviour of the prehistoric communities of the regions discussed here.[108]

The 10.2 ka cal BP RCC event

During the 10.2 ka cal BP RCC period (8500-8000 cal BC), the communities of both *Mesopotamia and its neighbouring regions*, which were in the Early Pre-Pottery Neolithic B period (EPPNB), reacted to climate change pressure. They accelerated and completed the domestication of animals and the selection of suitable cereal grains, with an emphasis on those which were resistant to drought conditions. At the end of the RCC period, the communities were now ready to develop their experience and knowledge in the economic sphere, and move to the next stage of development, the Neolithic period.

In *Greece*, the prehistoric communities were still in the Mesolithic stage of development. Research has identified an attempt to domesticate animals (goats), which according to experts was associated with successful animal domestication in SE Asia Minor in the second half of the 9th millennium, and with the movement of farmers from southern Asia Minor to Cyprus, e.g. around 8200 cal BC.[109]

The 8.2 ka cal BP RCC event

During the 8.2 ka cal BP RCC period (6600-6000 cal BC), the now populous Neolithic communities in *Mesopotamia and neighbouring regions* again had to adapt to climate change (drought) at any cost. Many settlements from SE Asia Minor to Syro-Palestine became deserted/or were at least temporarily abandoned, whilst in contrast, in southern lowland Mesopotamia (Ubaid culture), irrigation canals were constructed. At the end of the RCC period, around 6000 cal BC, in northern Mesopotamia and

103 Aslanis 1990, 19.
104 Toufexis et al. 2000, 113.
105 See small cylindrical bone stamp from the Skotini Cave at Tharrounia, Euboa, in LN II.
106 Aslanis 2010, 39.
107 Weninger et al. 2009, 7.
108 For more information about each RCC event and the responses of the communities in each region, see the respective sections of this article.
109 See section 'The Mesolithic in Greece – the Lower Mesolithic' and related footnotes.

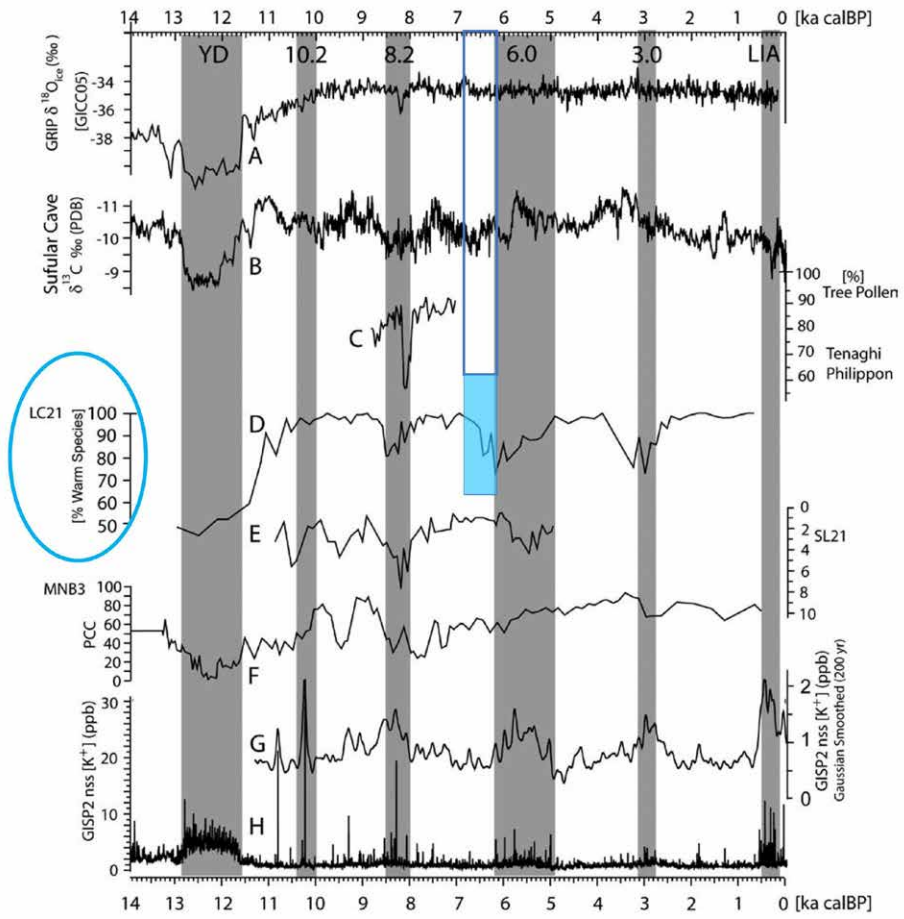

Fig. 4: *Set of Northern Hemisphere palaeoclimate records showing Holocene rapid climate change (RCC); from Weninger & Harper 2015, Fig. 3. D Eastern Mediterranean core LC21(SE Aegean), marine fauna as proxy for sea surface temperature variations (seasonal: winter/spring): Rohling et al. 2002. Blue shading indicates the time frame discussed in this article.*

SE Asia Minor, fortification was invented as a means of protecting settlements, whilst in the same region it is presumed that a new material, copper, was used. These were amongst the innovations, which in the succeeding mild climatic period led the Neolithic communities in the region discussed in this article into a new period, the Chalcolithic. At the same time, a population movement can be observed towards the southern and western coasts of Asia Minor, which affected developments from the Aegean and mainland Greece to the Balkans.[110]

Processes can also be observed in the Mesolithic communities of Greece. However, the transition from the Mesolithic to the (ceramic) Neolithic is a matter of debate, as in the 8.2 ka cal BP RCC period the Mesolithic caves were abandoned, and the presence of an aceramic phase at the first Early Neolithic open-air settlements in Thessaly is disputed. More generally, it is accepted that in Greece the transition to the Neolithic period occurred in the second half of the 7th millennium (6500-6000 cal BC) and coincided in time with the duration of the 8.2 ka cal BP RCC period.

The 6.2–5.0 ka cal BP RCC event

The last RCC event discussed here differs from the previous ones. Although its peak was around 3800 cal BC, the RCC period it covers, started as early as 4500 cal BC and ended around 3000 cal BC. Even though, with much regional and temporal variation, this RCC period was again characterised by prolonged drought and low temperatures, the continuation of these in the 4th millennium was associated with repeated fluctuations in their intensity.

The reactions of the Neolithic and Chalcolithic communities in Mesopotamia and Greece respectively to such a lengthy period of climate change were remarkable.

110 Weninger et al. 2005, 75.

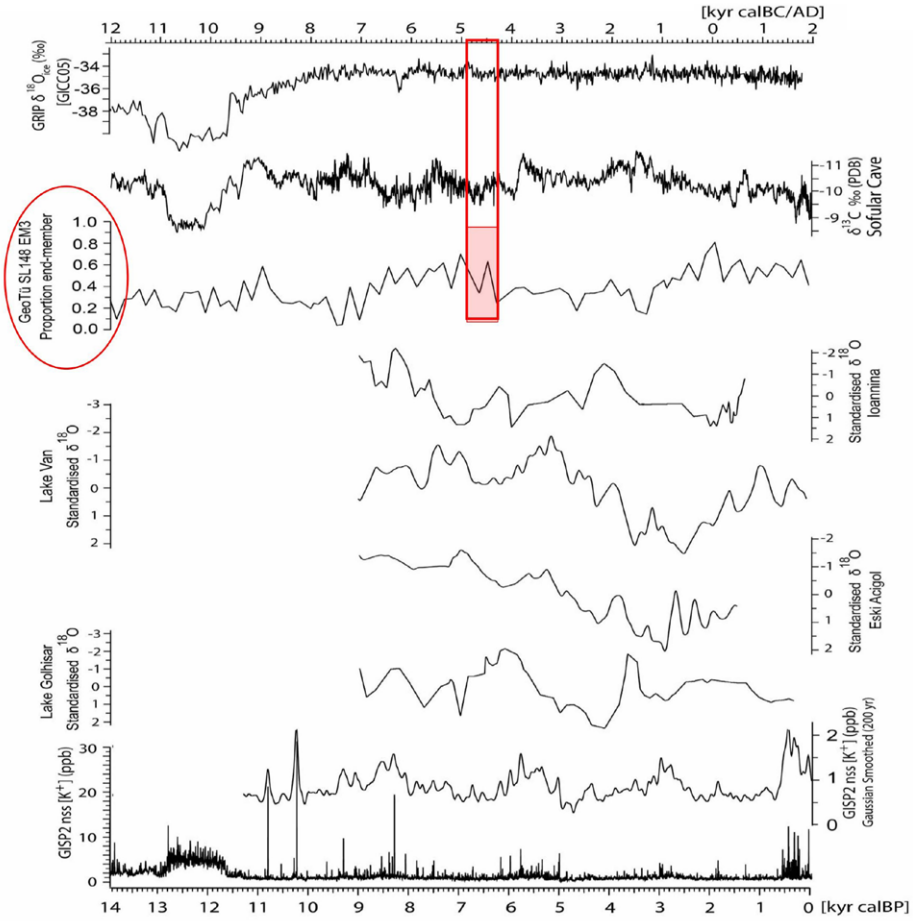

Fig. 5: *North Aegean marine site GEoTü SL148 silt fraction end member 3 indicative of fluvial sources (Hamann et al., 2008); from Clarke, J. et al. 2015, Fig. 4. The red shading indicates the time frame discussed in this article.*

In *Mesopotamia* and its surrounding areas, where the Ubaid culture had been dominant since the previous millennium, the number of settlements decreased in the second half of the 5th millennium, with many destroyed or abandoned, whilst others were fortified. Between 4250 and 4000 cal BC, the Ubaid culture was replaced by the Uruk culture, which lasted until the end of the next 4th millennium. At the beginning of the 4th millennium, due to local increase in rainfall in southern Mesopotamia and Syro-Palestine, without much disruption, the new culture continued the progressive, evolutionary development of the Chalcolithic period. The crowning achievement of this was the concentration of political and economic power at the temples and the exercise of this by the priesthood. In the Bronze Age that followed, power was transferred to the kings.

The development in *Greece* was different. The 6.2-5.0 ka cal BP RCC period coincided in temporal terms with the Final Neolithic or Chalcolithic period. Specifically, between 4500-4000/3900 cal BC, when the RCC event reached its peak, in the area of Thessaly the collapse of the material culture of the previous Neolithic period was not only completed, but was also combined with the mass abandonment of the largest lowland area of Greece. Throughout the 4th millennium, the few settlements which were established were of short duration and do not seem to reflect continuous habitation of the area.

However, could the Chalcolithic era in Greece have been different? According to the author, another interpretation of the Final Neolithic data, including that from the Late Neolithic II (NN II), gives the following picture of the beginning of the Chalcolithic period.

LN II period began 4800/4900 cal BC, (coincidentally?) with the end of the humid and warm climate period Sapropel 1b (4806±240 cal BC)[111] and lasted until 4500 cal BC, when it was replaced by the Final Neolithic, which temporarily coincided (by chance?) with the beginning of the 6.2-5.0 ka

111 Regarding the end of Sapropel S1b, see Weninger et al. 2009, 15.

cal BP RCC period. From the end of the Sapropel 1b period, the climate slowly and gradually deteriorated with increasing droughts.[112] In the Aegean, this phenomenon is reflected by the core records LC21 and SL148, from its SE and northern part respectively (Fig. 4.LC21 and Fig. 5.SL148). In both core records, a decrease in temperature (LC21) and precipitation (SL148) can be observed immediately after the end of the humid and warm period S1b.[113] The decline continues steadily until the end of the LN II period, around 4500 cal BC, when it rapidly accelerates at the beginning of the RCC period.

The questions that then arise are whether and how much the new climatic conditions that prevailed after the end of the Sapropel 1b climatic period, until the beginning of the RCC period (4800-4500 cal BC), affected the Neolithic communities of Thessaly? Based on the data that has been briefly presented in the previous sections, there seem to have been significant developments: the establishment of new settlements ceased, the existing ones were reduced in area and became densely built up, and some were fortified for the first time. In terms of agriculture, the cultivation of barley was intensified and the cultivated leguminous species were supplemented with new ones, which were all resistant to drought.

The reaction of the communities in Thessaly is highly reminiscent of the corresponding responses of the Neolithic communities of Mesopotamia to the previous climatic event (RCC event), which led them to the Chalcolithic period. In Thessaly, the addition of other innovations, which appeared between 4800 and 4500 cal BC and were presented in a previous section,[114] meant that the conditions that led to a new period, the Chalcolithic, were created as early as 4800 cal BC.

The development of the prehistoric communities in Greece (Thessaly) apparently followed a similar course to that of the communities of Mesopotamia, but with a time lag of an RCC event. Greece entered the Chalcolithic era. Its material culture, like that of the previous Neolithic period, seemed to be strongly influenced by the Eastern Mediterranean, which is especially reflected by the ceramics.

The sequel was different, however. In contrast to Mesopotamia, where despite fluctuations, the development of communities was continuous, in Greece around 4500 cal BC, at the end of the LN II (or Early Chalcolithic, as has been suggested), the material culture in Thessaly as well as the rest of Greece declined dramatically.[115] By 4000/3900 cal BC, the Thessalian plain had been almost abandoned, and the social structure and communal cohesion of its inhabitants had collapsed. New settlements were established in mountainous areas and the coasts of the mainland.[116] The economy became pastoral and as is clear from the ceramics, the influence of the Eastern Mediterranean on material culture was interrupted.

The situation in Thessaly was even worse during the 4th millennium, when sporadic, short-lived settlements give the impression of desolation. The few finds, mainly ceramics, testify to contacts with the Balkan hinterland. The separation from the developments of the Eastern Mediterranean seems to have been permanent, at least until the appearance of the Minoan civilization on Crete.

The 6.2-5.0 RCC event, especially in the 4th millennium BC, seems to have greatly influenced the evolution of the Chalcolithic communities in Thessaly and mainland Greece. This view is reinforced by the development of the Balkan hinterland in the same millennium, which was completely different. Prolonged drought turned the wet lowlands between the Tisza, Danube and Sava rivers into fertile pastures, where various animal-based cultural groups developed before the predominantly pastoral Baden culture prevailed. The same environmental picture is apparent (due to the same cause?) in Moldavia and southern Ukraine, where the Tripolje culture appeared. Conversely, further south, there is evidence of the abandonment on the Thracian and Thessalian plains.

Conclusion

This study of the first three RCC events after the beginning of the Holocene shows that that these

112 De Rijk et al. 1999, 337.

113 Core record LC21 shows changes in sea surface temperature (SST), see Weninger et al. 2009, 15, and sample GEoTü SL148 provides evidence of the changes in river flows in the North Aegean (Hamann et al. 2008, 97), and thus the decrease in rainfall and increase in drought conditions.

114 See in section 'The Neolithic (Middle and Late I) and Early Chalcolithic (or LN II) in Greece', Early Chalcolithic (or LN II).

115 See section 'The continuation of the Chalcolithic (or Final Neolithic) in Greece'.

116 Aslanis 1993, 133; 1995, 35; 2002, 37; 2018, 27.

phenomena exerted pressure on the Mesopotamian and Greek communities, which, as is shown by the archaeological data, responded successfully, mainly by adapting their economy to the new climatic conditions.

The similarities observed in the responses of the communities in the geographical areas focused on in this study to the first two RCC events apparently resulted in the creation of a common response model. However, the different results of the impact of the third RCC event on Mesopotamia, Greece and SE Europe seem to invalidate this theory, clearly indicating that the degree of climatic influence on prehistoric communities and the resulting changes to these within a wide area cannot yet be measured and interpreted according to rules and standards.

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The Neolithic Odyssey: The emergence of institutionalised journeys and exploitation of rare raw materials in the Aegean

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Introduction

This paper will discuss why Aegean Neolithic communities were heavily engaged in long-range maritime voyages. What was the driving force behind these journeys, and how did it affect societies with detailed maritime experiences and advanced organisational planning? Our hypothesis is that certain types of rare raw materials were so highly desirable that they laid the foundations for more regular and institutionalised journeys as well as pushing more intensive exploitation and exchange networks, while also creating an increased awareness of value. Two case studies of the Final Neolithic site of Pangali in Western Greece[1] and the Neolithic site of Kampos on the Cycladic island of Syros (Sørensen et al. 2025) were selected to test the hypothesis and answer the questions that were posed (Fig. 1). Pangali, which was excavated by Søren Dietz and his team, is characterised by a small obsidian assemblage, which was quarried over 400 km away on the Cycladic island of Melos.[2] Kampos, where Søren Dietz is part of the research team, represents such a quarrying site. Here, rare metamorphic jadeitite was exploited during the Neolithic to produce polished stone tools that were distributed across a wide network in the Aegean (Fig. 2).

The seafaring myths

Mythical seafaring journeys are well known from the ancient Greek written sources. One of the most famous examples is the epic poem *The Odyssey*, which was probably composed in the 8th century BC from a longstanding oral tradition and later written down in the mid-6th century BC. *The Odyssey* follows the hero Odysseus on his long and perilous journey home to Ithaca after the fall of Troy (Hom. *Od.*). Another well-known myth is the story of the Argonauts, a band of heroes (Heracles, Orpheus, Atalanta, and the twins Castor and Pollux) who accompanied Jason on his quest aboard the ship *Argo* to retrieve the Golden Fleece. The Argonauts' story was written down by Apollonius of Rhodes from the 3rd century BC (Apo. Rhod. *Argon*). However, earlier mentions of the myth in the works of the poet Pindar in the 5th century BC and in Homer's *Odyssey (*Hom. *Od.* 12*)* document that the myth was known when these stories were written down. The underlying themes behind these myths of seafaring travellers and pioneering maritime adventures probably extend far back into the Aegean prehistoric identity.[3] Some of the more regular and systematic seafaring voyages begin during the Aegean Neolithic, 6500-3300 BC, with the exploitation of rare raw materials and the emerging routinisation of routes.[4] A route is a social phenomenon, which exists as an institution through several historical processes. The route is a valid social structure, creating a pattern for later travel. Embarking on a journey to a particular place or area requires complex knowledge and strategic decision making on the part of the traveller.[5] At the beginning of routinisation, the travels would have been a directional chain consisting of shorter routes, which

1 Dietz & Bangsgaard 2018; Dietz & Moschos 2006; Dietz et al. 2018.
2 Sørensen 2006; 2010.
3 Broodbank 2000; 2013.
4 Horejs et al. 2015.
5 Giddens 1984.

Fig. 1: *Map of the Final Neolithic site of Pangali in Western Greece and the Neolithic site of Kampos located on the Cycladic island of Syros.*

were integrated into limited exchange networks.[6] If the route becomes more well established and known it will reveal itself by the scale, size and regularity of the exchanged objects in various networks.[7] In cultures without written resources, the knowledge of routes is a tangible practice of maritime skill and learning the seascape and landscapes, which is passed down by oral communication through generations. Such a process must be cherished and remembered by creating solid narratives and maintained by continuous travels along the route.[8] On many of the routes, certain sites or visible localities were likely chosen because of their landscape advantages, located near a natural harbour, river, plain or valley. The repeated use of certain routes and settlements in the landscape could create historical, symbolic and mythological narratives and myths for these societies, giving rise to the tales of Odysseus, and Jason and the Argonauts, who used and moved within the seas and rivers in the Aegean landscape and beyond. But what could the motivation be for going on longer seafaring journeys and creating such routes?

Desirable raw materials and objects

The Aegean region is characterised by a heterogeneous distribution of numerous minerals. The uneven distribution results in localised exploitation of clay for pottery production or lithics of varying quality. Most sources of chert, radiolarite, jasper and quartz are of inferior quality. Obsidian, on the other hand, is of extremely high quality and found only on the remote islands of Melos as well as Antiparos in the Cyclades and Giali in the Dodecanese.[9] As such, obsidian is a rare raw material and may be the reason for several sea routes in the Aegean. From as early as around 11,000 BC, Melian obsidian began to be exploited by hunter-gatherers.[10] Based on the quantities of obsidian from the Franchthi Cave, the amounts of obsidian being acquired become the dominant raw material compared to local types of chert from 6000 BC onwards, thus documenting a steady and continuous supply of this raw material.[11] Torrence's 1986 study on Melos provided a detailed analysis of obsidian procurement at the island's two main sources: Demenegaki and Adamas.[12] Torrence

6 Sherratt 1993a; 1993b.
7 Chapman 2008; Renfrew 1975.
8 Sindbæk 2001.
9 Carter et al. 2016; Demoule & Perlès 1993; Reingruber 2018.
10 Laskaris et al. 2011; Perlès 1987.
11 Perlès 1990a; 1990b.
12 Torrence 1986

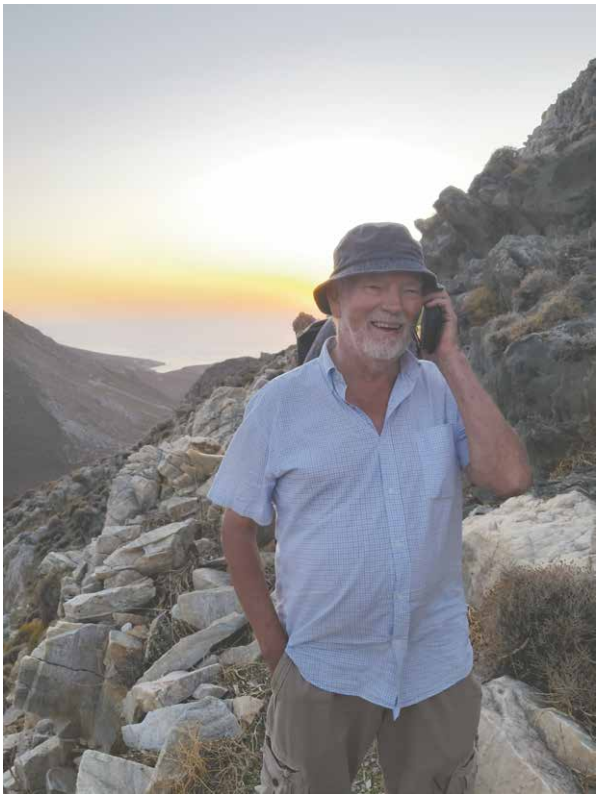

Fig. 2: *Søren Dietz participating in fieldwork in the Kampos Valley on the Cycladic island of Syros. Photo: The National Museum of Denmark.*

estimated the total output of these sources by calculating the number of obsidian macro-cores. At Adamas, the estimated output reached 4,895,870 macro-cores, corresponding to approximately 800 tons of obsidian. Demenegaki yielded an estimated 3,084,338 macro-cores, equivalent to about 500 tons. These estimates highlight the significant scale of obsidian extraction on Melos, which played a crucial role as a major source in the Aegean region during prehistoric times.

The limited number of other obsidian sources observed in the Aegean, the Carpathians and Anatolia,[13] would have resulted in longer journeys over sea or land for these communities, who wanted to gain direct access to this material (Fig. 3). Patterns within Neolithic distribution networks of Melian obsidian from Adamas and Demenegaki in the Aegean, suggest that the majority of these communities received a direct or indirect supply of the obsidian up to 500 km away from the sources.[14] Some communities clearly undertook long journeys by sea to directly acquire obsidian, whilst other groups were dependent on the indirect supply of this material. The different scale of the acquisition strategies would have resulted in both primary and secondary production sites, craft specialisations and possible phases of monopoly, thus altering the socio-economic relations within these communities, depending on their ability to gain access to obsidian.

Other types of raw materials exploited from the beginning of the Neolithic increased dramatically and consisted of various rocks used to make polished stone tools, such as axes, adzes, chisels and wedges (Fig. 4).[15] Unfortunately, few quarries for the raw materials used to make polished stone tools have been identified in the Aegean.[16] The Neolithic communities were very selective in choosing raw materials of the best quality for their polished stone tools, based on properties of hardness, colour and beauty. Most of the polished stone tools were made from raw materials that are more commonly distributed, such as serpentinite, andesite, basalt, gabbro and hematite, thus with the potential to reveal exchanges at a local or regional level.[17] Other polished stone tools tell a very different story, being made of extremely rare metamorphic rocks, such as jadeitite, nephrite, eclogite and omphacitite, which have a very limited distribution in the Aegean. Identifying the sources and quarries of these rare raw materials can potentially highlight regional as well as long-distance network relations far beyond the Aegean (Fig. 5).[18] During the Aegean Neolithic, the search intensified for different raw materials from remote and distant places, and the scale of their exploitation increased. A key question is why these rare and exotic raw materials were so desirable?

The sensory properties

Aesthetics is of crucial importance in enabling us to understand the disabilities and values that humans attach to objects in different cultural contexts.[19] In

13 Milić 2016; Perlès et al. 2011.
14 Milić 2016; Reingruber 2018.
15 Perlès 2001.
16 Melfos & Stratouli 2002.
17 Bamyaci 2017; Bekiaris et al. 2017; Chondrou 2023; Schwall et al. 2020; Stroulia 2010; Tsoraki 2011.
18 Sørensen et al. 2017.
19 Gosden 2001.

Fig. 3: *Map of the different obsidian sources in the Aegean together with the distributions of obsidian from the sources on Melos, in Anatolia and the Carpathian Mountains (after Carter et al. 2016; Milić 2014; 2016; Perlès et al. 2011; Reingruber 2018; Torrence 1986).*

prehistoric archaeology, the term 'aesthetics' refers to the study of how humans perceived, appreciated and arranged objects, focusing on their sensory qualities, stylistic choices and symbolic meanings. It is, however, important to acknowledge that each culture creates its own sensory environment, physically by constructing a material world with its own set of sensory properties, and by emphasising and valuing certain types of sensory impressions over others.[20] Nevertheless, when humans experience something aesthetically pleasing, which can be a shape, colour, material, design, or shiny or easily recognisable appearance, our brain's reward system is activated, causing the release of neurotransmitters, such as dopamine, serotonin and oxytocin, the pleasure-inducing hormones which create a feeling of happiness, well-being, satisfaction and social connection.[21] The effect would have been the same if these communities found rare and exotic raw material sources during their seafaring voyages in the Aegean. Raw materials with some aesthetic characteristics could have been desirable and valuable to these Neolithic societies, depending on different cultural or communal preferences.

The desirable properties

Value is not a real property, but a judgment people make based on desire both for the things themselves and for the effects they produce.[22] This perspective places value as a relative concept, which arises from the discerning relationship between people and things.[23] To explore

20 Gosden 2001.
21 Aesar 2021.
22 Simmel 1900.
23 Graeber 2001.

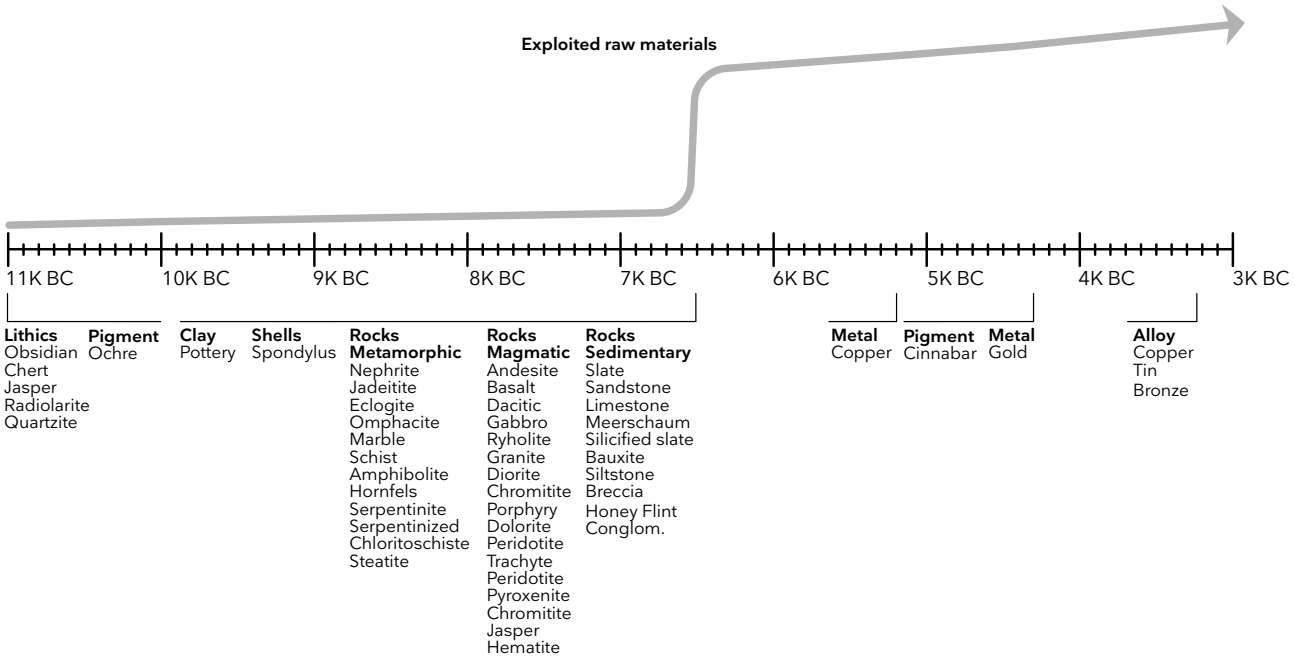

Fig. 4: *Exploitation of different types of raw materials during Aegean prehistory from 11,000 to 3000 BC.*

this relationship, Harris has recently identified five main ways in which people desire objects.[24] Firstly, objects are desirable because of their material properties, based on their qualities, which can be compared between different objects or raw materials, thus creating a materialistic hierarchy.[25] Secondly, exclusivity plays a vital role, as objects or raw materials become desirable due to their rarity and limited accessibility, which often enhances their socio-economic significance.[26] Thirdly, objects or raw materials can be desirable due to their sensory appeal, captivating the senses in ways that are immediately pleasing or aesthetic, thus influencing the human behaviour towards these things, which can be regarded as agents and 'alive'.[27] Fourthly, the biography of an object and its life history and associations with people, places or ideas can enhance its meaning and desirability.[28] Finally, objects may be valued for their exchangeability, or their ability to be substituted for one another within systems of barter exchange, enabling the transfer of obligations, reciprocal payments and debts (Fig. 6).[29] These five ways are not mutually exclusive: an object can be desired and valued in multiple ways simultaneously. Nevertheless, this framework provides a means of interpreting desirability and reveals different kinds of value.

Valuable raw materials and objects

In classic economic thinking, objects either have an inherent value or their value is the result of the labour involved in their production or the degree of utility and circulation of the goods. The latter giving rise to many other concepts, such as surplus gains and profits, debt and inequality.[30] This involves a new awareness of the desire, time and labour invested in finding, procuring and producing objects of high quality and/or beauty.[31] A fundamental problem relates to the question of how value as a concept was estimated and a consensus of trust was achieved during the Neolithic in relation to physical objects, such as tools of obsidian and polished

24 Harris 2017.
25 Delgado-Raack et al. 2020.
26 Kopytoff 1986.
27 Hallowell 1960; Matthews & Roulette 2018.
28 Dobres & Hoffman 1994; Malafouris 2013.
29 Appadurai 1986; Graeber 2012.
30 Appadurai 1986.
31 Graeber 2001.

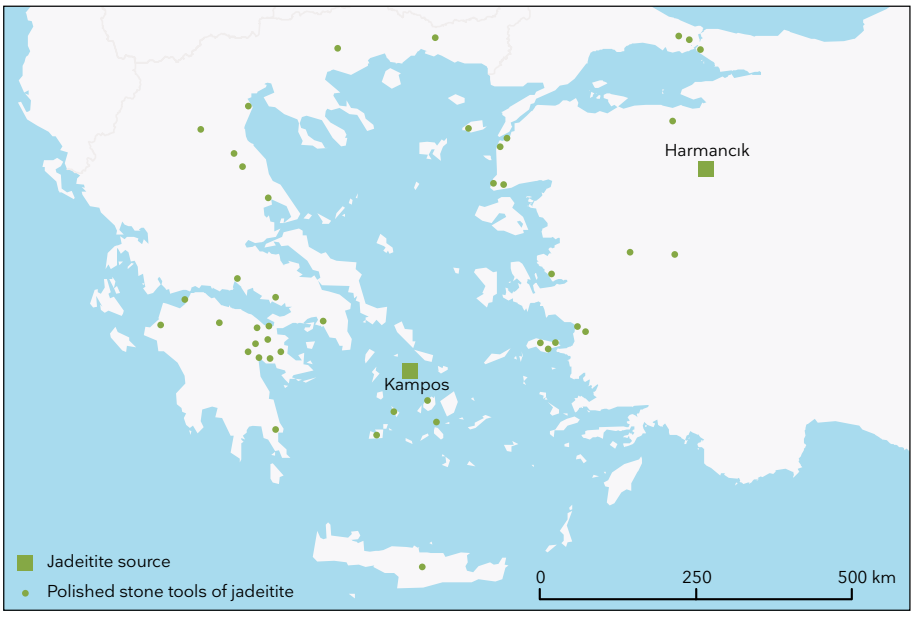

Fig. 5: *Map of the two jadeitite sources in the Kampos Valley and in Harmancik near Bursa in Western Turkey, shown together with the preliminary distribution of polished stone tools made of jadeitite in the Aegean region (data after Sørensen et al. 2017a; 2017b; 2025).*

stone. In the human mind, certain desirable objects can transform themselves into commodities, thus resulting in a consensus regarding their value, which means they are suitable for circulating in economic systems and being exchanged for other things.[32] Value and desirability can, however, change in other systems of exchange, due to different cultural preferences.[33] Value and desirability are thus dynamic concepts, as they involve the reciprocal relationship of objects within individual human minds. It is also a culturally constructed property, which becomes embodied in commodities when they are exchanged and is thus context dependent. We should therefore search for specific patterns of behaviour that are associated with specific raw materials and objects.

In Mauss's 'The Gift' and Sahlin's' 'Stone Age Economics', certain objects are regarded as social, functional or symbolic mediators within a barter economy of balanced gift exchange systems, functioning in a kind of diplomacy.[34] Inspired by these ideas, Godelier and Strathern argue that objects have an inner power, in which the main actor is the human idea of the sacred and desirable, which becomes the mediator of gift exchange.[35] In such a system, some gifts are given and received freely, whilst others are the property of the whole community and are kept out of exchange. Weiner further developed this insight into inalienable possessions, which are objects that cannot be exchanged and constitute the fixed point of coherence and sacredness within these communities.[36] Other objects can be used, destroyed or sacrificed in rituals to maintain the social order.[37] The emergence of such sacred objects created desire and demands.[38] Based on these theoretical discussions, desirability and value are a judgment people make about things. Desire and value relate to the object itself, its narratives and, importantly, the effects those things produce.[39]

The question is whether it is possible to document and observe some of these behavioural patterns connected to specific desirability and value, which could explain the increase in maritime journeys and search for a wide range of raw materials in the Aegean Neolithic? To explore this question, two case studies of obsidian and jadeitite will be discussed in the following section, as these two raw materials have many of the desirable characteristics and were acquired through maritime journeys.

32 Kopytoff 1986.
33 Gosden 2001.
34 Bradley & Edmonds 1993; Mauss 1990; Sahlins 1972.
35 Godelier & Strathern 1991.
36 Weiner 1992.
37 Bradley 2005; Chapman 1998; 2000.
38 Godelier 1999.
39 Malafouris 2013.

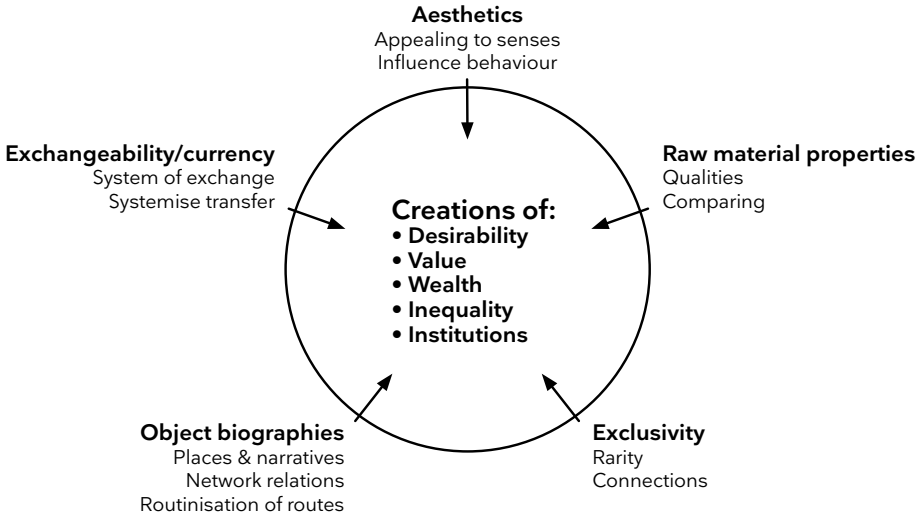

Fig. 6: *Aspects of creating desirable and valuable raw materials in Aegean prehistory (after Appadurai 1986; Gosden 2001; Graeber 2001; Harris 2018; Kopytoff 1986).*

Pangali in Aetolia

The site of Pangali is situated on the eastern slopes of Mount Varassova in a rock shelter, near a small natural bay, which is a very typical location compared to other coastal-orientated sites from this period (Fig. 7).[40] The site was identified during an intensive survey of the area conducted in 1995 by a Greek and Danish excavation project.[41] In 1996, a 2 × 2 m trial trench was excavated to investigate the nature of occupation. The soil was dry sieved with a 4 mm mesh in order to collect small finds. The deposit was c. 60 cm thick, and rocks and larger vegetation were removed from the surface. Three levels of occupation were identified during the excavation, relating to a single cultural phase. At the deepest level, a hearth was found immediately above bedrock. It was c. 1.5 m in diameter, and consisted of burnt, hard earth, small pieces of clay and charcoal.[42] A huge number of sherds (60 kg), lithics, bones, bone tools, seashells and land snails as well as some spindle whorls and a fragment of a figurine were recovered during the excavation. [43] The pottery and lithic assemblage were typologically dated to an early phase of the Final Neolithic (Ib), c. 4600-4200 BC, which was confirmed by two radiocarbon dates from the hearth.

Raw materials

In weight and numbers, radiolarite predominates, followed by flint, obsidian and marble. The radiolarite is dark red and constitutes 59 % of the material. Chert and marble make up 20 % of the whole assemblage. Most of the radiolarite, chert and marble were acquired locally, on the beach or in the nearby riverbeds of the Evinos River. The assemblages of local material were dominated by debitage and cores and to a lesser extent tools. The remainder of the assemblage consisted of 276 pieces of worked Melian obsidian. Most of the obsidian assemblage consisted of broken blades, often with signs of use. Obsidian was a limited but prized and desirable material at Pangali, as almost every piece of worked obsidian blade had been reworked from larger or smaller blade fragments of composite tools such as sickles (Fig. 8).[44] Pangali was located at the outmost periphery of the obsidian exchange system during the Final Neolithic, in which the obsidian was indirectly acquired as finished blades. The obsidian blades that reached Pangali were probably produced at distant, specialised knapping sites, either located on Melos or within the primary distribution zone, on neighbouring Cycladic islands or in the western part of the Peloponnese.

40 Broodbank 2000; Papathanassopoulos 1996.
41 Dietz & Moschos 2006.
42 Cazis 1998.
43 Bangsgaard 2006; Mavridis 2006; Sørensen 2006
44 Sørensen 2010.

Fig. 7: *The site Pangali with the upper and lower terraces to the left and Mount Varassova to the right. Patras and the Gulf of Patras are visible in the background. Photo: The National Museum of Denmark.*

The routes

The nearest contact zone for the habitants at Pangali to have obtained Melian obsidian would have been coastal sites in the inner part of the Corinthian Bay. Here, a dynamic hub for exchange between the Cycladic Islands, the Peloponnese and sites in the Corinthian Bay may have thrived, as there were ample opportunities to transport boats over land, for example, across the Isthmus (Strabo *Geogr*. 8.2.1). Another sea route for the community living at Pangali could have been to sail around Peloponnese. However, many ancient written sources warned about sailing around Peloponnese and crossing Cape Maleas. In *the Odyssey* 3.286-289, Nester states: "But when he in his turn, as he passed over the wine-dark sea in the hollow ships, reached in swift course the steep height of Malea, then Zeus, whose voice is borne afar, planned for him a hateful path and poured upon him the blasts of shrill winds, and the waves were swollen to huge size, like mountains." (Hom. *Od*. 3.286-289, trans. A.T. Murray, rev. G.E. Dimock, LCL 104, 1919). Or when Odysseus states: "And now all unscathed would I have reached my native land, but the waves and the current and the North Wind beat me back as I was rounding Malea and drove me off course past Cythera." (Hom. *Od*. 9.79-81, trans. A.T. Murray, rev. G.E. Dimock, LCL 104, 1919). The myths clearly warned against sailing around Cape Maleas, which narrows down the contact zones and opportunities for access to a continuous supply of obsidian for many of the sites located in the western part of the Peloponnese. The communities at sites such as Pangali, who were engaged in the indirect exchange of obsidian, would have had to travel to places such as the later poleis of Corinth. As stated in Strabo's *Geographica*, Book 8.6.20: "Corinth is called 'wealthy' because of its commerce, since it is situated on the Isthmus and is master of two harbours, of which the one leads straight to Asia, and the other to Italy; and it makes easy the exchange of merchandise from both countries that are so far distant from each other" (Strabo. *Geogr*. 8.6.20, trans. H.L. Jones, LCL 196, 1927). The distribution of obsidian during the Neolithic and Bronze Age clearly reveals a division between the eastern and western parts of the Greek mainland. It appears that the Pindos range, as well as its extension to the Peloponnese running in a roughly north – south direction, constituted a barrier to the distribution of obsidian.[45] The surveys conducted in Laconia,[46] southern Argolid[47] and central Greece[48] have confirmed that obsidian procurement exchanges pre-

45 Georgiadis 2008.
46 Carter & Ydo 1996; Kardulias 1992.
47 Kardulias & Runnels 1995; Runnels 1985.
48 Hartenberger & Runnels 2001.

Fig. 8: *Fragmented blades from Pangali indicating indirect importation of already produced blades. Lasse Vilien Sørensen (© Hellenic Ministry of Culture). The archaeological site of Pangali falls under the jurisdiction of the Ephorate of Antiquities of Aetoloacarnania and Lefkada.*

dominated in eastern mainland Greece.[49] Systematic production of obsidian blades would be expected in the eastern part of mainland Greece, which could reveal centralised and specialised sites at places like Corinth and Korphos in Corinthia, Phourni Focus in Argolid or Lerna on the Argive plain.[50] Here, the declining curve of the obsidian assemblages would be interrupted by peaks, representing centres of the exchange system.[51] In Western Greece, on the other hand, the chipped stone assemblages were dominated by local cherts at all these sites during the Neolithic, which were dependent on the indirect obsidian exchange with sites in the eastern part of the Peloponnese.[52] However, one of the reasons why the access to obsidian intensified during the Final Neolithic and it reached remote places like Pangali in greater quantities than before, was the permanent habitation of Melos during the period 4500-3300 BC. This settlement would have resulted in greater exploitation on the island itself, along with the emergence of other major, centralised sites in the Aegean.[53] Another important innovation that led to increased transportation of goods and longer sea voyages was the size of the ships during the Final Neolithic. The rock carvings at Strofilas on Andros show significant maritime development of the ships, which also enabled the Neolithic Argonauts to search for a greater range of raw materials and permanently settle on many of the previously uninhabited islands in the Aegean.[54]

Kampos on Syros

The Kampos Valley, located in the northern part of the Cycladic Island of Syros, contains one of the rarest raw materials in the whole Mediterranean region: a large deposit of jadeitite that was exploited during Aegean prehistory (Fig. 9).[55] The metamorphic jadeitite has been highly desirable throughout human history because of its rarity, beauty and resilience to breakage, and is thus ideal for making axes of great prestige and status.[56] Jadeitite polished tools (axes, adzes, chisels and wedges) are an uninvestigated group of objects from the Aegean prehistory.[57] However, recent discoveries by our team, together with Søren Dietz, have documented their existence at Neolithic sites all over the Aegean region (Fig. 5).[58]

In general, our investigations have so far revealed that the entire Kampos Valley was the location for numerous knapping places, concentrated around the larger jadeitite boulders of superior quality. We have so far identified over a hundred small to large jadeitite boulders in the Kampos Valley, together

49 Carter 2003; 2005; Cosmopoulos 1991; Johnson 1996; Parkinson et al. 2018
50 Parkinson et al. 2018; Perlès 1990a; 1990b; 1992; Sørensen 2010.
51 Renfrew 1975.
52 Sørensen 2010.
53 Renfrew & Wagstaff 1982.
54 Broodbank 2000; Dietz et al. 2018; Liritzis 2010.
55 Bröcker & Enders 1999; Pétrequin et al. 2017.
56 Harlow et al. 2015; Pétrequin & Pétrequin 2025; Pétrequin et al. 2012; 2013.
57 Sørensen 2012; Sørensen et al. 2017.
58 Sørensen et al. 2025.

Fig. 9: *Photograph of the Kampos Valley located in the northern part of Syros.*

with several zones of knapping places. Most of these knapping sites are covered by eroded soil, whilst a few have been exposed by aeolian erosion, thus revealing the scale of production. We laid out a square metre grid and collected all the flakes, blades, preforms, hammerstones and anvil stones. Over 16,000 objects were recorded from the surface of a 30 m^2 area, within which two knapping sites were recorded. The layers at these two knapping places contain extremely dense quantities of worked jadeitite objects, which have layers with a depth of more than 50 cm, thus indicating a major exploitation, with well over 100,000 objects weighing several hundred kilograms and perhaps even tons (Fig. 10).[59]

The technological study of the jadeitite assemblages of blades and flakes at the two knapping places at site 1 show some complete reduction sequences of primary, secondary, and trimming of blades and flakes similar to other Neolithic quarrying sites, where polished stone tools were produced.[60] In the future, it should therefore be possible to undertake refitting of the jadeitite objects in order to reconstruct the knapping sequences. Furthermore, dense layers of jadeitite dust indicate that the final pecking of the preforms of the axes or adzes also took place at these knapping places. The technological strategies reveal that the prehistoric people exploiting some of the jadeitite sources in the Kampos Valley were highly skilled and specialised workers, who made a series of preforms for axes that were intended for exchange and use far beyond their own supply of polished stone tools.

The ceramic material in the Kampos Valley is dominated by coarse wares and is accompanied by a few obsidian and quartz tools, probably reflecting several short-term occupations, as no large constructions or features have so far been observed. The presence of worked obsidian at the jadeitite knapping places could indicate that the exploitation of jadeitite and obsidian sources were closely related,

59 Sørensen et al. 2025.
60 Bradley & Edmonds 1993; Pétrequin et al. 2012; Šída & Burgert 2024.

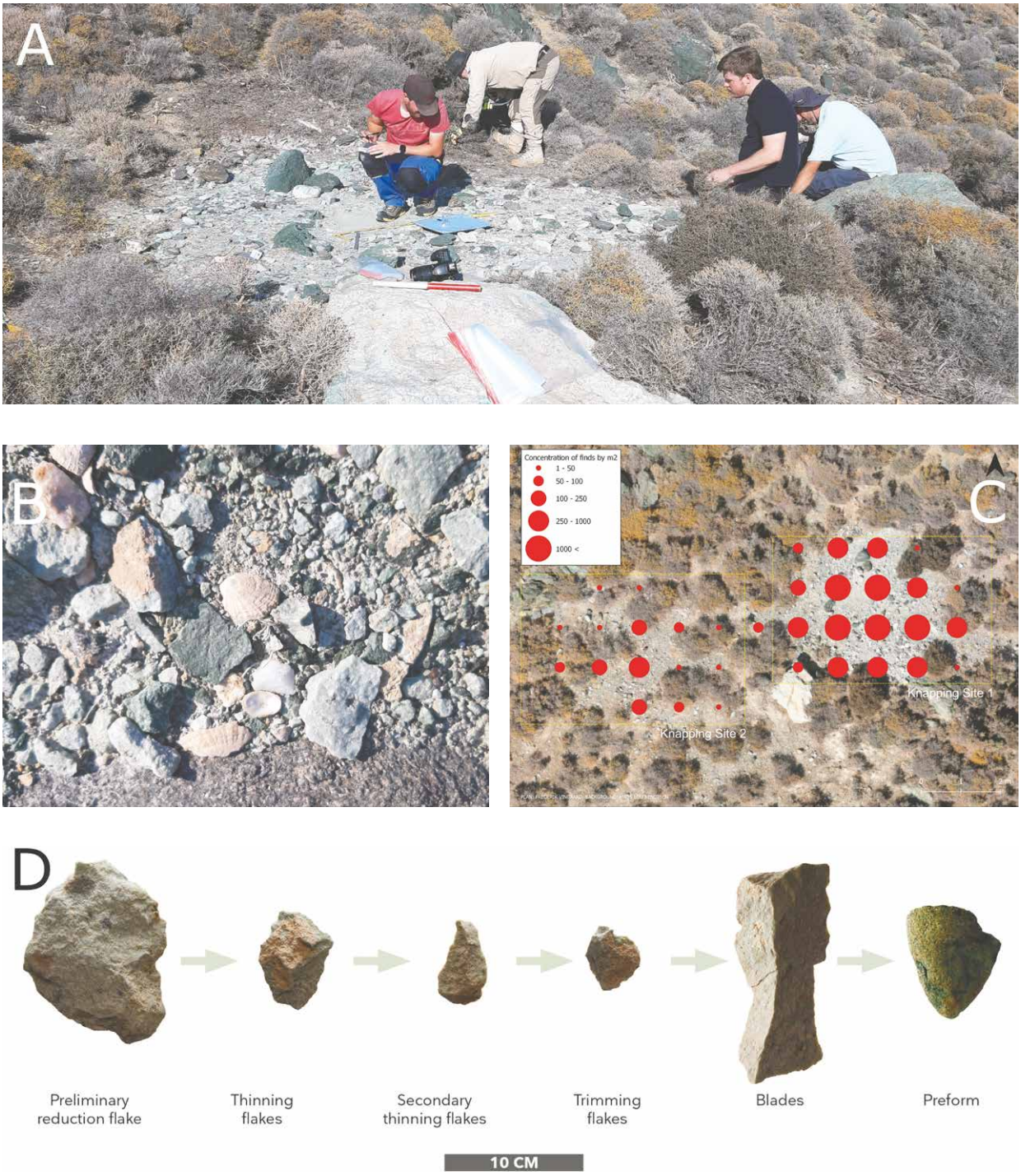

Fig. 10: *Photos of the investigation of the jadeitite knapping workshop* (**A**) *and its surface finds, consisting of flakes, blades and preforms of jadeitite* (**B**). *The distribution of the finds revealed two concentrations of jadeitite knapping sites, consisting of over 16,000 objects of mainly jadeitite flakes* (**C**). *The diagram shows the reduction, shaping, thinning and trimming flakes, together with a pecked fragment of a preform from the systematic production of jadeitite axes* (**D**). *Photo: The National Museum of Denmark (© Hellenic Ministry of Culture).*

Fig. 11: *An example of intentional deposition in a fissure of a blueschist boulder, consisting of the longest jadeitite blade recorded in the Kampos Valley (right) and a hammerstone made of jadeitite (left), together with several quartz flakes. Photo: The National Museum of Denmark (© Hellenic Ministry of Culture).*

with long-distance seafaring journeys organised by Neolithic and Early Bronze Age communities.[61]

The biggest surprise in the Kampos Valley was the documentation of several jadeitite objects, which had been deliberately placed within the fissures and narrow cracks of the boulders of blueschist and eclogite surrounding the exploited jadeitite boulders, knapping workshops and habitation (Fig. 11). Within these fissures we observed, often in pairs, several small flakes, large blades, hammerstones and preforms of jadeite, together with rounded beach stones of quartzite. In ethnographic studies of quarrying, fissures are often interpreted as portals to the underworld.[62] The exploitation of the raw materials requires specific rituals and symbolic behaviour to give back some of the extracted raw material to various deities, so that the best raw materials can be extracted.[63] These newly discovered depositions clearly supplement the aspects of desirability and value of the objects which were produced by the quarrying activities in the Kampos Valley.[64]

Institutionalised journeys

Polished stone tools, as well as obsidian, are often regarded as domestic and utilitarian objects of no particular value in the Aegean Neolithic.[65] However, if obsidian and polished stone tools of rare raw materials, such as jadeitite, were acquired either at the same time or independently, then they both represent a time-consuming procurement strategy involving dangerous seafaring expeditions, which required organisation, navigational skills and specialised actors to plan and undertake such voyages.[66] This would have contributed to the different kinds of desirability and value associated with these objects, based upon the assumption that these groups were conceptually aware of the time and resources they spent on the procurement strategies, rather than managing their agrarian practices.[67] When these communities went on journeys, it would not only have been one raw material that was obtained, but several, with the characteristic and often rare and highly localised sources functioning as meeting places for travellers, thus laying the foundations for the various sailing routes. The Aegean functioned as

61 Broodbank 2000.
62 Topping 2021.
63 Malafouris 2013; Pétrequin and Pétrequin 2020; Pétrequin et al. 2013.
64 Sørensen et al. 2025.
65 Tsoraki 2011.
66 Broodbank 2000; 2013.
67 Appadurai 1986.

a diverse marketplace for the various sources that were exploited: Melos and its obsidian, Syros with its jadeitite, and Naxos with emeralds and marble. When travelling across the Aegean Sea, these Neolithic Argonauts would have expected to continually meet other travellers at different quarrying places. The increase in their travelling activities during the Neolithic would thus have laid the foundations for broadening their networks and gaining social allies or even enemies, leading to institutionalised practices, such as the concepts behind guest friendship, *xenia*, as described in The Odyssey.[68] Examples of this include the hospitable Phaeacians who help Odysseus home, the brutal Cyclops Polyphemus who violates *xenia* by eating his guests, and the greedy suitors in Ithaca who show no respect for their host.[69] The moral is to treat your travelling guests with respect.

Guest friendship

In ancient Greek society, *xenia* was far more than simple hospitality. It was a sacred institution that bound together individuals from different city states, ethnic groups and even cultures in a relationship of mutual trust and respect. Unlike the bonds of kinship or friendship within one's own community, *xenia* specifically governed interactions with outsiders, ensuring that travellers, regardless of their origin or status, would never be turned away.[70] This practice was not just a social expectation but a moral and religious obligation, overseen by Zeus himself as the protector of strangers. The Greeks believed that even a humble traveller could be a god in disguise, testing the virtue of their host, and that those who failed to uphold the rules of *xenia* risked the wrath of the gods.[71] The roots of *xenia* can be traced back to at least the Mycenaean era, as it is found in Linear B inscriptions from Knossos and Pylos as *ke-se-nu-wo* or *ke-se-nu-wi-ja*, terms that already had the dual meaning of 'foreigner' and 'guest'. At its core, *xenia* was a formalised relationship between guest friends, which was characterised by rituals of gift exchange and the provision of food and shelter (Garcia 2017; Hiltbrunner 2005). These exchanges were not commercial transactions but acts of generosity intended to forge lasting connections. *Xenia* transcended political and ethnic boundaries: the concept was a widespread cultural practice in the Mediterranean world, with deep roots in Aegean prehistory.

Concluding remarks

The Neolithic Aegean was a dynamic maritime landscape, which was influenced by the pursuit of rare and desirable raw materials. The case studies from Pangali and Kampos demonstrate how the acquisition of obsidian and jadeitite resulted in the development of long-range seafaring, routinisation of routes, institutionalised exchange networks and advanced social organisation. These materials were not merely practical resources, but symbols of identity and connections, in which their desirability was based on their sensory, symbolic and economic value. The establishment of more permanent maritime routes and the practice of *xenia* further solidified these networks, laying the foundations for the complex societies of Aegean prehistory with roots extending back to the Neolithic. By taking calculated risks in often dangerous seafaring, these agrarian communities and Argonauts shaped the social and cultural identity of the Neolithic Aegean societies, and these ancient practices can be regarded as tested echoes of modern concepts of trade, hospitality and value.

Acknowledgements

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68 Felher et al. 1998; Herman 2002.
69 Frank 2011.
70 Kaul 2017; 2018.
71 Frank 2011.

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Cycladic Prehistory and Cave Research: A Review[1]

by Fanis Mavridis

The programme for the systematic recording of the caves in the Cyclades aims at a more effective protection of these monuments, focusing on the evaluation of the archaeological evidence, thus providing reliable data for the ongoing research into the history and culture of the islands of the central Aegean. A wealth of information about mostly previously unknown monuments has been produced by fieldwork undertaken as part of targeted surface surveys, and systematic and rescue excavations (Fig. 1).[2]

Cycladic caves: information and research

Information about caves in the Cyclades can be found in the texts of travellers, while archaeological, topographical, historical[3] or other studies relating to the study of the ancient cult[4] contain relevant information and references. Some of the monuments mentioned in the previous studies are now difficult to locate or identify. One such example is a cave on Mount Tsiknias on Tinos.

There are also numerous artificial galleries relating to quarries or mines, such as those on Serifos, Kythnos and Kea (e.g. Trypospiliespilies and Spathi bay), which have sometimes been used since antiquity. The marble quarries at Marathi on Paros are important within this category of monuments; they are also associated with cult practices, while artificial galleries of more recent date, such as those relating to marble quarrying on Tinos (e.g. the Panormos area and Lychnaftia), contribute to the study of aspects of the recent history of the islands (Fig. 2). In some cases, the galleries have been created in natural hollows containing evidence of ancient use (e.g. the Koutala cave on Serifos).

Excavations have been undertaken in the Chrysosspilia cave on Folegandros, in the caves of Zas Naxos and Koutalas on Serifos, and the Nymphs' cave on Sifnos. Research was undertaken in caves on Tinos[5] and on Paros and Antiparos in the 1960s (Fig. 3). Today, the scope of research has been expanded to include Naxos, Paros, Irakleia, Santorini, Tinos and other islands.

Archaeological evidence

There is now much evidence for the use of caves in all phases of Cycladic prehistory as well as in later periods. Regarding the earliest phases, obsidian and flint stone artefacts have been identified from various sites, as well as pottery sherds dating to the Neolithic period (Fig. 4). The recent discovery of obsidian tools in stratified assemblages from a cave in eastern Attica, with typo-technological characteristics which leave no doubt

1 It is a pleasure to contribute this article to a volume dedicated to Dr Søren Dietz. In the mid-90s, when I was a post-graduate student, he invited me to work with him in the field and it has been an honour to be his friend in the years since, when we have co-operated on several projects. It was a fortunate that I met him so early on in my professional career and he was one of the few individuals who has influenced the way I see archaeology.

2 The Irakleia cave exploration project was a collaboration between the Ephoreia of Palaeoanthropology and Speleology and the Norwegian Institute at Athens, and was directed by the present author and Dr Z. Tankosic, Bergen University. I would like to thank my friends and colleagues L. Kormazopoulou and Dr E. Stravopodi for their comments on earlier drafts of the paper.

3 Kefalliniadis 1961 for Naxos; Abelas 1874 for Syros.

4 Giannoulidou 1972; 1974.

5 In the 1920s by Italian archaeologists.

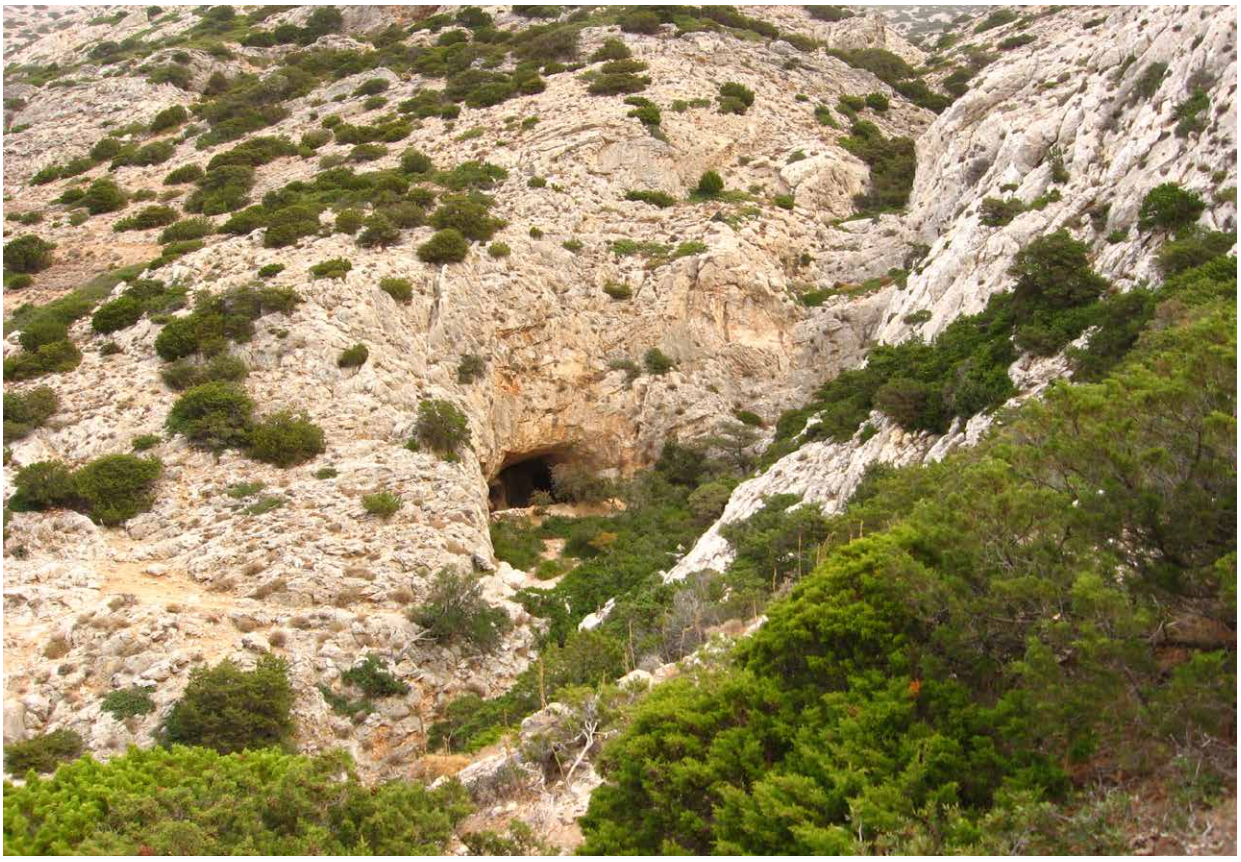

Fig. 1: *Cyclops' cave, Irakleia (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology).*

Fig. 2: *Entrance to quarrying gallery, Tenos (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology).*

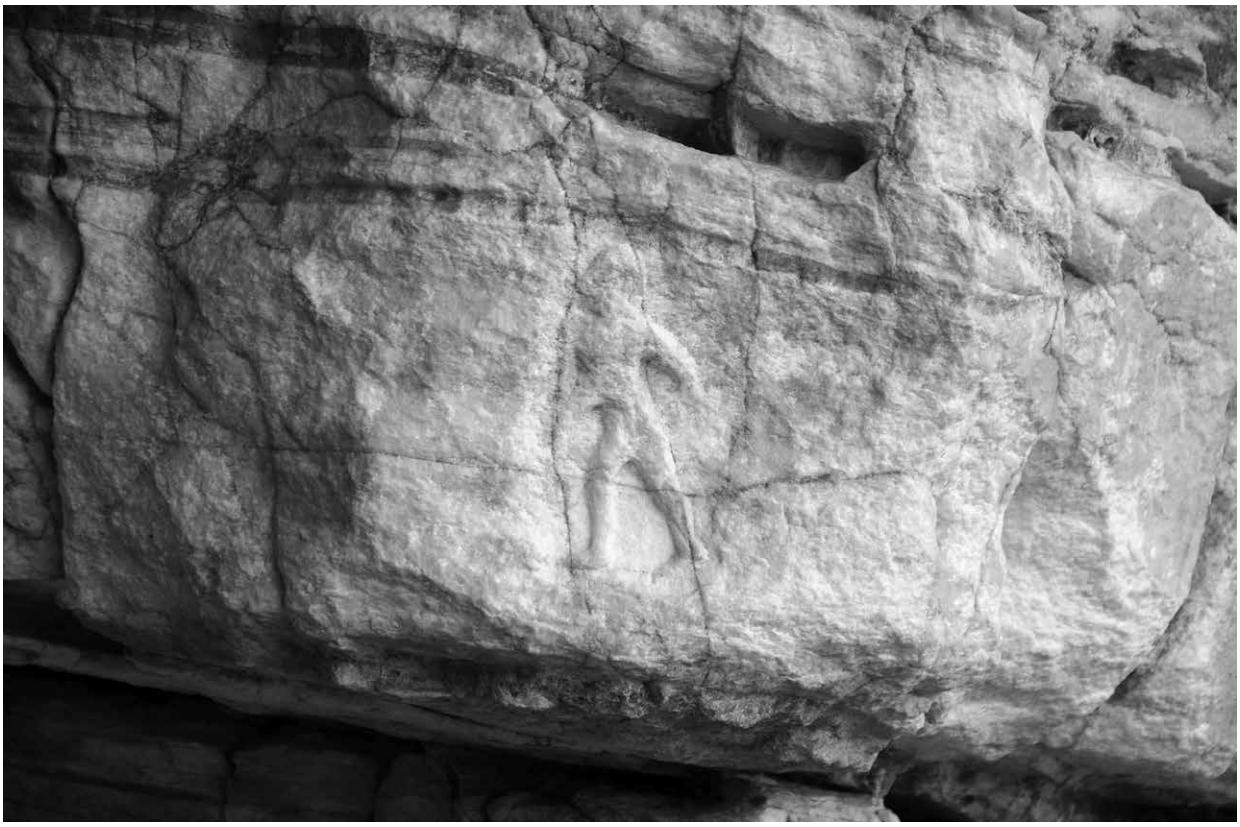

Fig. 3: *A relief figure at the entrance of the so-called Archolochos cave, Paros (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology).*

about their dating (e.g. geometric microliths), together with the results of absolute dating methods, indicate precisely when the circulation of obsidian becomes visible in the archaeological record, and that maritime travel was neither random nor only occasional, at least from the 10th millennium BC.[6] The dynamic role of the Aegean islands before the Neolithic is indicated by sites such as Stelida on Naxos and Maroulas on Kythnos, but also by the identification of 'pre-Holocene' tool scatters recorded during surveys of uninhabited islands around Paros,[7] as well as the Mesolithic finds (including a burial)[8] from the Negros cave on the island of Astypalaia,[9] between the Cyclades and the Dodecanese.[10] It therefore seems that, based on of finds from both sides of the Aegean, contacts, extensive exchange networks or even population movements were present from these early phases.[11]

Regarding the Neolithic, recent fieldwork on the island of Tenos has identified Neolithic material in two caves and two rock shelters, the most important of which was Plakiani (obsidian, coarse ware sherds and a shell pendant were found, Fig. 5); some possible Neolithic sherds come from a cave on Santorini,[12] from two caves on Paros (Fig. 6) and several caves on Naxos (caves of Feidas and Kanavaris), as well as from the Agios Ioannis cave, Irakleia, and elsewhere.[13] Neolithic finds from earlier investigations are also known from the cave of Zas on Naxos,[14] from Klef-

6 Mavridis et al. 2021.
7 Knodell et al. 2022, 9.
8 Stravopodi 2023.
9 Efstathiou 2023.
10 For other possible 'early' lithic scatters from sites on the Aegean islands, see Sampson 2019, fig. 1.
11 See Mavridis 2009; Reingruber 2017.
12 Mavridis & Trimmis 2018.
13 Mavridis 2021. For Antiparos cave, see Mavridis 2010.
14 Zachos 1987; 1994.

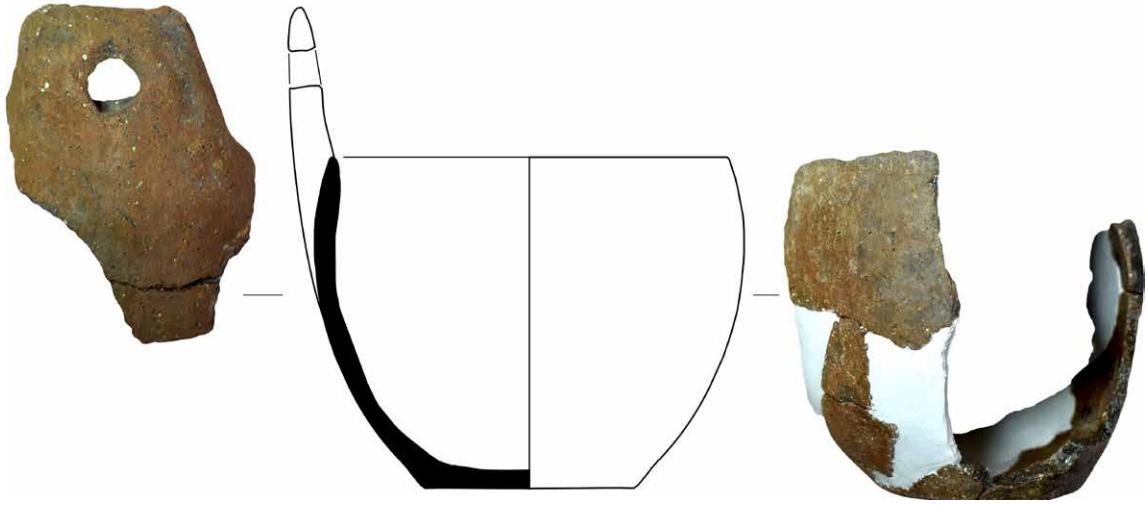

Fig. 4: *Neolithic vase. Agios Ioannis cave, Irakleia (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology. Author D. Nenova).*

Fig. 5: *Plakiani cave, Tenos (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology).*

Fig. 6: *Kalampaki or Daemons cave, Paros (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology).*

tospilia on Amorgos,[15] and from the rock shelter at the prehistoric site of Paouras on Kea.[16] Prehistoric (Neolithic?) sherds as well as material from later periods have also been found in the Drakonospilios cave on Anafi[17]. As is known from other Aegean regions, caves in the Cyclades were extensively used before the Bronze Age.[18] The Late Neolithic finds from the Agios Ioannis cave on the island of Irakleia indicate that small islands were also used and that the so-called Saliagos horizon of the Late Neolithic is a well-established phase, with a wide distribution in the Cyclades and nearby regions.[19]

New evidence has been recorded for the use of caves from the beginning of the 3rd millennium onwards. Until recently, only the important finds of the Early Cycladic period from the cave of Zas on Naxos[20] were known, as well as a small number of Middle and Late Bronze Age sherds from the same

15 Maragou 2002, 7.
16 Georgiou & Faraklas 1985, 242-43.
17 Agouridis, personal communication 26/9/23.
18 Mavridis et al. 2013; Mavridis 2015.
19 Mavridis 2017.
20 Zachos 1987; 1994.

Fig. 7: *Black burnished vase of the ECI. Agios Ioannis cave, Irakleia (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology. Author D. Nenova).*

Fig. 8: *A conical neck pithos from the Agios Ioannis cave, Irakleia. ECII-III (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology. Author D. Nenova).*

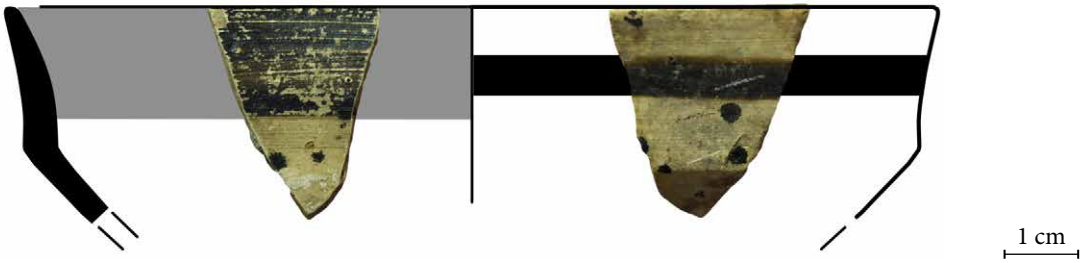

Fig. 9: *Carinated bowl. Alimia cave, Irakleia (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology. Author D. Nenova).*

site.[21] However, it was not possible to shed light on the broader significance of cave use during the Bronze Age based on these finds. Research on the islands of Irakleia and Paros indicated that caves were more extensively used during the Early Cycladic period than was previously thought (Fig. 7). From what is known from Crete, caves were extensively used for different purposes during the EBA-MBA phases.[22] The earliest caves with of symbolic or cultic significance on Crete have been dated to at least around 2000 BC, early MMI (e.g. Idaio, Amnisos, Skotino and Psyche) or even earlier.[23] Burial is amongst the known uses of caves on Crete.[24] In the Cyclades, rock shelters on Keros were also used for burials.[25] Human bones have been found in unstratified layers in the Kalambaki (or Daemons) cave on Paros. In mainland Greece, however, burials in caves are rare during the EBA.[26]

In the EBA, due to its narrow entrance and overall morphology, the cave of Agios Ioannis on Irakleia must have been used as a temporary shelter and/or storage place or for its water resources, which are still present in some of the deepest parts of the cave. Material from the Grotta-Pelos phase and the ECII and ECIII phases has been recorded (Fig. 8); storage jars and coarse wares predominate during the latter phases. In contrast to this, bowls of various sizes and a *depas amphikypellon* have been found intact inside crevices in the Kalampaki cave, Paros.

On the island of Irakleia, in some small caves adjacent to the cave of Agios Ioannis, as well as others in the bay of Alimia (Fig. 9), mainly good-quality pottery from the MCIII-LCIA periods was found. Based on macroscopic observations, the provenance of the pottery varies. Conical cups were found under layers of volcanic ash, originating from the so-called

21 Barber 2017.
22 Tyree 2013; Faro 2013; Sporn 2020, 188.
23 Stampolidis & Kotsonas 2013, 188, with further references; Platon 2013; Tyree 2013; Sporn 2020.
24 Indicatively, Triantafyllou 2012; Betancourt 2014.
25 Moutafi 2015.
26 Mavridis & Tankosic 2016; Prevedorou et al. 2019.

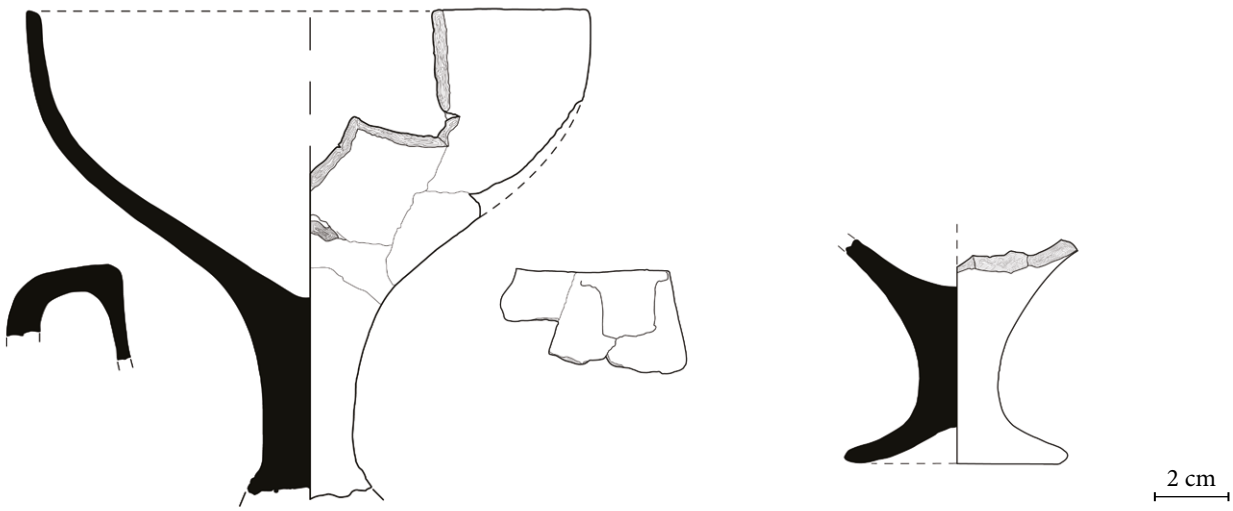

Fig. 10: *Mycenean pottery. Agios Ioannis cave, Irakleia (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology. Author D. Nenova).*

Fig. 11: *Conical cups and tephra, anonymous cave (Mandri), Irakleia (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology).*

Minoan eruption of the Santorini volcano.[27] Only a few sherds from the MCI-II phases have been found on Irakleia, whilst there are more (e.g. grey Minyan sherds) from the Kalampaki cave on Paros.

The cave of Agios Ioannis was re-used during the Mycenaean period. A few sherds from drinking vessels (Fig. 10) have been found in pools in the deepest areas of the cave, indicating its sporadic (and specialised?) use, a pattern that is also observed in the Zas cave.[28] Mycenaean finds from caves are, however, increasing as more sites are being investigated.[29] Finally, the finds from the Finikia cave complex on the island of Santorini are of particular interest in terms of the diachronic use of caves in the Aegean and the possible use of the cave complex during the LBA, the latter of which requires further documentation.[30]

Of particular importance are the finds from the MCIII-LCI phase of the Irakleia and Paros caves (Fig. 11), as they confirm, for the first time, the symbolic/cultic use of Cycladic caves during this

27 Mavridis et al. 2018.
28 Barber 2017.
29 Vasileiou 2000; Katsarou 2021.
30 Mavridis & Trimmis 2018.

Fig. 12: *Katafygi cave, Paros. Pottery inside rock crevices (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology).*

phase.[31] Cave sanctuaries are well known from Minoan Crete.[32] The excavation of inverted conical cups under layers of volcanic ash in the small, anonymous cave on Irakleia and the presence of conical cups in crevices and on stalagmite formations in barely accessible areas in the Kalampaki cave on Paros also suggest this. In the large, complex cave of Katafygi on Paros, concentrations of pottery, animal bones, seashells and pottery (including conical cups, small-sized askoi, cups, nippled/eyed ewers, oval-mouthed jars, pithoid vessels and Melian bowls) were found close to stalagmite formations in different areas. In a narrow and isolated chamber of the same cave, which was only accessible with specialised equipment, a 10-30 cm-deep layer was excavated, containing relatively large amounts of animal bones, seashells and terrestrial snails with traces of burning, pottery, some scattered human bones, as well as a prismatic seal and a dagger (Fig. 12). There are currently no parallels for this context in the Cyclades.[33]

The dagger[34] found in the Katafygi cave on Paros (Fig. 13a, b) is 19.3 cm long and 0.6-0.8 cm wide. It belongs to the so-called type A according to Papadopoulos'[35] classification of mainland Greek daggers (types A and B). It is mainly dated to the late MBA and early LBA,[36] or MHIIIB-LHIA according to S. Dietz.[37]

The type is generally described as "…short, tapering or ogival, usually not much over 20 cm in length and approximately 5,5 in width. Their main and common characteristics are the absence of a tag (tagless) and the broad, convex or straight butts. Other basic features are the tapering or ogival blades with or without a midrib and bevelled edges and the massive, mostly gold-or silver-plated rivets which range in

31 Mavridis 2018.
32 Faro 2013; Platon 2013; Tyree 2013.
33 Mavridis 2018.
34 I would like to thank Dr N. Papadimitriou (director of the Canellopoulos Museum) for his assistance and the information he provided me with concerning Aegean daggers.
35 Papadopoulos 1998, 4.
36 Papadopoulos 1998, 4.
37 Dietz 1991, 261.

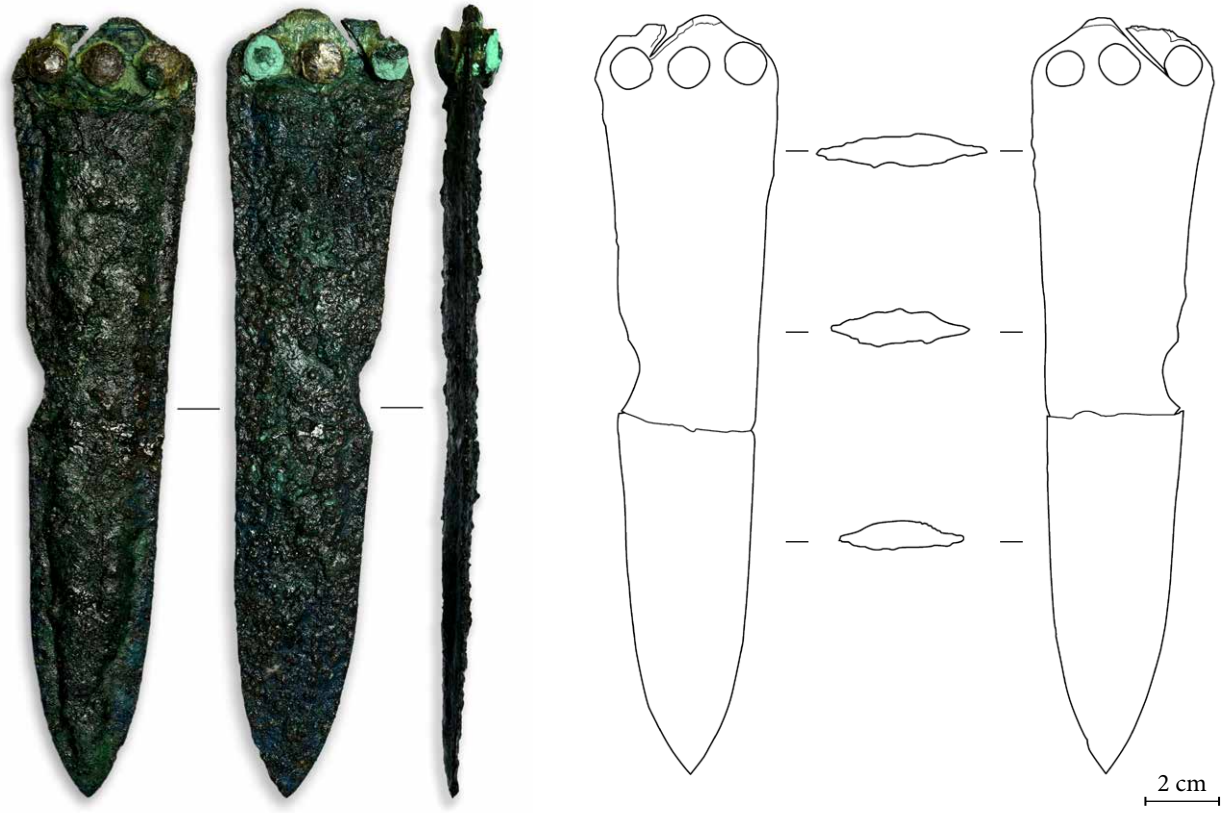

Fig. 13: *The dagger from the Katafygi cave, Paros (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology).*

numbers from two to four and are set at the edge of the butt…" (Papadopoulos 1998, 4).

Type A daggers are widely distributed, and are thus not confined to specific areas, although according to the data presented by Papadopoulos[38] they are mostly concentrated in the Argolid and Messenia.[39]

XRF analysis conducted by E. Philippaki and Y. Bassiakos (NCSR Demokritos) indicated that copper is the predominant element in the dagger, but small percentages of tin, calcium and arsenic are also present. Nevertheless, the surface analysis identified copper, calcium and iron, with the latter a byproduct of corrosion, whilst the absence of tin and arsenic may also be due to the high degree of corrosion. The analysis of the nails shows differences between them. One of the nails consisted of copper, silver, arsenic, iron, bromine and calcium (silver coated). The other two nails were, however, composed of copper, iron, nickel, arsenic (recycling?) and calcium.[40]

On Crete, daggers and swords were deposited in caves (e.g. Psychro and Arkalochori) during the MMII-LMIA, a period during which objects were more varied and elaborate.[41] The scarcity of MBA-LBAI burials from the Cyclades[42] hinders a comprehensive understanding of the Paros dagger, as these objects are mostly known from graves in Mainland Greece.[43] From a burial of a similar date at Skarkos on the island of Ios, a double-edged, tongue-shaped razor blade has been published and other finds have been reported from Akrotiri on Thera and

38 Papadopoulos 1998, 50.

39 For Minoan daggers and the role of the Cyclades, see Branigan 1968, 198-9; Dickinson 1994, 200, whilst earlier scholars, such as Karo (1930-33, 195-200), believed that the specific dagger type probably came from Crete and perhaps the Cyclades, because of the long tradition in these areas of metallurgical activities and weapon production.

40 See Branigan 1968, 200 for relevant discussion. I would like to thank A.-M. Sdralia for the information she provided me with on the analysis of the dagger.

41 Tyree 1974, 74; Faro 2013, 169; Platon 2013, 157.

42 Sotirakopoulou 2004; Marthari 2009.

43 Kilian-Dirlmeier 1990, 158, also Molloy 2010.

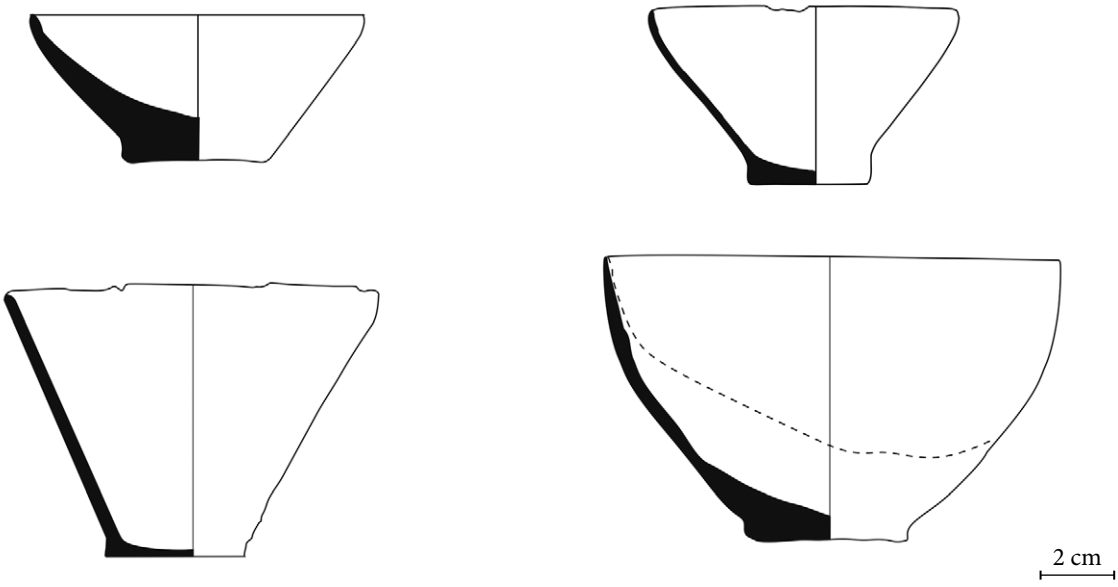

Fig. 14 a-d: *Conical cups from Paros caves. Daemons cave (a-c) and Katafygi cave, from the area of the dagger and associated finds (d) (F. Mavridis/Ephoreia of Palaeoanthropology-Speleology. Author D. Nenova).*

other sites.[44] The presence of a burial at the Katafygi cave cannot be confirmed as only scattered bones have been found and there is no associated evidence from other cave sites in the Cyclades. At this stage, we can only suggest that different practices are attested in the cave on Irakleia and the Kalampaki cave on Paros (conical cups) in comparison with the Katafygi cave evidence, which points to more complicated and varied practices.

The weaponry of the 'Mycenean warrior' found in mainland Greek graves has been interpreted as not directly indicating biographical details of the dead, but as instead representing a metaphor of authority and status,[45] or a symbol of high social ranking.[46] According to Malafouris,[47] material culture (tools for the body) extends and transforms the boundaries of our body schema, and referring to the sword in Mycenaean contexts, the same researcher believes that it represents a boundary artefact, which operates in between spaces, practices and realms.[48] This may also apply to daggers given the evidence from graves in mainland Greece. The male figurines with daggers in their belt from Crete[49] may point to a more varied male identity, for instance, as a warrior or hunter.

The conical cups from the small, anonymous cave of Irakleia have common morphological features and must be imports from other islands. They are wheel-thrown, are of similar dimensions and have a quite tall body. The presence of inverted cups at many sites on Crete and elsewhere[50] has been associated with ancestral worship, foundation offerings, or the consumption or offering of goods.[51] Conical cups are often found in caves that were used during the Neo-Palatial period. However, the interpretation of their presence in caves is debatable due to the continuous use of these sites and the frequent disturbance of their deposits.[52] Conical cups with the same characteristics were found in both the Katafygi and Kalampaki caves on Paros (Fig. 14a-d).

44 Marthari 2009, esp. p. 52, with further references.
45 Georganas 2018, 89.
46 Kilian-Dirlmeier 1990, 158.
47 Malafouris 2008.
48 Malafouris 2008.
49 Morris 2009, 184, fig. 15.2; Murphy 2019, 5.
50 Åström 1987; Gillis 1990; Berg 2004; Hatzaki 2009; Caloi 2013; Knappett and Hilditch 2015.
51 Åström 1987, 13; Soles 1992, 248-9; Caloi 2013, 135; Privitera 2018.
52 Platon 2013.

While the Cretan caves were used from the Neolithic onwards as places of habitation or storage as well as for burials, their symbolic/ritual use seems to have increased or at least become more archaeologically visible in the Neo-Palatial period, along with peak sanctuaries.[53] Outside Crete, the Daskalio cave at Vathi on Kalymnos in the Dodecanese seems to have had a similar use,[54] although the material is very different to that from the Katafygi cave on Paros. The Katafygadi cave on Kythera was also used during the Late Bronze Age, although it is not known what for, but this was probably burials.[55]

The detailed comparison of the finds from these sites will help improve understanding of the role and importance of the caves in the Cyclades during the Middle and Late Bronze Age. The overall picture could add another variable to the discussion of the so-called "Minoan influence" in the Cyclades.[56] Based on the pottery finds, which imply a specific chronological time frame, it is risky to interpret these contexts as reactions to the eruption of the Santorini volcano.[57] This is merely a fascinating working hypothesis which needs to be well documented and discussed. Another interesting aspect of the finds is that fine wares and ritual practices known from 'central sites' are also present, possibly as a result of secondary local exchange networks, even in the smallest agro-pastoral social units, as is indicated by the small-scale evidence from the Irakleia caves.

The volcanic ash found in the caves on Irakleia is undergoing laboratory analysis. Preliminary results confirm that it originates from the Minoan eruption of the Santorini volcano. Ash has also been recorded inside caves in a few other cases, such as at Pelekita on Crete,[58] Koumelo on Rhodes and Aspri Petra on Kos.[59] As at Koumelo on Rhodes,[60] in the small, anonymous cave near Agios Ioannis, Irakleia, the few sherds found under the ash are dated to the MCIII-early LCI phase.[61]

Conclusion

Fieldwork in caves has shown that, due to their natural characteristics, they usually preserve archaeological material and other remains, such as anthropological or palaeontological, exceptionally well. Caves and other natural formations in the landscape are 'created' as places by specific perceptions through the deposition of material remains, in associations that are not encountered at open-air sites. Therefore, research of cave sites on several Cycladic islands by the Ephoreia of Palaeoanthropology and Speleology (Ministry of Culture) has so far produced unique evidence relating to everyday or symbolic practices of past insular societies, from the Stone Age to recent times. The finds briefly discussed in this article, within the framework of representative evidence from the relevant literature, reveal aspects of the dynamics, ideologies and strategies of islanders outside the typical settlement sites. The protection, preservation and documentation of cave sites in the Cyclades are of major significance in contributing to addressing several research questions within Cycladic archaeology.

53 For a Minoan type of peak sanctuary from Naxos, see Carter et al. 2021.
54 Benzi 1993; 2011.
55 Trantalidou et al. 2019.
56 Mavridis 2018.
57 Crisis cults, see Driessen 2001, for example.
58 Bruins et al. 2019.
59 Sampon 1988, 14.
60 Sampson 1987, 67, 74.
61 Mavridis 2018.

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The Levantine Connection: Reassessing the Geographical Origins of Some Near Eastern Innovations of the Early Helladic 'Period of the Corridor Houses"[1]

by Joseph Maran

During the period of the Corridor Houses (c. 2500-2200 BC) in the second half of Early Helladic II,[2] a set of innovations, including the administrative use of seals, the adoption of a weight system and the use of new forms of tableware, were introduced in regions of Central and Southern Greece during the course of wide-ranging contacts with the Near East.[3] The appearance of foreign types of tableware in East-Central Greece (Lefkandi 1 horizon) and the Cyclades (Kastri group), in particular, point to strong links between the Eastern and Western Aegean, as the formal prototypes of these new vessels can all be traced back to Western and Central Anatolia.[4] It was probably this fact that prompted researchers to assume that the other objects and cultural techniques of Near Eastern origin must have also reached mainland Greece via Western Anatolia and the Eastern Aegean. While Machteld Mellink previously argued for the importance of maritime connections along the coasts of Southern and Western Anatolia linking Cilicia with Troy,[5] the recent contributions by Vasif Şahoğlu and Turan Efe[6] have led to a change in opinion and the belief that a network of land-based trade connections between Cilicia and the coast of Western Anatolia, known as the 'Anatolian Trade Network' (Şahoğlu) or the 'Great Caravan Route' (Efe), was the most likely way in which these innovations were transmitted to the various regions of Anatolia, and from there onwards by sea to the Western Aegean.[7]

Yet, regardless of the importance of Anatolian land connections,[8] it is important to remember that among those innovations were probably ones that not only originated in parts of the Near East well beyond the Aegean and Western Anatolia, but were also transmitted in a fairly direct way via sea routes from the Levant to the Aegean. Such Levantine-Aegean connections in the 3rd millennium BC were first proposed in 1978 by Amnon Ben-Tor, to account for the distribution of storage jars with impressions made by cylindrical wooden or terracotta rollers which were decorated with incised reliefs. Such vessels with roller impressions are found in the Levant and parts of Mesopotamia as well as in the Northeastern Peloponnese.[9] According to Ben-Tor, roller-decorated vessels from the Southern Levant, were especially closely related to those from Lerna in the Argolid,[10] thereby confirming the claim made by Martha H. Wiencke in 1970 that "we may reasonably conclude […] that the use of the cylinder at Lerna was an idea imported

1 For Søren Dietz, whose friendly advice and suggestions I have greatly benefitted from. I would like to thank Dipl.-Arch. Maria Kostoula (Heidelberg) for sharing her knowledge of the Early Helladic period and its seal systems with me as well as preparing the images used in the figures of the article. I also am indebted to Dr Irina Oryshkevich (New York) for her careful linguistic editing of the text.

2 Wiencke 1989.

3 Şahoğlu 2005, 340; Rahmstorf 2006.

4 Rutter 1979; Mellink 1986; Şahoğlu 2005; French & Dickinson 2022.

5 Mellink 1992-1993, 440-2; 1993, 504-6; see also Bobokhyan 2009, 43; Oğuzhanoğlu 2019, 58-60.

6 Şahoğlu 2005; Efe 2007.

7 Genz 2003, 61-4; Blum 2016, 474-82; however, see Massa & Palmisano 2018, 79, who argue for the co-existence of land-based trade connections with those that connected the Levantine coast with the Aegean through a maritime trade network.

8 Massa & Palmisano 2018, 65-82.

9 Ben-Tor 1978, 97-9.

10 Ben-Tor 1978, 96.

directly or indirectly from the borders of the eastern Mediterranean". [11] Ben-Tor suggested a maritime transport route to the Aegean via ports such as Tarsus, and from there along the southern coast of Turkey to the Aegean,[12] where, he assumed, Troy had functioned as a distribution centre for the Western Aegean.[13]

However, possible indications of direct maritime contacts with the Levant have not played a part in later discussions of Near Eastern relations in the period of the Corridor Houses for the following reasons. Firstly, because in light of the undeniable contacts with West Anatolia, it seemed logical to assume that all other innovations of Near Eastern origin similarly arrived via trans-Aegean routes, especially since Ben-Tor himself had argued that the Levantine practice of roller-decorated storage jars had come to the West Aegean via Troy. Secondly, it is due to the prevailing belief since the 1990s that long-distance maritime contacts could not have been established during the period of Corridor Houses because of the lack of suitable seagoing vessels. Pictorial representations of maritime vessels from the Early Bronze Age Aegean had supported the idea that only longboats with paddles, unsuitable for long journeys, were known in this region at the time.[14] This situation, it was thought, restricted maritime trade to a down-the-line pattern with many intermediary stations.[15] To cite Cyprian Broodbank: "The feasibility of transfer by down-the-line passage between local communities and prestige chains between elites, combined with the fact that people on the Anatolian plateau were adopting large quantities of 'core culture' by this time, renders the case for a direct Aegean connection to Egypt, Mesopotamia and even the Levant during EB II more or less superfluous".[16] According to Broodbank, the first sailing ships in the Aegean only started to appear at the end of the Early Bronze Age, during the Prepalatial phase on Crete, when they revolutionized trade with Egypt and the Levant.[17] His argument, which assumes there was an change in shipbuilding shortly before 2000 BC due to the introduction of the sail, and recognises the great importance of inner Anatolian trade routes, makes it obvious why the originally envisaged, far more direct maritime connections between the Levant and the Aegean, along the southern coast of Turkey, have since then no longer been considered to be plausible.[18] Instead, scholars now assumed that the most likely form of organised Early Bronze Age trade between the Near East and the Aegean, during the years c. 2500-2200 BC, involved a combination of land connections through Central and Western Anatolia and a down-the-line pattern along Aegean sea routes. I will return to the validity of these interpretations below.

In my opinion, there are good reasons to challenge some of the basic assumptions underlying the currently prevailing scholarly opinion that Near Eastern innovations spread exclusively via land routes through Central and Western Anatolia, then onward through down-the-line trade from the Eastern Aegean to the Greek mainland. In the following, I will discuss certain aspects of objects, ideas and practices of the period of the Corridor Houses, which were unknown or extremely rare in the zone between the Eastern Aegean and Central Anatolia, and probably arrived in Southern Greece through far more direct forms of maritime relations with the Levant and its surroundings.[19]

Roller-decorated storage vessels

The basic parameters of the research on the often discussed Early Bronze Age roller-decorated storage vessels have not changed much since Ben-Tor's groundbreaking study.[20] However, since that time it has become possible both to specify the timespan of the occurrence of these vessels in the Near and Middle East,[21] and to

11 Wiencke 1970, 109.
12 See also Mazzoni 1992, 108; Massa & Palmisano 2018, 79.
13 Ben-Tor 1978, 97.
14 Broodbank 1989; 2013, 327-9; Alram-Stern 2004, 462-4.
15 Broodbank 1989, 333-5; 2013, 335-8.
16 Broodbank 2000, 286.
17 Broodbank 2000, 341-6; 2013, 353-4; Alram-Stern 2004, 464-5.
18 Genz 2003, 58-61; Broodbank 2013, 335-8.
19 Another possible indicator of quite direct Early Bronze Age contacts between the Levant and the Western Aegean are bone tubes with incised decoration, which were often used as containers for colour pigments and are mainly found along coastal areas of the Eastern Mediterranean: Genz 2003; Rahmstorf 2006, 58-62; Saliari & Draganits 2013. This group of objects will not, however, be further discussed here, because it starts to appear in the Aegean as early as before the period of the Corridor Houses and thus chronologically differs from the other aspects of material culture included in this article: Maran 1998, 291-2; Rahmstorf 2006, 62.
20 Ben-Tor 1978.
21 Mazzoni 1992, 109, 197; 2013, 195.

refine the regional stylistic groupings of the corpus of vessels.[22] All this has made it clear that the decoration of storage vessels with cylindrical rollers was not only a very widespread, but also an extremely long-lived cultural practice in the Levant and parts of Mesopotamia, one that lasted from the late 4th millennium to the late 3rd millennium BC.[23] In the Aegean, however, vessels decorated in this way are only found in a narrow time frame within the 3rd millennium BC, in the centuries of the period of the Corridor Houses, exactly at the time when the phenomenon had its widest distribution in the Northern Levant,[24] and they have a clear regional focus in the Argolid and Corinthia.[25] Here, the storage vessels were manufactured by specialised workshops and/or itinerant potters, as is suggested by impressions of what is apparently the same roller on vessels found at different sites,[26] a phenomenon that is also known from Near Eastern examples.[27] Whereas in the Aegean the roller decoration was impressed into raised plastic bands, in the Near East it was impressed directly into the vessel's surface.[28] This difference has to be put into perspective, however, as the impression of rollers into plastic bands was not entirely unknown in the Near East,[29] and in the Northeastern Peloponnese[30] and on Samos[31] there are some rare examples of the direct impression of rollers into the vessel surface that closely correspond to the way such roller impressions were applied in the Near East. In addition, some of the plastic bands of the Early Helladic storage vessels into which the rollers were impressed were so low that they did not significantly stand out from the surface,[32] and thus the general appearance of the decoration closely resembles that of Near Eastern vessels. Apart from the general difference in the ways in which the impressions were applied, there are obvious similarities, especially between the geometric motifs impressed into Near Eastern and Northeastern Peloponnesian vessels.[33] Also analogous to the Near Eastern groups of roller-decorated storage vessels is the combination of such geometric motifs with depictions of animals that are occasionally present in the Northeastern Peloponnese,[34] while an amphora[35] from the Early Bronze Age settlement below the Heraion on Samos has multiple impressions of a possibly imported Near Eastern roller depicting a row of quadrupeds.[36]

Outside the Near and Middle East, where roller-impressed storage vessels were used as far inland as Mesopotamia,[37] this kind of decoration was a 'coastal' phenomenon that, as Mellink observed,[38] can be found between the coast of the Levant in the east and the one of the Argolid in the west.[39] In contrast, no traces of such Early Bronze Age roller-decorated storage vessels have been found in the entire area of Central Anatolia or the interior of West Anatolia.[40] Thus, in light of the currently available evidence, it seems that the aforementioned hypothesis that Troy played a special role in spreading the phenomenon to the Northeastern Peloponnese requires some revision. Firstly, evidence of roller-decorated storage vessels is extremely rare in the case of Troy and the Eastern Aegean-Western Anatolian zone in general,[41] especially when compared to the Argolid and Corinthia, where such vessels occur with a frequency that is reminiscent of their distribution in the Levant.[42]

22 Mazzoni 1992, 11-175; 2013, 193-9.
23 Mazzoni 2013, 193; Tumolo 2022, 62-79.
24 Tumolo 2022, 66-67.
25 Müller 1938, 41-6; Wiencke 1970; Weißhaar 1989; Kostoula 2004; Alram-Stern 2004, 448-9; Lindblom et al. 2018; Beeler 2018, 164-6.
26 Wiencke 1970, 103; 2000, 578-9; Weißhaar 1989, 322; Kostoula 2000, 137; Krzyszkowska 2005, 55; Pullen 2011, 190; Lindblom et al. 2018, 91. Some of the rollers were made of clay (Lindblom et al. 2018, 81-7), while others probably consisted of wood: Weißhaar 1989, 316; Alram-Stern 2004, 448.
27 Mazzoni 2013, 195; 2017, 200; Rahmstorf 2006, 67; 2022, 589-90. Concerning possible itinerant potters producing such storage vessels with roller impressions in the Southern Levant, see Flender 2000, 304.
28 Ben-Tor 1978, 96; Krzyszkowska 2005, 55; Rahmstorf 2006, 66; 2022, 589; Mazzoni 2017, 200.
29 Mazzoni 2013, 196 fig. 2.
30 Weißhaar 1989, 316-7, fig. 2.a-b.
31 Isler 1973, 175; 2021, 29-30; pl. 18.F3352; Beilage 14.5,8-9.
32 Wiencke 1970, pl. 23.240; Müller 1938, pl. XVI.1.3-4.9; Lindblom et al. 2018, 90-1, fig. 9.
33 Prausnitz 1958, 34; Ben-Tor 1978, 96-9; Mazzoni 2017, 188-93; Aruz 2008, 22; Rahmstorf 2006, 66; 2022, 588-9.
34 Müller 1938, 44, pl. XIX.2; Weißhaar 1989, 320-1, fig. 11.a-b; Rahmstorf 2006, 66.
35 Isler 2021, 29-30; Beilage 14.8-9.
36 Aruz 2008, 53-5; Mazzoni 2017, 200.
37 Mazzoni 1992, 78.
38 Mellink 1953, 60.
39 Tumolo 2022, 65.
40 Genz 2003, 57; Rahmstorf 2006, 64-6; 2022, 588.
41 Mazzoni 2017, 194.
42 Mazzoni 2013, 200.

Secondly, it is striking that there are no roller-decorated storage vessels from the sites of the Lefkandi 1 horizon and Kastri group in either East Central Greece or the Cyclades, whose fine tableware reflects particularly strong connections with the East Aegean. Conversely, the sites in the Northeastern Peloponnese that have yielded a large number of roller-decorated storage vessels lack any tableware of East Aegean-West Anatolian origin. All this supports the conclusion that the practice of roller-decorating storage vessels was not transferred via sites in the East Aegean or West Anatolia, but must instead have reached Southern Greece by far more direct sea routes from the Levant.[43]

As for the possible motives for applying the roller decoration to storage vessels, an apparently common denominator in all the regions where this type of decoration occurs is the fact that only specific vessels were marked in this way.[44] This finding supports Stefania Mazzoni's assumption that we are dealing with a form of visual communication in which the impressed decoration conveyed cognitive content, which was recognised by those who were familiar with the underlying system.[45] Mazzoni argues that the "impressions were labels for the identification of products or activities connected with the use of the products contained in the jars".[46] Maggie Beeler points in a similar direction when she claims that the Early Helladic roller-decorated storage vessels were marked for use as feasting equipment.[47] Unlike the reversible impressions of seals on unfired clay, those of relief-decorated rollers were applied before the storage vessels were fired and were thus permanently set into the vessel's surface. Although this system cannot have been used to check the integrity of the contents of particular vessels, roller impressions may have been used to label those that held contents intended for specific purposes, and thus to distinguish and separate them from other vessels.[48]

Sealing practices

One of the most striking innovations of the period of the Corridor Houses is the administrative use of seals, the spreading of which to the Greek mainland, via West Anatolia and the East Aegean, has always been taken for granted.[49] This is apparently supported by the appearance of individual clay sealings in the East Aegean and Western Anatolia by the early 3rd millennium BC, and thus several centuries earlier than on the Greek mainland.[50] However, the more we find out about specific sealing practices during the period of the Corridor Houses in Southern Greece, the less likely it seems that they originated from the East Aegean or West Anatolia. Significantly, in the almost seven decades since the discovery of the corpus of sealings in 'the House of the Tiles' at Lerna, two additional, extensive complexes of clay sealings have been uncovered in the Peloponnese at Petri and Geraki.[51] By contrast, nothing even remotely comparable in terms of quantity has come to light at Early Bronze Age sites of the East Aegean and West Anatolia. In fact, in the entire zone between the East Aegean and Central Anatolia, only a very small number of clay sealings from the entire 3rd millennium BC is known.[52] This is especially noteworthy, as much larger areas than those at the mentioned Peloponnesian sites have been excavated at many Early Bronze Age sites of urban character,[53] in both the East Aegean and in areas of Western and Central Anatolia. This includes recent excavations applying modern standards of the recovery of finds,[54] in which many destruction horizons were encountered that would have offered favourable conditions for the preservation of unfired clay objects such as sealings.[55] Seeking an explanation for the extreme rarity of Early Bronze Age sealings not only in the Eastern Aegean-Western Anatolian zone, but also in Central Anatolia, Michele Massa and Yusuf Tuna came to the conclusion that the administrative use of seals in

43 Maran 1998, 423.
44 Mazzoni 2017, 196, 202.
45 Mazzoni 2013, 198-200; 2017, 199-202.
46 Mazzoni 2013, 199; see also Mazzoni 1992, 194; Flender 2000, 302-4.
47 Beeler 2018, 420.
48 Mazzoni 2017, 202; Rahmstorf 2006, 67; 2022, 589-91.
49 Weingarten 1997, 147-8, 159; 2000, 116; Maran 1998, 421-3; Aruz 2008, 26, 225; Broodbank 2013, 335-6; Rahmstorf 2006, 62; 2022, 575.
50 Rahmstorf 2006, 62; 2022, 570; Massa & Tuna 2019, 66.
51 Kostoula 2000; 2004 and 2006; Weingarten et al. 1999; Weingarten et al. 2011.
52 Frangipane 2012, 115; 2018, 93-5; Massa & Tuna 2019, 65-9; Oğuzhanoğlu 2019, 48, 56-7; Rahmstorf 2022, 574-6.
53 Harrison 2016, 101-36; 2021; Naiboğlu 2019, 158-68; Fidan 2021, 131-42.
54 Massa & Tuna 2019, 70. For overviews of recent excavations in inland Western Anatolia, see Türkteki 2020; Fidan 2021; Bilgen 2021; Efe 2021; Harrison 2016, 160-541; 2021.
55 Stamps made of terracotta, stone and other materials that are often identified as 'seals' (see Beeler 2018, 37-110), are far too ambiguous in their range of possible functions to be a substitute for actual seals: Younger 1991, 36-7, 45-6; Maran 1998, 235-6; Frangipane 2012, 115-6; Rahmstorf 2022, 558.

these regions was somewhat low key and not meant to control storage vessels or the doors of storage rooms.[56] Instead, they claim such sealings were applied to certain products "to enhance their desirability through simple forms of branding".[57]

In the Peloponnese, clay sealings were used in a fundamentally different way. Sealing complexes, such as those known from Lerna, Petri, and Geraki, provide evidence of a quite intensive administrative use of seals and, due to their sheer number,[58] most closely resemble find complexes of sealings in Eastern Anatolia, the Northern Levant and Mesopotamia. In contrast, no comparable concentrations of clay sealings have ever come to light at the settlements of the Lefkandi 1 horizon of eastern Central Greece,[59] thus recalling the situation in the East Aegean and West Anatolia, to which these settlements were closely related. However, it is not just the number of sealings that differentiates the way in which seals were used in the period of the Corridor Houses in certain regions of Southern Greece from the situation in the Eastern Aegean and Western Anatolia, but also two practices: the sealing of doors and the storage of broken clay sealings in temporary archives both attested at Early Helladic sites in the Northeastern Peloponnese. It is these that reflect a direct connection with the Cilician-East Anatolian zone and the Northern Levant.

To my knowledge, the Argolid is the only area to the west of the zone of the Near East in which sealed door closures are encountered in 3rd millennium BC contexts,[60] whereas in Central and West Anatolia as well as the East Aegean they are unknown at this time.[61] In the Levant, the sealing of doors can be traced back to the 5th millennium BC,[62] while in Greece it is only attested in Lerna IIID and Asine.[63] As was recently demonstrated,[64] the sealings of Wiencke's Type A and B, which constitute about 40 % of those found in Room XI of the House of the Tiles,[65] may originally have all been used to secure doors. Type B sealings,[66] which were attached to wooden pegs inserted into door jambs or adjacent walls, in particular, have direct parallels in East Anatolia, Syria and Mesopotamia.[67] The Type A sealings from the same context,[68] on the other hand, were probably attached to wooden poles used for constructing doors[69] and may have been combined with sealings of Type B (Fig. 1.a-d),[70] while a newly defined 'door stopper sealing' reveals a local modification or addition to the Middle Eastern system of door locks.[71] The method of sealing a door bolt documented in Asine[72] (Fig. 2) likewise points to contact with the Cilician-Eastern Anatolian-Levantine zone, as the shape of the locking device resembles systems of door closure with a wooden lock recorded at Arslantepe.[73]

Room XI of the House of the Tiles is probably the only Early Bronze Age temporary sealing archive outside of Eastern Anatolia, Syria and Mesopotamia.[74] It was Wiencke[75] who in 1969 proposed that the room

56 Massa & Tuna 2019, 70-1; see also Massa & Palmisano 2018, 82; Frangipane 2012, 115-7.
57 Massa & Tuna 2019, 71; Rahmstorf 2022, 681.
58 Rahmstorf 2022, 579.
59 Maran 1998, 422.
60 Massa & Tuna 2019, 69.
61 Massa & Palmisano 2018, 82; Massa & Tuna 2019, 69.
62 Ferioli et al. 2007, 91; Massa & Tuna 2019, 69.
63 Heath 1958, 90-5; Maran & Kostoula 2014, 149-51.
64 Maran & Kostoula 2014, 144-52.
65 For the numbers see Beeler 2018, 120.
66 Heath 1958, 90-5; Krzyszkowska 2005, 48-9.
67 Fiandra 1968; 1975, 9-11, 17; 1994, 237; Ferioli et al 1979, 15-6; Ferioli & Fiandra 1989, 47; 1990, 212; Weingarten 1997, 149-56; 2000, 103-11; Ferioli et al. 2007, 64, 90-3.
68 Heath 1958, 86-90; Krzyszkowska 2005, 49.
69 Maran & Kostoula 2014, 144-51. As feedback for our paper, Dr. Martha H. Wiencke kindly sent the following comment, for which we are very grateful: "This is an excellent and thorough piece of work, and I hope it has wide circulation. You have meticulously shown how the Lerna sealing fragments of Types A and B from the House of the Tiles fill their original purpose, that of securing important doors, and then you have used the 'cultural-anthropological' approach to suggest, most cogently, the conclusions that can sensibly be deduced from the evidence" (pers. communication 7 June 2015)
70 Maran & Kostoula 2014, 149-51, fig. 17.7d. Regarding an identification of Type A sealings as parts of door closure systems, possibly combined with Type B sealings, see Foster 2000, 178.
71 Maran & Kostoula 2014, 149, fig. 17.6d.
72 Maran & Kostoula 2014, 151, fig. 17.8a-f.
73 Ferioli et al. 2007, 97-101, fig. II.27.
74 For the practice of temporarily storing sealings, see Ferioli & Fiandra 1989, 48; 1990, 226; Fiandra & Frangipane 2007, 17.
75 Wiencke 1969, 514; 2011, 351-2; 2000, 235, 302-3, but see Wiencke 1989, 505. For the discussion about the interpretation of Room XI of the House of the Tiles, see also Maran 1998, 234 with further literature; Krzyszkowska 2005, 50.

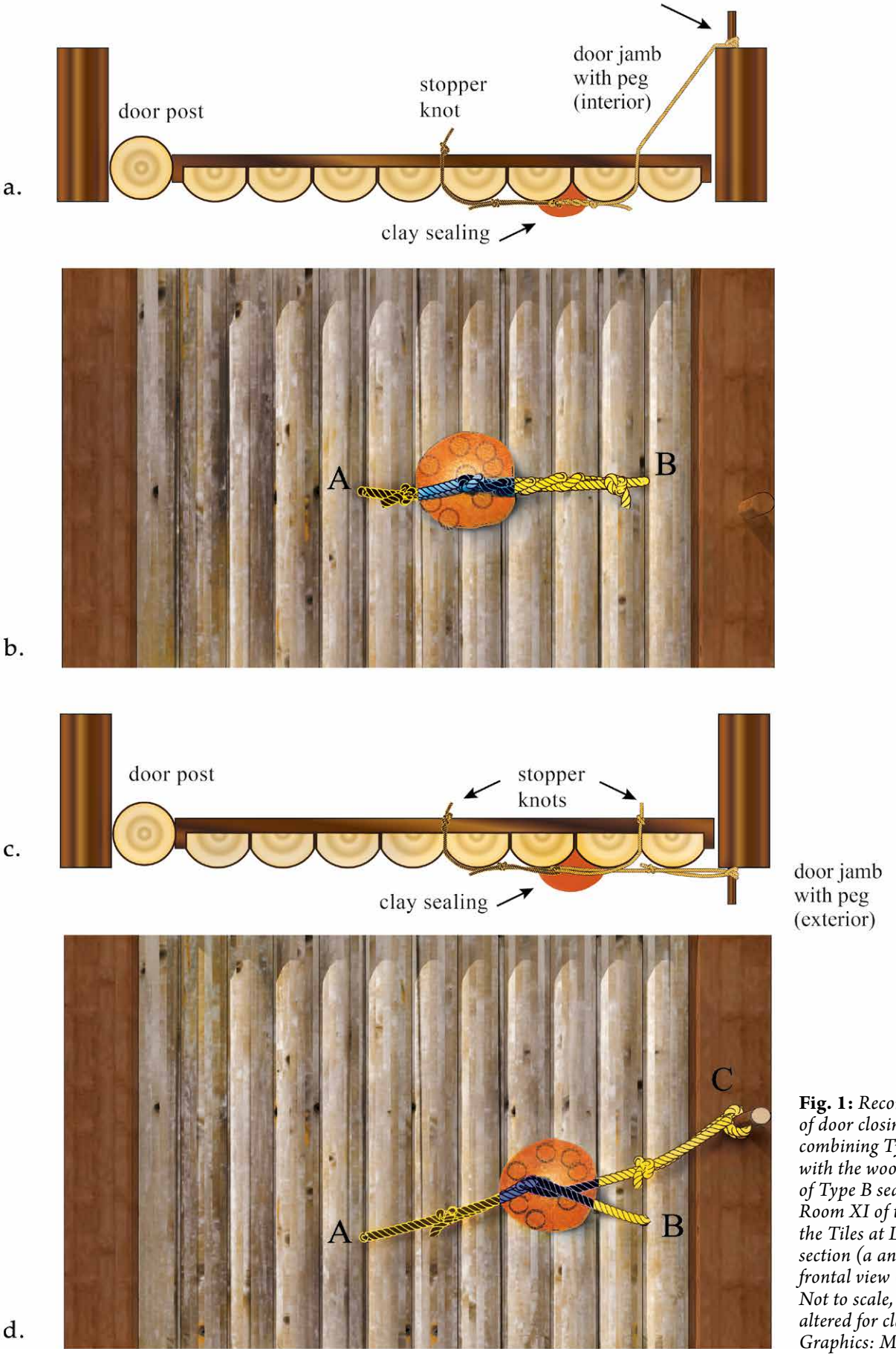

Fig. 1: *Reconstruction of door closing system combining Type A sealings with the wooden pegs of Type B sealings from Room XI of the House of the Tiles at Lerna (a-d); section (a and c) and frontal view (b and d). Not to scale, proportions altered for clarity. Graphics: M. Kostoula.*

Fig. 2: *Reconstruction of a door closing system with a wooden bolt, based on a sealing from Asine. No scale. After Maran & Kostoula 2014, Fig. 17.8. Graphics: M. Kostoula.*

had functioned as such an archive for sealings, which were stored on shelves,[76] an interpretation that was later strongly supported by Fiandra,[77] although disputed by other researchers.[78] In addition, the recent identification of Type A sealings from the House of the Tiles as a system of door closures has provided further support for Wiencke's interpretation of Room XI as a temporary sealing archive. It can now be assumed that the room was used to store door sealings in particular, the preservation of which was regarded as especially important for registration purposes.[79] Maria Kostoula and I did not claim that the clay sealings used in a door closure system were the ones that controlled the door to Room XI (*pace* Beeler[80]). Instead, we argued that these sealings had been attached to the doors of various rooms, especially those in the House of the Tiles,[81] which were ritually opened and closed by different people or groups on certain ceremonial occasions.[82] This would also account for the relatively large number of different impressions in these sealings. Storing such door sealings in a temporary 'archive' meant it was possible to check how often certain rooms were opened and by whom. The combination of sealings from Room XI brings to mind the consecutive stages of the application, removal, storage and disposal of clay sealings identified at Arslantepe in around 3000 BC. Discovered there in the carefully excavated layers of the stratified deposits of sealing dumps were numerous door sealings, which, after their removal, were kept for accounting activities, before being finally discarded.[83]

It is for this reason that it is now becoming clearer that the main elements of the Early Helladic use of seals, especially the sealing practices in Lerna at the time of the House of the Tiles, reached the Northeastern Peloponnese through a Levantine connection. The fact that in the 3rd millennium BC only stamp seals, and not cylinder seals, were used in Greece suggests that the Near Eastern impulses must have originated in regions such as Cilicia or East Anatolia, where a tradition of using stamp but not cylinder seals already existed in the Early Bronze Age.

Regarding the reasons for applying clay sealings, Olympia Peperaki recently criticised the use of the term 'administration' for the ways in which seals were used at sites dating to the period of the Corridor

76 Wiencke 2000, 234, 302.
77 Fiandra 1994, 238-43; this interpretation was accepted by Pullen 1994, 44-5, 47; 2011b, 189; Renard 1995, 294-5; Maran 1998, 234-5; Kostoula 2000, 145 with footnote 28; Maran & Kostoula 2014, 146, 151, 154; Massa & Tuna 2019, 69.
78 Weingarten 1997, 160; Peperaki 2016, 10; Beeler 2018, 133.
79 Maran & Kostoula 2014, 151-2.
80 Beeler 2018, 311.
81 Maran & Kostoula 2014, 146-7, 151-2.
82 That the doors of this building and its rooms may have only been opened on certain occasions was previously suggested by Peperaki 2004, 219; 2007, 81-3; Pullen 2011a, 224.
83 Frangipane & Fiandra 2007, 455, 467-468; Frangipane 2016, 24-8.

Houses.[84] In her opinion, the term "administration" "mainly concerns the 'management'…of animate and inanimate resources contained in the territories of prehistoric, complex, state-like societies. It is coterminous with hierarchical, stratified social formations".[85] She thus argues that the term is unsuitable for the social and political conditions in Early Helladic Greece. Concerning the function of Early Helladic sealings, both Peperaki and Beeler suggest a close connection between seal use and practices of collective consumption, in the context of which the imprints of seals were used to identify the individuals and groups that contributed to the feasts.[86] According to Peperaki, it was thanks to sealings that "the resources for the common meal became immediately and publicly referable to their contributors….that they were not necessarily used on the closure of vessels bespeaks a priority on labeling rather than on the 'security' of contents".[87]

Unlike Peperaki, I believe that it is fully justifiable to use the term 'administration' in relation to the sealing practices in Early Helladic Greece.[88] That the attachment of the clay sealings was not merely an act of labelling, but explicitly of controlling, is especially well demonstrated by the care with which the sealings were attached to the interface between a container and its cover, or in the case of door closures, to a wooden peg or pole, around which a cord was fastened and tied to another part of a cord attached to the door. Had labelling been the priority,[89] there would have been no need to combine sealings with cords or to attach sealings to the area of the container's cover – practices which only made sense if the intention was to ensure that any illicit opening of doors or containers would be noticed.[90] In this respect, this is indeed a "fairly complex system of…'administrative' control"[91] and a system which closely corresponds with the procedures followed by Near and Middle Eastern administrations in the region between Southeastern Anatolia and Mesopotamia, which have been most thoroughly analysed at the site of Arslantepe.[92] Having stated this, I nevertheless fully agree with Peperaki that the societies of the period of the Corridor Houses were not organised in a state-like way. Recent research has, however, shown that in the Near East, clay sealings were used to control the integrity of containers for three millennia prior to the emergence of the earliest states and by societies that were certainly neither highly stratified nor hierarchically organised.[93] Evidently, communities with very different political and social systems found the administrative practices of controlling storage useful, and such practices were by no means exclusively associated with state-like societies.

The crucial question is what may have been the motives that drove people to monitor the opening and closing of doors and containers? In relation to this, Peperaki and Beeler have added important new perspectives of interpretation, by proposing a relationship between the use of seals and collective consumption and linking the marking of containers with clay sealings to contributions to ceremonial feasts. The custom of archiving door sealings may reflect both the importance of the rooms in which foodstuffs marked for feasts were stored and the controlled ritual of opening and closing rooms, in which social groups gathered to feast together[94] in the interior and exterior spaces of the House of the Tiles.[95] The collective consumption associated with the use of seals not only established and strengthened the integration of such groups,[96] but also excluded those persons and groups that did not belong among the feasting participants.[97] In this respect, there is evidence that, by the end of the period of the Corridor Houses, different social groups in settlements like Lerna were

84 Peperaki 2007, 96-100, 106-11; 2016, 10-1.
85 Peperaki 2016, 10.
86 Peperaki 2007, 111-21; 2016, 15-17; Beeler 2018, 366, 368-81.
87 Peperaki 2016, 17.
88 See also Fiandra 1994, 243; Weingarten 1997, 149; 2000, 104; Maran 1998, 233-4; Maran & Kostoula 2014, 153-4; Rahmstorf 2022, 681-2.
89 Peperaki 2016, 13-5.
90 Ferioli & Fiandra 1989, 47-8; Maran & Kostoula 2014, 154; Beeler 2018, 380. For the emergence of this system of administrative control through sealings as early as the Late Neolithic in the Levant, see Duistermaat 2000, 15; Frangipane 2016, 10-3; 2018, 82-5.
91 Peperaki 2016, 16 footnote 98.
92 Frangipane et al. (eds.) 2007; Frangipane 2016, 17-30.
93 Duistermaat 2000, 15-24; Wiencke 2011, 352; Graeber & Wengrow 2021, 420-2.
94 Concerning the importance of communal feasting during the Early Helladic period, see Pullen 2011b, 190-3.
95 For potential communal spaces in and around the House of the Tiles, see Weiberg 2007, 44-57; Pullen 2011b, 190-2.
96 Beeler 2018, 368.
97 Beeler 2018, 368, 379.

competing for power and strategically using their control of resources to achieve certain goals.[98]

But how different was the use of seals in the Northeastern Peloponnese in the 3rd millennium BC from that in the Cilician-Eastern Anatolian-Northern Levantine zone? A close connection between the use of seals and commensality has in fact also been suggested for this zone. Marcella Frangipane, for example, has argued that the aim of the administrative use of seals was to manage the distribution of food for ceremonial contexts, such as rituals enhancing the prestige of elites.[99] In relation to this, Piera Ferioli and Enrica Fiandra associated the administrative use of seals with so-called "distribution storerooms," which, in contrast to "conservation storerooms", "were quickly and periodically refilled in order to allow a constant distribution of goods".[100] Again, this does not also mean that the political organisation of the community of Lerna at the time of the House of the Tiles, for example, was identical to that in contemporary societies of the Near East. However, the reason why sealings were used to control food intended for communal consumption in the rooms of that corridor house and the open spaces around it is unlikely to have differed greatly from that behind the use of seals in the Near East. Together with the use of seals, the different rights to open rooms and containers enabled groups to publicly display their contribution to communal celebrations.[101]

Movable objects of Levantine origin

The societies of the period of the Corridor Houses in the Northeastern Peloponnese, however, adopted and appropriated not only ideas and practices, but also movable objects that had originated in the Levant. Remarkable in this respect is the fragment of an *amphoriskos*, which Eliezer Oren identified as an Early Bronze (EB) IV import from the Southern Levant on the basis of its morphological features whilst on a visit to Tiryns in 1986.[102] Subsequent petrographic analysis of a sample of the vessel confirmed his identification. [103] The vessel fragment was discovered in 1978, redeposited in a Mycenaean layer in the eastern part of the Lower Citadel to the south of the Mycenaean Building X, which dates to Late Helladic IIIB2.[104] In this part of the Lower Citadel, remains of EH II and III buildings were found immediately beneath the layers of the Mycenaean Palatial period. At the time when Oren published the vessel fragment, EB IV was still dated to between 2200 and 2000 BC, which is why he assumed it was contemporary with the Early Helladic III period.[105] Due to the recent re-evaluation of Early Bronze chronology in the Southern Levant, the assessment of the absolute chronology of EB IV has changed:[106] today its start is dated to around 2500 BC, which means that the vessel may very well have reached Tiryns as early as during the period of Corridor Houses.

The identification of a vessel imported to Tiryns from the Southern Levant in the Early Helladic period ought to have had a great impact. However, as the essay was published in Hebrew, with only a brief summary in English, this important find was practically overlooked by the scholarship. The realization that Levantine objects reached the Early Helladic Northeastern Peloponnese also sheds new light on the impressions of a seal on sealings in Petri (Corinthia), which shows an image that is quite unusual for Early Helladic iconography: a quadruped, possibly a wild goat or an antelope,[107] with a suckling young animal that Maria Kostoula has likened to images from the Levant and Mesopotamia.[108] This seal may thus also have been an imported object, and unlike the Tiryns vessel fragment, did come not from the Southern Levant, but from the Northern Levant, Cilicia or East Anatolia, as there is no evidence of the administrative use of stamp seals in the 3rd millennium BC in the Southern Levant.

98 Pullen 2011b, 192 ("feasting arena"); Maran & Kostoula 2014, 153-4.
99 Frangipane 2012, 112-4.
100 Ferioli & Fiandra 1990, 223.
101 Beeler 2018, 368-75.
102 Oren 2003, 10-1, fig. 1.
103 Y. Goren in Oren 2003, 15, 282* (English summary).
104 The find context of the fragment is LXIV39/57, Id. See Riedl 2023, 141–9. I am grateful to Dr Martina Riedl for discussing the find context of the vessel fragment with me.
105 Oren 2003, 11-4, 282* (English summary); see also Maran 2007, 117.
106 Regev et al. 2012; Shai et al. 2014; Lev et al. 2020; Fall et al. 2021.
107 Kostoula 2000, 145.
108 Kostoula 2000, 146-7. See also Rahmstorf 2006, 66; Aruz 2008, 19.

The Rundbau of Tiryns

While in the decades following the uncovering of the House of the Tiles, further examples of Early Helladic corridor houses were identified in the regions of Southern and Central Greece, no structure even bearing a remote resemblance to the monumental *Rundbau* (circular building; Fig. 3.a) [109] of Tiryns has come to light in the Aegean in the 110 years since its discovery. Previous attempts to establish that the *Rundbau* is derived from rare examples of Early Helladic round buildings are unconvincing,[110] as the ground plans of the latter differ completely in terms of size and complexity from those of the *Rundbau*.[111] Unlike the corridor house, which in spite of the Near Eastern comparisons that have sometimes been cited,[112] may represent an indigenous development on the Greek mainland,[113] there is much to suggest that the inspiration behind the construction of the *Rundbau* came from outside the Aegean. In 1998, I pointed to a group of Early Dynastic, monumental, round buildings from Northern Mesopotamia as possible models for the *Rundbau*, as they resembled the Tiryns building in terms of size and ground plan.[114] Chronologically speaking, these Mesopotamian buildings date to the first half of the 3rd millennium BC, with most examples dating to Early Dynastic I, and some still being used in Early Dynastic II.[115]

Peter Marzolff confirmed the resemblance of the tower-like buildings in Northern Mesopotamia, with their internal subdivision with concentric walls, to the *Rundbau* of Tiryns.[116] He stated that the internal structure of the Early Dynastic buildings had much in common with that of the *Rundbau*, although the structure of the facade of the tower at Tiryns, with its bastion-like buttresses, has no parallels amongst the Early Dynastic buildings, even though in some such buildings (e.g. Tell Razuk, Fig. 3.b)[117] the facade has protruding buttresses that are not as closely placed as those of the *Rundbau*. Despite the similarities in size and ground plan, the geographical distance between the two regions and the chronological difference between the monuments led Marzolff to conclude that they had developed independently of each other, and that any resemblance between such buildings was due to similarities in the economic and political situation in the two regions.[118] I regard this claim as improbable due not only to the significant differences in the economic and political structures of the two regions, but also and above all, because the construction of the *Rundbau* seems neither to have originated from a local building tradition nor resulted in the establishment of any such tradition after it was built. The isolated character and uniqueness of the structure, along with the signs of contact between the two Argive harbours at Tiryns and Lerna with the Cilician-Eastern Anatolian-Levantine zone at the time, suggest that the idea of building such an unusual tower on the highest point of the rock of Tiryns was indeed inspired by Near Eastern building traditions. Admittedly, the chronological issue, namely that the Mesopotamian round buildings mostly date to the first half of the 3rd millennium BC and appear to have been abandoned before Early Dynastic III, that is before the Early Helladic Period of the Corridor Houses, cannot be currently resolved. In addition, all hitherto known examples of such buildings have been uncovered far from the Mediterranean coast, mostly in Northern Iraq. Nevertheless, if it is taken into account that many Early Bronze Age centres along the Levantine coast are covered by deposits from the Middle and Late Bronze Age as well as later periods and have thus been excavated in fairly small segments,[119] it is possible that coincidences in the archaeological finds are responsible for the current picture of the distribution and dating of monumental round buildings.

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109 Müller 1930, 80-8. For the history of research on the *Rundbau* and its possible function, see Maran 2016 with earlier literature.
110 Yiannouli 2009, 93-5.
111 Marzolff 2009, 190.
112 Margueron 1982, 581; Themelis 1984, 350; Wiencke 1989, 504 footnote 59 with further literature arguing for and against a Near Eastern origin for the Early Helladic corridor house.
113 Shaw 1987; 1990.
114 Maran 1998, 198-9, pls. 62-64.
115 Renette 2010; Heil 2011.
116 Marzolff 2009, 191-2.
117 Gibson (ed.) 1981; Gibson 1987; Marzolff 2009, 192.
118 Marzolff 2009, 192.
119 Regarding Tarsus, see Mellink 1993, 508.

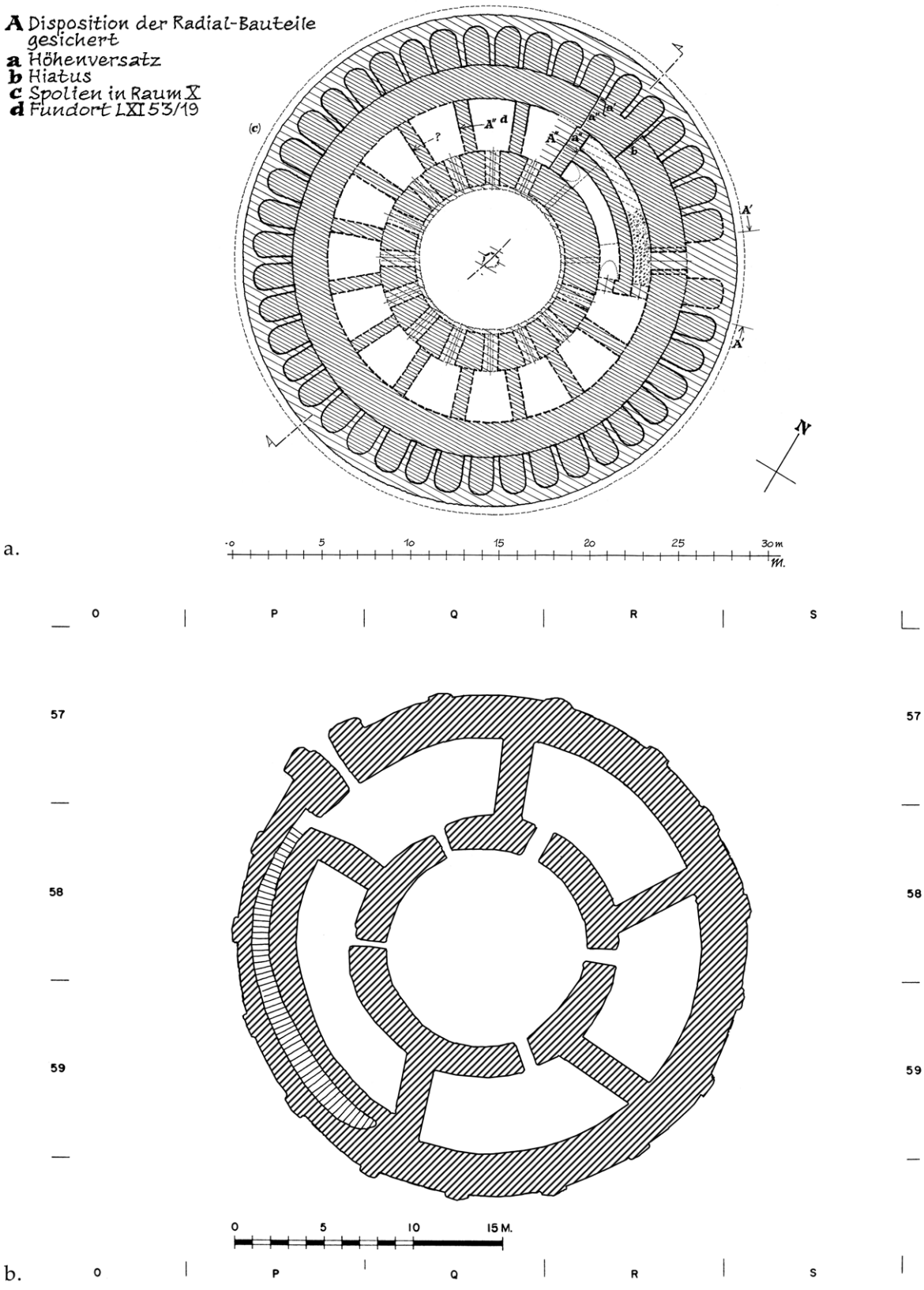

Fig. 3: *Round buildings of the 3rd millennium BC in the Argolid* **(a)** *and Northern Mesopotamia* **(b)**. *a. Tiryns; b. Tell Razuk. Scale c. 1:333. After Marzolff 2009, Fig. 4* **(a)** *and modified after Gibson 1987* **(b)** *by M. Kostoula.*

Implications of the Levantine connection

Above, I have argued that the Northeastern Peloponnese during the "Period of the Corridor Houses" witnessed a number of innovations with close comparisons in the Levant and the surrounding regions of Cilicia, Eastern Anatolia, and Mesopotamia, but of a form unknown or extremely rare at sites of the Eastern Aegean and Western Anatolia or of the Lefkandi 1-horizon in Eastern Central Greece. Transmission via Anatolian land routes to Western Anatolia, then onwards by ship to the Peloponnese is thus unlikely, and also does not appear to have been the result of a down-the-line exchange, but instead of a far more direct relationship. The range of innovations is impressive and includes cultural practices, such as marking storage vessels with relief-decorated rollers, controlling doors through the attachment of clay sealings and the temporary archiving of such sealings, as well as aspects of material culture, including seals, ceramic forms, decorated storage vessels and probably a certain type of monumental architecture. A common denominator of many of these innovations is their association with the context of social space management, the practices carried out within social spaces and the monumentalization of the built environment. Strikingly, the innovations not only fall within a relatively narrow chronological period, but are also geographically concentrated in the Northeastern Peloponnese, where they are particularly evident at the Argive centres of Tiryns and Lerna, both also port towns. Judith Weingarten's interpretation of Lerna as a trading post for long-distance contact with the Near East[120] may thus be correct, although it was not Western Anatolia, but the Levant with which trade relations were established. The results may also shed new light on the curious phenomenon that tableware of Eastern Aegean-Western Anatolian origin was not adopted at Argive EH II sites, very much in contrast to sites in the neighbouring Saronic Gulf area, such as Kolonna on Aegina.[121] As Vasif Şahoğlu previously realised, the fact "that no settlements in the Peloponnese had direct contacts with the Anatolian Trade Network suggests that this region might have had a different political alignment or structure than other regions in the Greek mainland".[122] The different alignment of the trade network connecting the Argolid with the Levant may have been responsible for this phenomenon.

The here postulated Levantine connection of particularly Argive sites in the "Period of the Corridor Houses" contradicts the idea that has dominated research in recent years, namely, that all trade contacts between the Near East and the Aegean from c. 2500 to 2200 BC ran exclusively via Anatolian land connections, and that direct contact, such as that between the Argolid and the Levant, was incompatible with the technical possibilities of these centuries since sailing ships began appearing in the Aegean only at the very end of the 3rd millennium BC. It is a fact that plank-built sailing ships, used to transport cedar wood and other goods from Lebanon to Egypt, were already operating between Egypt and the Levant from the 4th dynasty of the Old Kingdom at latest.[123] It is thus very likely that the knowledge required to construct sailing ships also existed in the Levant during the Early Bronze Age,[124] which is why Broodbank rightly asked: "did a few 'Byblos ships' (in any sense) probe tentatively further on, towards the Aegean?"[125] Based on the evidence presented here, the answer to this question is probably yes. But if this is the case, why are only long-boats with paddles and no sailing ships depicted in the Aegean during Early Bronze Age II? It seems to me that the research on the available maritime vessels may have far too closely linked Early Bronze Age Aegean images to historical changes in boat building.[126] The problems associated with such an approach are demonstrated by Michael Wedde's observation that the earliest depictions of sailing ships from the Prepalatial phase on Crete show them as already fully developed, which led him to conclude "that Aegean seafarers had perfected their sails before pictorial evidence becomes available".[127] In 1998, I pointed out that the iconography may

120 Weingarten 1997, 159-61.
121 Şahoğlu 2005, 353-4. For a similar phenomenon, see the rejection or acceptance of tiled roofs by certain Early Helladic communities in eastern Central Greece and the Peloponnese: Jazwa 2024, 179-181.
122 Şahoğlu 2005, 354.
123 Marcus 2002, 407-8; Genz 2003, 58-61; Fabre 2004-2005, 114-5; Broodbank 2013, 287-301; Frank 2018, 352-4; Rahmstorf 2022, 644.
124 Frank 2018, 353-5.
125 Broodbank 2013, 304.
126 This was rightly criticised by Rahmstorf 2022, 642.
127 Wedde 2000, 90.

give us a distorted picture of ship development, as longboats with paddles may have been depicted because they were used for raids and other warlike purposes[128], which does not necessarily mean that larger merchant boats, with and without sails, did not also exist.[129] The need for a critical approach to the available imagery is evident from the example of wheeled vehicles. These were not depicted in the Aegean until the beginning of the Late Bronze Age, when light, prestigious two-wheeled chariots used in warfare appeared, whilst two-wheeled and four-wheeled carts, which had probably been used for transport for over 1,500 years by this point, were not deemed worthy of pictorial representation.[130]

Regarding the possible sea connection between the Levant and the Argolid, Carolin Frank has recently examined in detail the potential significance of 3rd millennium BC trade connections down the southern Anatolian coast, which Mellink and Ben-Tor had already proposed as being the most likely route for Near Eastern innovations to reach the Aegean.[131] Not only did Frank find no evidence of particularly harsh natural conditions along this sea route, but she was even able to come up with a series of convincing archaeological arguments for why it must have been used for trading purposes during the Early Bronze Age. Therefore, an alternative to the Anatolian Great Caravan Route is emerging in the maritime connection between the Levant and the Argolid, by means of which the innovations that have been discussed may have been transmitted between c. 2500 and 2200 BC.[132] Contacts were most likely initiated by Levantine societies, which were both interested in expanding their maritime contacts and had the seagoing vessels that were required to undertake long voyages. Regarding the possible motives for the interest of Levantine societies in contacts with Argive sites, I find it unlikely that the demand for Lavrion silver[133] played a major role, as Saronic Gulf sites, such as Kolonna on Aegina, would have been much better placed for this purpose than Lerna and Tiryns on the shores of the Gulf of Argos. However, these Argive harbour sites may have served an important purpose, as intermediaries in the transportation of goods, which ultimately originated from the Adriatic-Ionian sphere of interaction that had emerged since the early 3rd millennium BC.[134] Such goods may have been transported from the Ionian Sea through the Patraic Gulf and the Corinthian Gulf, and could have then been brought from harbours at the eastern end of the Corinthian Gulf via land routes to the Argolid. This was a trade pattern that much later on, from the shaft grave period, became characteristic of Mycenaean long-distance relations with the Central Mediterranean.[135]

If Levantine sailing ships actually reached the Argolid during the period of the Corridor Houses, exposure to these foreign sail-propelled seagoing vessels must have influenced local boat-building traditions and may have facilitated the sail's introduction in the Western Aegean.[136] In the Northeastern Peloponnese, innovations that had originated in the Levant were adopted by societies whose political structure differed from those in the Near East. The Northeastern Peloponnese societies adapted these innovations to suit their own needs and values,[137] and over time, transformed them through use. The centuries between c. 2500 and 2200 BC would thus have seen something of a prelude to the maritime contact networks of the Eastern Mediterranean, which during the Prepalatial phase on Crete led to the transmission of other Near Eastern innovations, such as the principles of the use of writing and the maintenance of a palatial system through complex administrative structures. As in the centuries before, these eastern models were altered considerably due to the processes by which the respective societies had appropriated them.[138]

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128 Broodbank 1989, 329-30, 335-6; 2013, 327-9.

129 Maran 1998, 437 with footnote 62; 2007, 7; see also Rahmstorf 2022, 642-4.

130 Maran 2020, 211-6.

131 Frank 2018.

132 Massa & Palmisano 2018, 79, 82

133 Weingarten 1997, 159 with footnote 19.

134 Maran 1998, 434-43.

135 Dickinson 1977, 54-7, 101-10; Rutter 2001, 142-6; Oikonomidis & Tsonos 2018.

136 Rahmstorf 2022, 644. After I submitted the manuscript for the present article, important additional evidence for the knowledge of the sail in the Aegean between ca. 2550 and 2200 BCE was published by Aleydis van de Moortel (2024).

137 Weingarten 1997, 148.

138 Ferrara 2015, 41-5; 2017, 16-7. If the interpretation presented here is correct, Aegean societies may have been exposed to Levantine systems of writing considerably earlier than was previously thought.

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Middle Bronze Age Decorated Antler Horse Bits Linking Denmark, Hungary and Early Mycenean Greece

by Kristian Kristiansen

This article sends a greeting from the north to Søren and connects two themes: his interest in the early Mycenean horizon and its origins,[1] and my own interest in understanding the nature of international connections between Greece, Central Europe and Scandinavia during this period.[2] My own starting point involves three decorated antler horse bits that are geographically widely separated, but clearly connected in terms of their style and dating: one from Denmark, another found as part of a set of horse antler bits in a pottery vessel at a Middle Bronze Age tell in Szazhalombatta, Hungary, and one recovered from an early Mycenean, Late Helladic I elite settlement context.[3]

In the following, I will speculate about what mechanisms resulted in such a widely spread distribution. Helle Vandkilde has documented a corridor of cultural, technological and probably social innovations, which during the 17-16th centuries BCE connected the Carpathians and South Scandinavia.[4] These are now also supported by the trade in copper.[5] However, there is a similar corridor, if not as well documented, connecting the Carpathians with the Balkans and Greece during the same period. It involved a trade in rapiers as well as silver, documented by Laura Dietrich.[6] Significantly, it also included equestrian/chariot-related horse equipment, as noted by Wolfgang David,[7] with a more recent update by Grigoriev, [8]whilst Katherine Kanne has also recorded evidence of riding.[9] Common to all three regions is the first occurrence of decorated horse bits of antler, which are associated with the expansion of the chariot horizon that unified large areas of western Eurasia during the early to mid-2nd millennium BCE.[10] In addition, the chariot horizon was also characterised by an elaborate style of wavy bands and spirals, suggesting an elite horizon with widespread connections that also extended to the Hittites and the Levant.[11] Finally, chariotry is depicted on grave *stelae* in the shaft grave horizon in Mycenae, as well as on pictorial slabs in the famous Kivik burial, but also in a more widespread way in rock art in South Scandinavia. But who belonged to this new warrior elite horizon and how did it spread – through conquest, or via specialist horse trainers and chariot builders? Or by a combination of these?

How did the antler horse bits and the chariot horizon expand?

In order to provide some possible answers, let us move from the known to the unknown. It is well documented from Late Bronze Age written sources in the Near East that horse trainers moved around and

1 Dietz 1992.
2 Kristiansen & Larsson 2005.
3 Vandkilde 2014, fig. 7; Earle & Kristiansen 2010: fig. 8.4; Maran & van de Moortel 2014, fig. 6.
4 Vandkilde 2014, fig. 5.
5 Ling et al. 2023.
6 Dietrich 2010.
7 David 2001.
8 Grigoriev 2021.
9 Kanne 2022.
10 Chechushkow & Epimakhov 2018; Kristiansen & Larsson 2005, fig. 79.
11 Kristiansen & Larsson 2005, fig. 77.

were attached to royal courts to teach their training skills, resulting in the surviving Kikkuli manual for the training of chariot horses, for example.[12] Dressage began with this, as it was necessary to control horses on the battlefield. Thus, while chariots and horses can be traded, they are worthless without specialists to train them. The charioteer also had to be trained, in order to manoeuvre the horses and chariot. In addition, craft specialists were required to produce the new, complicated sets of horse equipment, even if these could also be imported from specialist centres. Adopting chariotry, however, meant adopting a complex, new phenomenon, with its requirements for specialist training and maintenance of everything from horses, their training and nurturing, to the production and maintenance of chariots and horse equipment, as well as a new class of elite warriors.

We therefore must assume that the spread of the chariot horizon amongst Bronze Age chiefly elites was accompanied by groups of trainers of both horses and charioteers, that is unless military conquest was involved, which would have introduced the whole package by force. We know from the Near East that the two were often closely associated with one another, but could also be separate.

In the case of Europe, I propose a related pattern: we should see the chariot horizon as the materialisation of a new institution of aristocratic warriors, who could also use the demands of chariotry to establish a new powerful institution, which was accompanied by new requirements of economic support in the form of tribute. This is reflected in the Kivik burial with its elaborate pictorial slabs, including a depiction of a chariot race, and which can now be dated to the same period of the Middle Bronze Age based on new scans of back-curving ship sterns,[13] although this was originally proposed by Kristiansen and Larsson.[14] Later burials show the continued use of this outstanding monument.[15] Even if chariots were not used in organised chariot warfare as in the Middle East, their use by elites for racing and show required the same kind of specialist training and economic support. This would again have encouraged the controlling of larger territories with more producers to support the new elites. We should therefore expect larger political entities (chiefdoms) to emerge from this period onwards.

The tell settlements of the Balkans and Carpathians could, at least partially, be seen as a response to such a new, more powerful political organisation/economy.[16] In Denmark, this coincides with the introduction of new, elaborate metalwork and weapons, decorated with the same wavy bands and spirals that are present on the antler bits/cheek pieces. It is also characterised by the construction of new, three-aisled long houses, some of which are very large and include stables for cattle, and perhaps also horses.[17] The rise of Mycenean culture during the same period was undoubtedly also linked to the formation and establishment of such a new ruling warrior aristocracy.[18] The travelling specialists who accompanied the introduction of this new institution, whether through trade or conquest, were responsible for expanding the horse equipment and its highly elaborate decoration that was associated with this new institution. It explains why similarly decorated antler bits are found from Denmark to Greece during the formative years 1750-1500 BCE, and also explains why chariots are depicted in rock art in Scandinavia and on early Mycenaean grave *stelae* during the same period. Traders, warriors and horse trainers/crafts specialists were mobile, and as well as horses they also brought new knowledge of how to train them, and of how to produce the new chariots and their elaborate horse equipment, from strappings to decorated bridles. This has recently been confirmed by a major aDNA study of the origin and spread of the modern horse: DOM2, which can now be firmly linked to the chariot horizon and its expansion.[19] The application of this new institution was, however, ritualised in different ways according to local and regional traditions: in Central Europe and the Carpathians double horse burials were adopted from the Steppes, while in Scandinavia chariots were commemorated in rock art.[20]

12 Raulwing & Meyer 2004.
13 Bertilsson et al. 2017.
14 Kristiansen & Larsson 2005, 189-93.
15 Goldhahn 2009
16 See Earle & Kristiansen 2010, fig. 8.9; Kanne 2022 and Kienlin & Bussman 2022 for alternative narratives.
17 Kveiborg 2019.
18 Maran & van de Moortel 2014.
19 Librado et al. 2021.
20 Metzner-Nebelsick 2021, fig. 3.

Conclusion

The deposition of decorated antler horse bits must be considered the tip of the iceberg, depending on conditions of preservation and burial rituals, which differed between the regions in question. However, it is clear that the connections that brought such objects to Denmark, Central Europe and Greece were the result of large-scale, systematic trade relations or even conquests, which also brought a new social and political order to Europe, from South Scandinavia to Greece: the chariot package. It also included well-trained horses and even encompassed the Near East and Central Asia. It seems likely that there were differences between these regions in terms of the use of chariots,[21] but they were linked together by a new ideology of warrior aristocracies, which allowed warriors to travel and serve at chiefly courts across Europe, based on new ideas of leadership that were shared across extensive areas.[22]

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Following glass beads, razors and amber: Long-distance exchange of commodities and ideas during the Bronze Age, connecting the Mediterranean and Denmark

by Flemming Kaul

During the (Central European) Middle Bronze Age, networks of contacts were opened up, extending from the Mediterranean to South Scandinavia. The demand for metal (e.g. copper from the Alps) created long-distance exchange systems. A commodity demonstrating the most distant connections are the blue glass beads, which are present in rich Danish burials from c. 1400 BC. Chemical analyses have revealed that the glass was produced in Egypt and Mesopotamia. We can follow its routes via Mycenaean and Central European 'intermediate places'.

Along the trade routes, ideas were exchanged. We can follow the dissemination of the single-edged razor, around 1500-1400 BC, related to ideas of the well-shaven warrior from Egypt, via the Minoan-Mycenaean world to South Scandinavia. However, in between the Eastern Mediterranean and South Scandinavia, the specific single-edged razor of asymmetrical design never came into fashion. Here, the old double-edged razor remained the preferred type.

South-north exchange was not a one-way phenomenon, however. Early on in the research, the wealth of the Nordic Bronze Age was noted. The sources of amber along the coasts of the Baltic Sea and the North Sea coast of the Jutland Peninsula could explain the remarkable Bronze Age wealth in North Germany, Denmark and South Sweden. We can follow the Nordic/Baltic Middle Bronze Age amber along the European river systems, one of the routes through the Alps. Nordic amber is found in tombs at Mycenae and Tiryns. It has also even been found beyond the Mediterranean, in Syria, Mesopotamia and Egypt.

The glass beads

During recent decades, the methods associated with chemical analyses of ancient glass have improved dramatically, complemented by the increasing amount of material available for comparative studies. By recognising different chemical trace elements related to the vitreous material itself as well as the colourant, it is now possible to identify glass from Egypt and Mesopotamia, and to distinguish glass from these two principal production areas found in well-dated burials of the Danish Early Bronze Age (Central European Middle Bronze Age). It is also possible identify glass from the later glass production workshops in Northern Italy, on the Po Plain, such as Frattesina (after c. 1200 BC).[1] Only Mesopotamian and Egyptian glass has been identified amongst the Danish Bronze Age bead material. For morphological reasons, however, a glass bead from a richly furnished period III (1100-1300 BC) female grave at Ülsby, Schleswig-Holstein,[2] could be interpreted as a North Italian Frattesina bead.

The glass beads have been analysed using laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS). The technique requires no special preparation of the samples and is virtually non-destructive.[3] The chemical analyses were carried out at Institut de Recherche sur les Archéomatériaux, CNRS, the University of Orléans, France.

1 Walton et al. 2009; Shortland 2012; Walton et al. 2012; Gratuze 2013; Rehren & Freestone 2015.
2 Aner & Kersten 1978, no. 2440 C.
3 Gratuze 2013.

Fig. 1: *The Ølby Mound, at Køge, East Zealand, Denmark. After the excavation, it became a protected heritage site. Today, it still stands as a great monument with the mound reaching a height of around 4.5 m. Photo: F. Kaul.*

In the present research project, 52 glass beads from 39 Danish Middle Bronze Age burials have been analysed out of a total of 214 recorded beads.[4] Below, two female burials from Nordic Bronze Age period II, 1500-1300 BC, are discussed.

Egyptian glass found at Ølby, East Zealand, Denmark, c. 1400 BC

'The Ølby Woman' was excavated in 1880 by the National Museum. She had been placed as the primary burial in her oak coffin covered by the great mound, which was a labour-intensive undertaking (Fig. 1).[5]

The decayed oak coffin contained the remains of 'the Ølby woman'. Her maxilla and mandible were well preserved. The Ølby woman was equipped with a spiral-decorated belt plate, a neck collar, also decorated with spirals, and four tutuli, all of bronze. She was accompanied by a dagger made from the lower part of the blade of a sword. More than 125 bronze tubes in two rows below the belt plate are from a corded skirt, with the remains of the woollen cord still preserved inside some tubes (Fig. 2). Near her left arm were four beads: a bronze spiral bead, two amber beads and a blue glass bead (Fig. 3). The chemical analysis of the glass indicates that it is Egyptian cobalt glass.[6]

Investigations of the Ølby woman and her bronze objects have recently been undertaken.[7] Multi-strontium isotope analyses of three of her teeth, molars, yielded strontium isotope values that seem to indicate a local provenance. Thus, the Bronze Age Ølby woman did not move around like her famous 'cousins' from Egtved and Skrydstrup in Jutland. Investigations based on strontium isotope analysis of the female oak coffin burials from Egtved, East Jutland, and Skrydstrup, South Jutland, have revealed that throughout their childhoods they lived in areas far from where they were subsequently buried.[8]

Even though the Ølby woman did not move far away from her local surroundings, she was integrated into a long-distance exchange network. Lead isotope

4 Varberg et al. 2019; Clemmensen et al. 2020.
5 Boye 1896; Aner & Kersten 1973, no. 299; Randsborg & Christensen 2006; Reiter et al. 2019.
6 Varberg et al. 2015; Kaul et al. 2015; Varberg et al. 2019.
7 Reiter et al. 2019.
8 Frei & Mannering 2015; Frei et al. 2015; Frei et al. 2017.

Fig. 2: (left) *Excavation plan of the Ølby oak coffin grave, East Zealand, c. 1400 BC. The location of the glass bead is marked. Drawing: the excavation report archive, the National Museum of Denmark.*

Fig. 3: (below) *The blue glass bead from Ølby, East Zealand, c. 1400 BC. Diameter: 1.2 cm. Photo: A. Mikkelsen, the National Museum of Denmark.*

and chemical trace element analyses of the bronze objects indicate where the copper in the bronze came from. The copper of her sword/dagger came from the mining area of Mitterberg, Salzburg, in the Austrian Alps. Her belt plate is made of copper from the Trentino sources in the Italians Alps, in the Redibus Pass areas. Lastly, the copper of her neck collar originates from ores in the mountains of Slovakia.[9] Thus, the Ølby burial corresponds to the three main metal suppliers which have recently been identified by other archaeometrical projects as associated with objects found in Scandinavia at this time: Mitterberg, Austria, Trentino, Italy, and the mountains of Slovakia.[10]

Ølby and the beads of Egyptian glass

Whilst Sophus Müller (Director of the National Museum of Denmark after 1892) led the excavation of the Ølby mound in 1880, he probably pondered over the blue glass bead, and its connection to areas beyond the Mediterranean. In an article published two years after the excavation, in 1882, he discussed the potential origins of the Danish glass beads in the Near East, and seems to have been the first to specifically propose Egypt as a potential source.[11] Our recent chemical analyses have confirmed Müller's theory.

The bead from the oak coffin in the barrow at Ølby is not the only bead of Egyptian glass from

9 Reiter et al. 2019.
10 Ling et al. 2014; Ling et al. 2019; Bunnefeld 2016.
11 Müller 1882.

Denmark. A bead from a richly furnished female burial at Hesselager on the island of Funen, Denmark, shares the same Egyptian chemical fingerprint as the bead found at Ølby. It also is of a similar date. The Hesselager woman was equipped with a large spiral-decorated belt plate, two arm rings and a fibula, all of bronze. Around her neck she wore six beads: the bead of Egyptian cobalt glass and five amber beads.[12]

The Egyptian origin of the Ølby and Hesselager beads is confirmed by their colourant composition: in these beads, cobalt is combined with relatively high values for nickel, zinc and manganese. This combination has been shown to be typical of the cobalt colourant extracted from Egyptian deposits, such as those at the Kharga and Dakhla oases in the Western Desert, respectively 200 and 350 km west of the Nile. The same trace elements associated with the cobalt colourant have been observed in glass waste from 14th century BC glass workshops at Malkata and Amarna, Egypt, as well as in the glass ingots found in the Uluburun shipwreck on the southwestern coast of Turkey and in Mycenaean glass beads.[13] The Egyptian cobalt colourant can be followed from its source in the Western Desert, to workshops in Malkata and Amarna, further along the Mediterranean trading routes represented by the Uluburun shipwreck, then to Mycenae and finally to Ølby and Hesselager in Denmark.[14]

Recently, due to the work by a Polish research team, the geographical gap between Mycenae and the North has been narrowed, by a bead of Egyptian cobalt glass from a Middle Bronze Age burial at Kietrz, southwestern Poland, of the same composition as the Ølby and Hesselager beads.[15] The find spot is on the upper Oder River, not far from the Oder sources and the watershed for the Danube tributaries. Thus, the Kietrz Egyptian cobalt bead marks a point on the exchange routes, with the Oder River leading from here to the Baltic Sea. If the Bronze Age traveller sailed westwards from the mouth of Oder into the Baltic Sea, he or she could have come to the island of Zealand with the Ølby burial and the island of Funen with the Hesselager burial.

Mesopotamian glass – Søviggård, West Jutland, Denmark, c. 1400 BC

The glass of the remaining Danish beads can be identified as Mesopotamian. Amongst the beads of Mesopotamian glass, a rare polychrome bead should be noted, which was found in an inhumation grave covered by a burial mound, at Søviggård, West Jutland, c. 1400 BC (Fig. 4).[16] The Søviggård woman was buried with two amber beads, five amber buttons, a ribbed neck collar, a wheel-headed pin and tutulus, all made of bronze. Her dress ornaments indicate that she originated in the Lüneburg area, Lower Saxony,[17] although she was buried around 450 km to the north, within 'the Nordic Bronze Age cultural area'.

The rare glass bead thus reached Lüneburg via one of the transport routes, in this case probably following the Elbe River, which passes through the Lüneburg area. Then, as part of the ornaments of 'a Lüneburg woman', the bead was transported from the mouth of the Elbe northwards along the amber-rich west coast of Jutland, perhaps by boat. In the reverse direction, along the amber routes, such as those following

Fig. 4: *The polychrome eye bead from Søviggård, West Jutland, c. 1400 BC. Diameter: 1.2 cm. Photo: A. Mikkelsen, the National Museum of Denmark.*

12 Aner & Kersten 1977, no. 2014 A.
13 Shortland et al. 2006; Shortland et al. 2007; Jackson & Nicholson 2010: Smirniou & Rehren 2013.
14 Varberg et al. 2015; Kaul et al. 2015; Varberg et al. 2019.
15 Purowski et al. 2016; Purowski 2020.
16 Aner & Kersten 1986, no. 4170; Varberg et al. 2015.
17 Lomborg 1969; Bergerbrant 2007; Varberg et al. 2019.

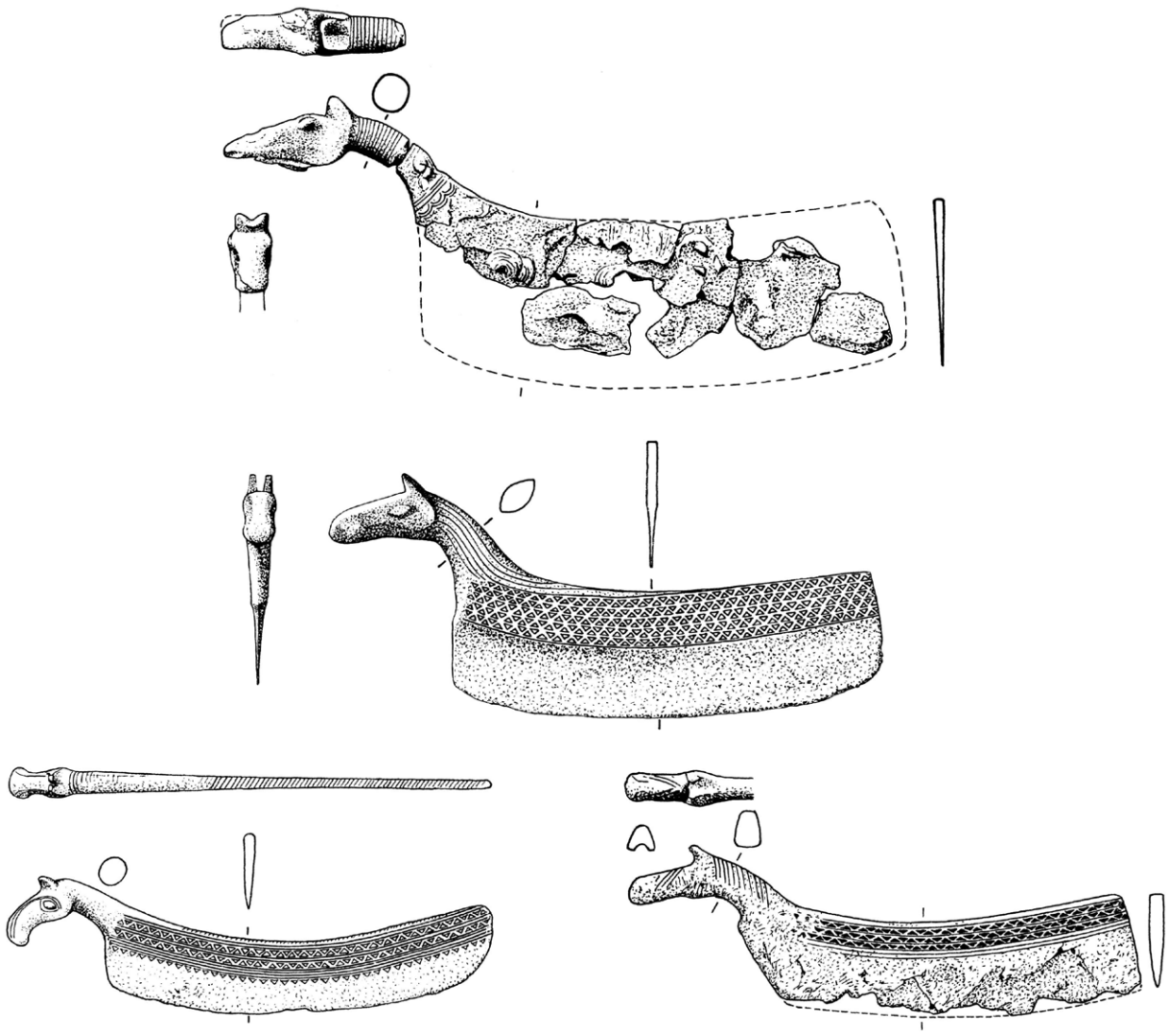

Fig. 5: *Razors with a horse head-shaped handles, Nordic Period II, c. 1400 BC. Ubby, Darup, Karlstrup and Petersdal, all Zealand, Denmark. Length: 9.0-10.8 cm. After Aner & Kersten 1973 & 1976.*

the Elbe and its tributaries, amber was transported deep into Central Europe. Middle Bronze Age finds of amber on the Elbe/Vltava in Bohemia, Czech Republic, provide evidence of this particular amber route. From the sources of Vltava/Moldau, over a low watershed, the Danube river system can be reached, providing further access to 'the South'.

Following the razor (following the horse)

One particular type, which is very characteristic of the Nordic Bronze Age culture, namely the single-edged razor with its handle in the shape of a horse's head, will now be followed and discussed. The creation of this razor type can be traced from its possible roots in the Eastern Mediterranean and beyond, to its Nordic finalization and spreading, through its physical alteration and transformation processes, as well as to some changes of meaning in terms of social and religious perception. However, the razor remained a razor throughout its quick spreading from south to north during the decades around 1450 BC.

The single-edged razor, from Egypt to North Norway via Crete

The introduction of the single-edged razor into South Scandinavia in the decades before 1400 BC was due to

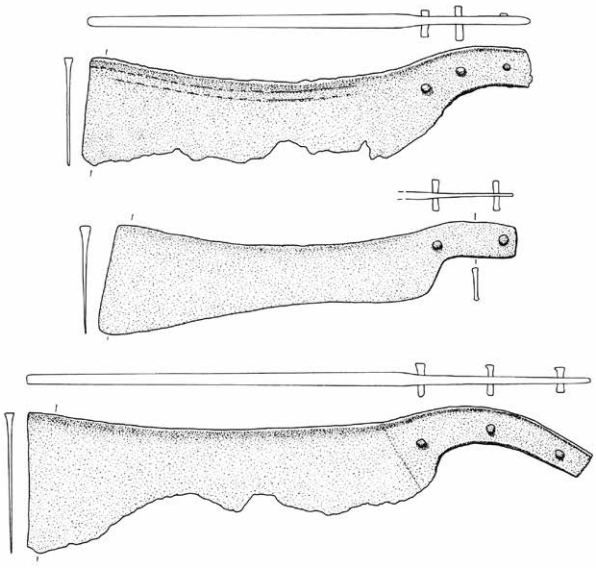

Fig. 6: *Razors, LH/LM III A, from Zapher Papoura and Epano Gypsades, Knossos, Crete, and Prosymna, Argolis, Greece. Length: 17.5-23.6 cm. Illustration: T. Bredsdorff, after Weber 1996.*

influences originating from the Eastern Mediterranean (Fig. 5).[18] Even though the razor as such represents a common European Bronze Age phenomenon, the shape of the Nordic razors differs markedly from almost all other Middle Bronze Age razors: the Nordic razors are single-edged and asymmetrical, whereas all other razors are double-edged and symmetrical.[19] There is one exception to this, which has the same design, from the Aegean/Minoan area. The Aegean one-edged razor appeared at the transition between LH/LM II and LH/LM III A. It continued without many changes until and including LH/LM III C. Before this the Aegean/Minoan razor was double-edged and symmetrical, and with a leaf-shaped blade.[20]

The evidence from the Dictean Cave on Crete

Whereas on the Nordic razors the handle with its horse's head is fully cast, the handle of the Aegean razors is flanged and has holes for rivets (Fig. 6). As

Fig. 7: *Votive razor with handle in the shape of a horse's head, from the Dictean Cave, Psychron, Crete, Greece. Length: 8.6 cm. Photo: F. Kaul (with permission from Heraklion Archaeological Museum).*

they are partially made of organic materials (wood, horn and ivory), it has not been possible to determine the entire shapes of the handles of the Minoan and Mycenaean single-edged razors. However, votive objects found in the Dictean Cave at Psychron, Crete, shed light on this. Some votive razors were cut out of thin bronze sheets. In these votive representations of Minoan razors, the full shape of the handle is present. In some cases, the handle is in the shape of an animal's head, and in one case forms a stylised horse's head.[21] Not only the overall design of the early single-edged razors, but also the horse head-shaped handles thus show striking similarities between the Aegean and Southern Scandinavia (Fig. 7).[22]

The Dictean Cave was regarded as one of the most holy places in the ancient Greek world, as recorded by a number of classical authors, some of whom apparently regarded the cave as the birth place of Zeus, whilst others believed that the infant Zeus was hidden and nurtured there in order to avoid him being swallowed by his father, Chronos (Fig. 8).[23] At the bottom of the cave is a pool containing stalagmites, and from the cave roof stalactites shape impressive 'curtains'. Most of the bronze votive objects, including knifes, razors, tweezers, pins and chisels, some of which, such as the razors, were totally unusable, as well as double axes, were found in crevices in between the stalagtites.[24] The main period of the bronze votive objects is MM III to LM III, but there are also later depositions.[25]

18 Kaul 2013a; 2015; 2018a.
19 Jockenhövel 1971; 1980.
20 Weber 1996.
21 Boardman 1961; Weber 1996.
22 Kaul 2013a; 2015.
23 Boardman 1961.
24 Hogarth 1900.
25 Boardman 1961; Weber 1996.

Fig. 8: *View from the Dictean Cave over the fertile Lasithi Plain, Central Crete, Greece. Photo: F. Kaul.*

Egyptian razors and the process of transformation into 'Greek' razors

The journey of the single-edged razor brings us to Egypt, where shaving traditions had deep roots dating back to at least the Early Dynastic Period.[26] To the ancient Egyptians, unkept beards and general hairiness reflected neglect of the body and uncleanliness. The face, neck, limbs, armpits, chest and pubic regions were regularly shaved. Generally, men were clean shaven, with facial stubble only permitted in special circumstances, such as at times of mourning. Professional barbers, called *chaku*, played an important role in Egyptian society. They were part of the permanent staff of the royal and noble households, of temples and apparently also the army.[27]

26 Petrie 1917.
27 Davies 1982.

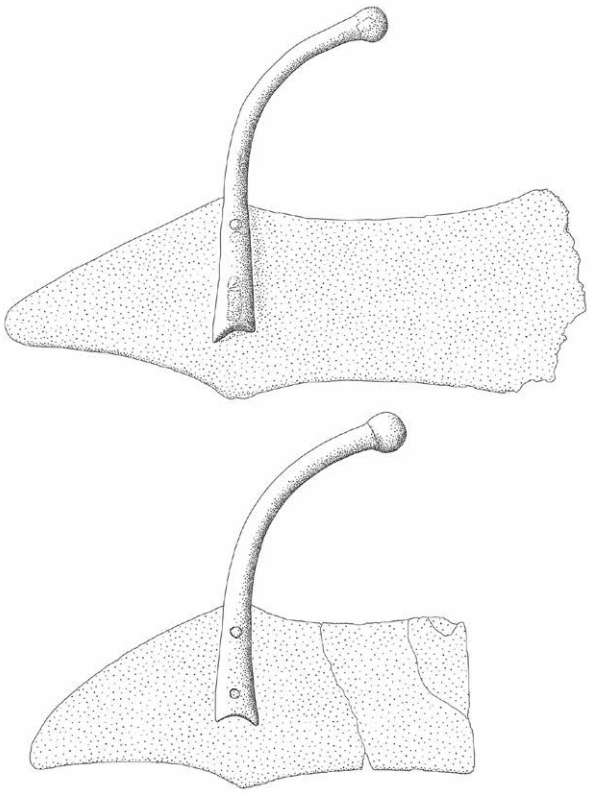

Fig. 9: *Egyptian razors, 'rotating razors'. Upper razor of unknown provenance, bottom razor supposedly Abydos. The bottom razor originally had a longer blade; the end of the primary cutting edge is now missing and a new edge has been added. The two razors would originally have been of approximately the same length. Both seem to have an extra cutting edge along the blade on the opposite side to the handle. The Petrie Museum of Egyptian Archaeology, London, and the National Museum of Denmark, Copenhagen. Length: upper razor: c. 16 cm. Illustration: T. Bredsdorff.*

It has been suggested that, given its outline, the Minoan/Mycenaean single-edged razor could have been derived from an 18th Dynasty type of razor.[28] It is tempting to compare the outline of the blade of the so-called rotating razor of Egypt with the blade of the Minoan/Mycenaean one-edged razor.[29] During the New Kingdom, the so-called rotating razor appeared.[30] A long, broad, bronze blade ends in a relatively narrow cutting edge. From the middle of the blade a handle fastened by rivets projects at a right angle (Fig. 9). By making a rotating movement, the short edge could be used in swift cutting motions, cutting upwards and downwards, or alternatively in a side ward direction. This is an excellent tool for the skilled barber – especially when considering that these alternate up and down cuts or slashes are most easily executed by a person other than the one being shaved. This may be a practical tool which is not necessarily closely associated with the person being shaved. In a few cases, these razors have another sharp cutting edge, apart from the one at the end of the blade, along the side of the blade (*the Petrie Museum of Egyptian Archaeology*, London inv. nos. UC 40550; 40545; and 40538). The extra edge does not alter the idea of this razor being intended for professional use, although it would have been easy for the person requiring shaving to use this edge, without involving a barber. This observation may be of interest when considering the possible transfer of a similar razor shape to Crete and Greece. Apart from a zigzag-type pattern on the handle and one short hieroglyphic inscription, these razors are undecorated.

Ignoring the peculiar handle projecting from the blade at a right angle, it is close to the shape of the Minoan/Mycenaean razor, especially when taking into account that some of the Egyptian razors in question had a supplementary cutting edge along the longer side.[31] Furthermore, the handle of the Minoan/Mycenaean razor was situated at the end, making it easier for a man to shave himself, instead of having a second person, a barber, undertake this task. In this process, the razor seems to have changed from a professional 'barbershop' item to a more personal object, often found in warrior's graves.

Another Egyptian type of razor should be discussed. Like the rotating razor, this razor has a narrow cutting edge at one end of the blade, but has a handle with plastic figural decoration at the opposite end. There is no handle projecting at a right angle in the middle of the blade. Because of its small size and delicacy, it has been suggested that it was a woman's razor.[32] It could also be argued that the decorated handle indicates that this was a personal item that was more intended for individual use.

A toiletry item dating to the 18th Dynasty (c. 1550-1292 BC) in some cases has a handle shaped like a horse in flying gallop, which apparently

28 Evans 1906; Weber 1996.
29 Kaul 2018b.
30 Petrie 1917; Davies 1982.
31 Kaul 2018b.
32 Davies 1982.

represents a royal horse because of the plumes on the head.[33] The horses which drew chariots are probably represented, and a military connection seems obvious, with these objects apparently belonging to members of the highest military ranks. Such horse representations did not have a religious meaning, as the horse was not associated with the religious sphere in Ancient Egypt. The horse (with a chariot) became a symbol of the military capacity of Egypt, a symbol of power. A small razor blade and a pin for curling hair (of a wig) were inserted into the horse-shaped holder. Thus, this piece of toiletry can be seen both as a practical item for bodily care, which would have been readily available before battle in the field, as well as a sign of military distinction.

In a creative process, at a time when there were close contacts between Egypt and Crete, just before 1450 BC, I would suggest that a hybridization of these razor types could have taken place. The Aegean-Minoan single-edged razor was created as an amalgamation of the shape and meaning of these three following different types: 1. the overall shape of the 'rotating razor', a practical barbershop item without decoration; 2. the small, narrow razor with iconographic decoration; and 3. the toiletry item/razor with horse decoration, with the horse decoration not related to the religious but instead the social military sphere, and probably a personal item of a high ranking officer.

The new razor type spread quickly, and it is not possible to detect any differences in the development on Crete, the Greek islands or mainland Greece. These razors were perhaps introduced at certain production centres, such as at Knossos. No Egyptian razors have been found in the Aegean area, and nor have any Aegean razors been recorded in Egypt.[34] Ideas can 'travel' without imported material being identified.

A few words regarding horses

It should not be ruled out that the horse and the horse's head could have attained a certain significance in the religious sphere of the Minoan/Mycenaean world. The horse was given an important place in later Greek mythology, for instance, with Poseidon taking the form of a horse and mating with a horse, in this case the goddess Demeter, who like Poseidon could take the form of a horse. Even though Poseidon is known from Linear B tablets, it is uncertain whether his mythological horse relationship started at the beginning of LM III. A few Linear B inscriptions may provide us with further information about the importance of the horse in the religious sphere. In a list of divinities from Knossos, we find *Atana Potinija* – Athena as *Potnia* – the Mistress. An inscription from Pylos relates a *Potnia* to horses, as the Mistress of the Horses. In Classical times Athena was clearly associated with horses. It is difficult to say whether these texts refer to different specific goddesses or different aspects of the same goddess,[35] or whether the gods with the same name had the same character as in later times. But it is worth considering whether the horse may have been of religious significance as early as the Bronze Age, with connections to the Great Goddess – the Mistress – and perhaps Athena.

In general, it is perhaps difficult to identify religious aspects in depictions of horses. Mycenaean vase paintings, for instance, include processional or hunting scenes involving horses. However, the imagery on a Late Minoic III *Larnax* from Episkopi, Hierapetra, eastern Crete, dating to the 13th century BC,[36] may show a horse with divine status, associated with solar images. Three men are standing in a curious boat-shaped chariot, which is being drawn by the horse from left to right. One of the men is carrying what seems to be a solar disc on a stand. On another panel of this *larnax*, a large human-like figure is standing behind another horse figure, carrying a similar 'sun disc' on a stand. This may be a depiction of a procession in the earthly world related to funeral rituals, although it should not be ruled out that the pictures may illustrate transcendental matters, with the dead being transported in a horse-drawn wagon to the afterworld,[37] and the solar and other symbols relating to the journey towards the eternal afterlife. On a few Late Minoan III *Larnakes* from Armenoi, Crete, exhibited in the archaeological museum of Rethymnion, horses are depicted in what I would consider to be a religious/mythological setting, together with solar symbols, spirals and other animals, such as a snake and a fish, which could be regarded as symbols associated with the eternal voyage of the sun.[38]

33 Petrie 1917; Davies 1982; Freed 1982.
34 Weber 1996.
35 Schofield 2007; Lupack 2012.
36 Davaras 1976; Dietrich 1997.
37 Mellink 1991.
38 Fovakis et al. 2021.

Even though these *Larnakes* should probably be dated to 1300-1200 BC, they seem to constitute evidence of a growing interest in the horse as a divine animal, and this can perhaps be traced back to the beginning of LM III or earlier. The structured two paired horse burials at the Dendra tumuli, Peloponnese, dated to LH IIIA-B, reflect a ritual/religious use and understanding of the horse during this period.[39]

Turning away from the Bronze Age for a moment, the iconography of Geometric Period pottery should briefly be touched upon. The horse is undoubtedly the most commonly depicted animal in the art of the Early and Middle Geometric periods. It is even present on Attic proto-geometric pottery. In early geometric pottery from Athens, dating to the 10-9th century BC, a few examples of horses, associated with a swastika, should be mentioned.[40] However, it is not until the beginning (c. 760 BC) of the Late Geometric Period that we encounter the full 'explosion' of iconography on the splendidly decorated pottery.[41] On this, the horse is a dominant figure, which is closely associated with solar images and solar symbols, such as the swastika.

Another category of Geometric Period horses is the bronze horse. These objects are deposited in large numbers as votive offerings at sanctuaries, such as Olympia. As figurines, they are depicted as individual animals, often attached to some sort of a stand, or fixed to the ring handles of tripod cauldrons. These horse figures probably appear as early as around 900 BC.[42]

The horse of the Geometric Period was regarded as a symbol of wealth and power, a token of high social and political status, and chariot racing was a sport that was associated with the aristocracy.[43] Its ritual and religious roots are worth noting, however, with horse-drawn chariots, for example, depicted in a funeral procession on a Geometric krater from the Dipylon cemetery, Athens, c. 750 BC.[44] We should still bear in mind the many divine associations of the horse from later periods, not forgetting the god of the sun Helios driving his 'Chariot of the Sun', pulled by four white horses, across the heavens.

The Nordic razor

It is possible that when the Mycenaean/Minoan single-edged razor was created from Egyptian prototypes in a process of amalgamation, the meaning of the horse figure of the handle changed, from being solely associated with the secular/military sphere, to also becoming connected to the religious sphere, with the horse having some divine connotations in Late Minoan-Mycenaean Greece. When the next spatial leap of the single-edged razor occurred – this time a gigantic leap – the religious character of depictions of horses was further emphasised.

The single-edged, horse-headed razor was introduced to South Scandinavia in the decades before 1400 BC, therefore shortly after the appearance of this type in the Eastern Mediterranean.[45]

Even though the basic shape remained the same, there were some changes when the ideas of the one-edged razor were somehow passed on from the South to the North, with these probably conveyed via certain places *en route*. The Nordic razor became smaller. The handle of the Aegean razor was flanged, with holes for rivets securing the 'full handle' made of organic material, such as wood, bone or ivory.[46] The handle of the Nordic razor was cast together with the blade. The horse heads of the handles are finely executed, constituting small works of art and craftmanship. A few of the early Nordic razors have a spiral-decorated handle, a feature which also characterises the votive razors of the Dictean Cave.

When the single-edged razor was introduced in the North, it quickly spread and was accepted across large parts of northernmost Germany and southern Scandinavia as a sort of fashion or ideal. The horse head indicates that the razor should be regarded as one of the most important bearers of iconography, with the horse referring to the sun horse, as demonstrated by the Sun Chariot from Trundholm Bog, Zealand, Denmark. The latter shows the horse as the divine sun horse, which ensures the transportation of the sun over the heavens in daytime and through the underworld at night.[47] The religious message of the

39 Dietz 1991; Pappi & Isaakidou 2015.
40 Carter 1972, 28-9.
41 Carter 1972; Griffiths Pedley 1993.
42 Carter 1972; Griffiths Pedley 1993.
43 McK. Camp II 1998.
44 Griffiths Pedley 1993.
45 For considerations regarding absolute chronology, see Kaul 2013a; 2015; 2018b.
46 Weber 1996.
47 Kaul 1998; 2004.

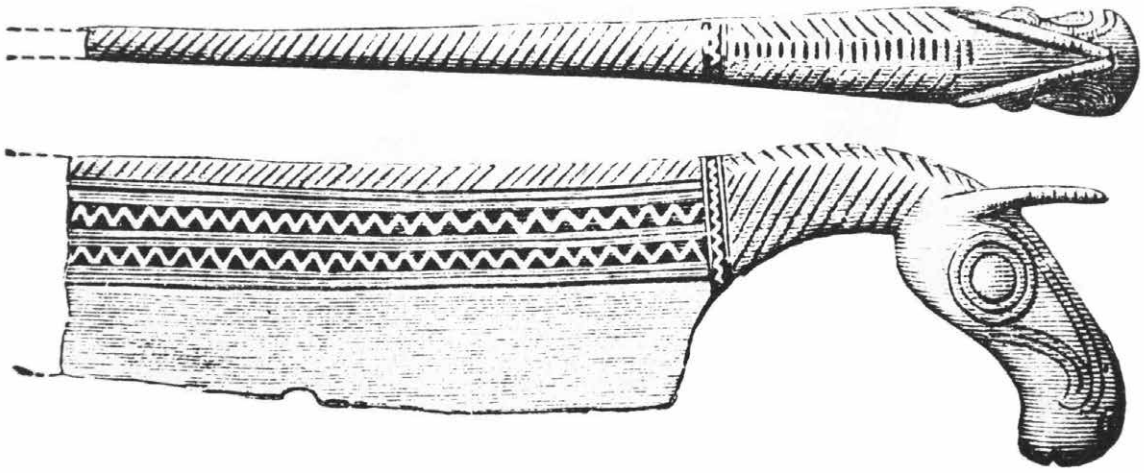

Fig. 10: *Razor, Nordic Period II, c. 1400 BC, Valsta, Närke, Sweden. Preserved length: 4.5 cm. After Montelius 1917.*

Fig. 11: *The northernmost find of all razors with a horse head-shaped handle, Nordic Period III, 1300-1100 BC, Skjeggesnes, Helgeland, Nordland, Norway. Length: c. 8 cm. Photo: P. E. Fredriksen, NTNU University Museum, Trondheim.*

razors became even clearer when complex miniature iconography on their surfaces became common during the Nordic Late Bronze Age.[48]

In a burial cairn at Valsta, Närke, in Stockholm, Central Sweden, a typical example of a Nordic period II razor has been found (Fig. 10).[49] Together with a razor from a burial cairn at Todness in North Trøndelag, Norway,[50] it demonstrates the quick spreading of the razor before 1300 BC, with it even reaching the northern border zone of Nordic Bronze Age culture.

The northernmost of all razors with a handle in the shape of a horse's head, although from Nordic Bronze Age Per. III (1300-1100 BC), was found in a stone cist in a cairn, at the farm of Skjeggesnes, Nordland, Norway (Fig. 11).[51] The cairn is part of

48 Kaul 1998; 2004; 2018b; Stig Sørensen & Appleby 2018.
49 Montelius 1917, no. 927.
50 Rygh 1906; Kaul 2013b; 2013c; Kaul & Rønne 2013.
51 Binns 1985; Rønne 2011; Kaul 2013b; 2013c; Kaul & Rønne 2013.

Fig. 12: *Skjeggesnes, Helgeland, Nordland, Norway. View of the landscape seen from the cairn cemetery where the northernmost razor was found. Photo: F. Kaul, June 2007.*

a large cemetery of cairns. Due to the mild climate resulting from the Gulf Stream, here less than 100 km south of the Arctic Circle, the fields are well suited for growing barley (Fig. 12).

The introduction of the razor, reflecting the idea of the shaven warrior, should not be regarded as an isolated phenomenon, but as part of a broader picture of south-north social interaction. It can be considered a component of an 'aristocratic package', reflecting a new chiefly elite culture.[52] At the same time, elements such as the folding stool, bronze drinking vessels and the horse-drawn chariot, all associated with the highest echelons of society, were introduced or chosen in the North.[53]

Thus, the spread and distribution of the single-edged razor takes us from Egypt, via the Mycenean-Minoan world to Scandinavia, during a relatively short period, around 1400 BC (Fig. 13). Many questions arise about the transfer and exchange of ideas associated with specific types of objects of high status, if we do not reject the observations as mere coincidences.

Following the amber

Early on in the research into the period, the metal wealth of the Nordic Bronze Age was noted. The sources of amber along the coasts of the Baltic Sea, including Scania in South Sweden, some of the Danish islands and the North Sea coast of the Jutland Peninsula, could explain this remarkable wealth. In 1882, the leading Danish archeologist J.J.A. Worsaae emphasised the importance of the amber trade as constituting part of the explanation of the metal-rich Nordic Bronze Age.[54] Today, a significant proportion of Bronze Age and Early Iron Age amber found in Mediterranean, including North Italy, which has been chemically identified, belongs to the succinite category.[55] This type of amber is generally called 'Baltic amber', but 'Nordic amber' is perhaps more appropriate.

The Swedish archaeologist O. Montelius noted the importance of the amber trade, and suggested a number of amber routes following the rivers of Europe, such as the Elbe, with its mouth at the bottom of the Jutland Peninsula. One branch follows the Saale, and another passes through Moldova over a watershed

52 Kristiansen & Larsson 2005.
53 Kaul 2013a; 2018a.
54 Worsaae 1882.
55 Angelini, et al. 2003; Bellintani 2010; 2014.

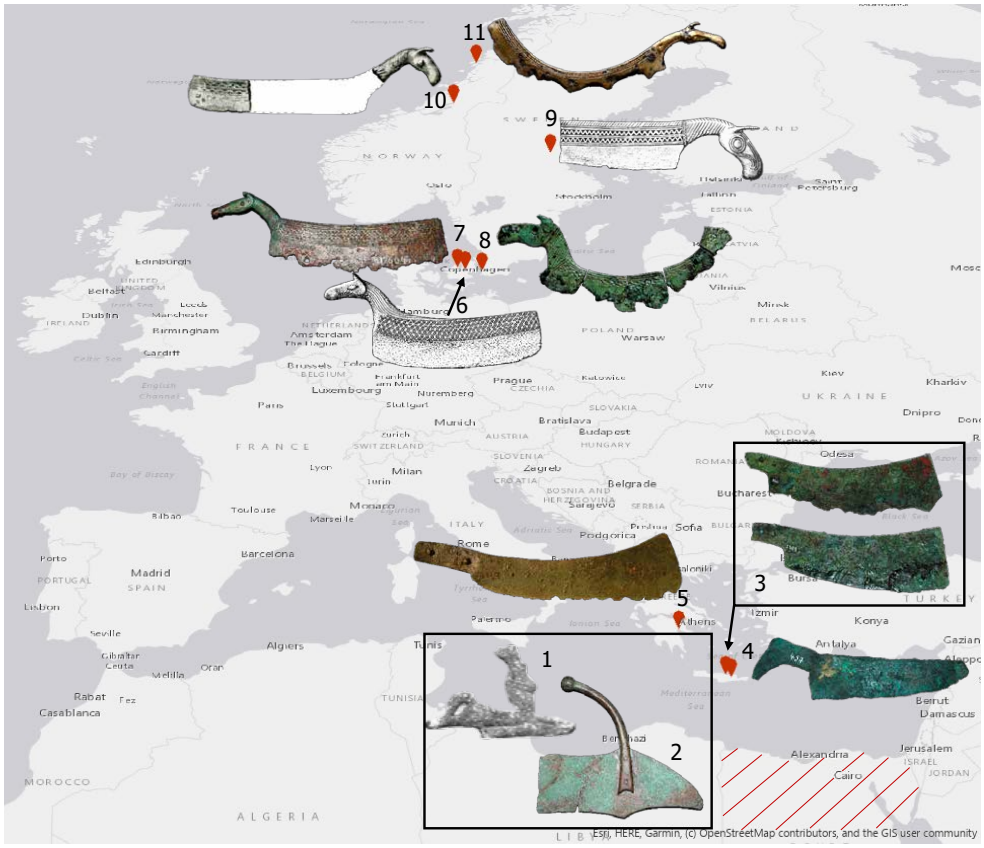

Fig. 13: *Map showing examples of the Bronze Age razors. Arrangement by S. Scott Reiter. 1. Toiletry items including razor, the handle in the shape of a horse, Egypt. After Petrie 1917. 2. Rotating razor, Egypt. Photo: F. Kaul. 3. Single-edged razors, Zapher Papoura at Knossos, Crete, Greece. Photo: F. Kaul. 4. Votive single-edged razor with horse head-shaped handle. Dictean Cave, Crete, Greece. Photo: F. Kaul. 5. Single-edged razor, burial at Nafplion/Tiryns, Greece. Scandinavian single-edged razors: 6. Darup, Zealand, Denmark. After Aner & Kersten 1973. 7. Kastrup, Zealand, Denmark. Photo: A. Mikkelsen, the National Museum of Denmark. 8. Skivarp, Scania, South Sweden. Photo: F. Kaul. 9. Valsta, Närke, Central Sweden. After Montelius 1917. 10. Todness at Steinkjer, North Trøndelag, Norway. After Rygh 1906. 11. Skjeggesnes, Nordland, North Norway. Photo: P.E. Frederiksen, NTNU University Museum, Trondheim.*

to the Danube via its tributaries.[56] When following the Danube in a westerly direction, one of the Alp roads is reached via the Inn valley, arriving in Italy by the Brenner Pass or other passes close by.[57] After having passed the great passes, the road continues along the Adige River and/or Lago di Garda, reaching the Adriatic Sea by Po/Adige. From the upper Adriatic, the sea route led to Mycenaean Greece with its significant finds of amber. From the Baltic Sea, the Oder River provides access to Central Europe, with a road even further east connecting the Vistula to the Dnepr, and leading to the Black Sea.[58]

In the Eastern Mediterranean, sites such as Mycenae and Tiryns have yielded both blue glass and Nordic/Baltic amber.[59] Nordic/Baltic amber and ingots of Egyptian cobalt glass constituted part of the cargo of the ship which was wrecked c. 1300 BC at Uluburun, near Kas on the Turkish coast. This merchant ship may have been heading for a harbour close to Mycenae when it sunk.

Nordic/Baltic amber has even been found beyond the Mediterranean. In a royal tomb at Qatna, near Homs, Syria, c. 1340 BC, a carved lion's head cup was found together with amber beads.[60] Two beads of

56 Montelius 1906.
57 Catacchio 2011.
58 Catacchio 2011; Czebreszuk 2013.
59 Harding & Hughes-Brock 1974; Walton et al. 2009; Shortland 2012; Czebreszuk 2013.
60 Mukherjee et al. 2008; Pfälzner & Rossberger 2009.

Nordic/Baltic amber found in a foundation deposit under the large ziggurat at Assur, Iraq, dating to c. 1800-1750 BC, represent the most distant evidence of this material.[61]

It has been suggested that a number of beads and scarabs found in Egypt may be of Baltic/Nordic amber, although no chemical analyses have been undertaken on these.[62] The possible items of Nordic amber include beads and scarabs from the tomb of Tutankhamen (died in 1327 BC). Other examples of amber in Egypt can be mentioned, such as an amber bead found on the floor of a possible representative building in Pi-Ramesse in the Nile delta, which was in use during the reign of Rameses II (1279-1213 BC),[63] and an amber scarab forming part of a complex pectoral, from the burial of the scribe Hatiay at Luxor, 1350-1333 BC.[64]

It is very interesting to note just how far this precious commodity of the North was transported. The contexts themselves emphasise the importance of amber, which has been found in a sacred deposit related to a great religious monument and in royal tombs. Apart from its importance as an 'exotic' and rare expression of wealth, the amber's magical and mythological properties enhanced its value. The mythological connotations of amber are well known from later Greek and Roman literary sources, in which it is closely associated with the sun, with the amber almost constituting a mystical manifestation of it, as the sun's tears and rays.[65]

Conclusion

Amber from the North, as well as glass from the South, provide firm physical evidence of very extensive connections. During the Middle Bronze Age, long-distance exchange systems developed, connecting the shores of the Euphrates and Tigris rivers in Mesopotamia and the Nile in Egypt with the beaches of the Baltic and North Sea. Nordic amber and Egyptian and Mesopotamian glass linked a wide expanse of world, the two materials constituting a kind of mutual dialogue of exotic materials from distant lands. Possible intermediate stations can be proposed, such as Mycenae, Pylos and Tiryns.[66] Other places where different trading networks were connected could have been located in the Caput Adria area, the Po Valley, the North Italian/Austrian/Swiss Alpine regions, South Germany and in the middle Danube area.

The physical transportation of glass and amber was also accompanied by a flow of ideas originating from the Mediterranean. The idea of the shaven warrior is reflected by the introduction of the razor with the handle in the shape of a horse's head. Even some basic religious iconographic themes, which were strongly emerging in South Scandinavia, such as the solar barque,[67] may have originated from distant Egyptian roots. We should bear in mind that the beads and other commodities, like metal, did not cross the European landscapes on their own. These items were transported by human beings, who met in certain places along the routes, and while participating in guest-friendship, discussed important matters, and therefore did not just exchange objects but also ideas.[68]

Today, we use the word 'globalisation' as something which applies to the last two or three centuries. However, during the Bronze Age the world also opened in a 'globalised way', especially around 1500-1300 BC. Ideas and commodities streamed along the exchange routes for amber and glass, as well as metal.

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61 Bunnefeld & Martin 2020; Bunnefeld et al. 2022.
62 Hood 1993.
63 Pusch 2003.
64 Bongioanni et al. 2001.
65 Döpp 1996; Causey 2011; Kaul & Varberg 2017; Varberg et al. 2019.
66 Walton et al. 2009; Shortland 2012; Varberg et al. 2016.
67 Kaul 1998; 2004; 2009.
68 Herman 2002; Kaul 2018a.

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'Ear picks' and a 'cosmetic box' from the Grave of the Griffin Warrior

by Jack L. Davis & Sharon R. Stocker

We are honoured to make a small contribution to this collection of papers offered to our friend Søren Dietz on the occasion of his 85th birthday. Among Søren's many interests, the period of the Mycenae Shaft Graves has figured large, and we trust that he will find our topic of interest.[1]

Bodily care, personal adornment, and the Griffin Warrior

Among the many items associated with the burial of the Griffin Warrior, various types of artefacts stand out as closely associated with care for his body and personal adornment. All are luxury goods, made of precious materials, including metal and ivory, and have been found in other so-called warrior burials of the early phases of the Late Bronze Age, particularly, but not exclusively, on the southern Greek mainland. We here illustrate and discuss two previously unpublished small gold spoons and a small cylindrical gold box. Our evidence seems to support Eleni Konstantinidi-Syvridi's suggestion that such spoons and boxes were meant to be used in conjunction with each other.

Several years ago, Konstantinidi-Syvridi re-examined a small gold box associated with the burial of the 'Queen' in the Dendra tholos tomb, and suggested a relationship between boxes of this sort and the so-called 'ear picks' most characteristic of the Peloponnese in the earlier phases of the Late Bronze Age.[2] Its excavator, Axel Persson, remarked that the box may have contained "something sweet-scented."[3] Examination by Konstantinidi-Syvridi discovered two wafers of a calcium carbonate substance inside the Dendra box, one on top of the other. A similar box from Shaft Grave IV, now also in the National Museum of Athens, contained traces of a powdery residue.[4]

The grave of the Griffin Warrior contained two nearly identical small gold spoons, both designed for suspension from a cord, and a cylindrical gold box, also pierced for suspension.[5] The gold box is unique in the western Peloponnese, and the spoons unique for Pylos, but not for Messenia, where Marinatos found a nearly identical gold spoon in a tholos tomb at nearby Myrsinochori.[6]

1 The objects presented here will be studied further as we continue our work at Pylos and this paper should be considered preliminary. We have not yet, for example, been able to determine the material that constitutes the inlays on the cosmetic box. Small amounts of soil were found in the box when it was opened; in the soil was a black and a white inclusion, both of which remain to be studied in more detail. See also Davis 2025 and Stocker 2025.

2 Konstantinidi-Syvridi 2012, passim, republishing the gold box, and 51-2, concerning the relationship between gold boxes and 'ear picks'; see Persson 1931, 39, pl. xxvii for the primary publication of the gold box.

3 Persson 1931, 58.

4 Konstantinidi-Syvridi 2012, 49-51, about the substances inside the boxes.

5 See Wiener 2016 on the tradition of Helladic pairs, whether or not the duplication of spoons in this case is representative of the same phenomenon.

6 Marinatos 2014, 112, also of LH IIA; illustrated in Konstantinidi-Syvridi 2012, 52, fig. 2. Slightly further away, a silver spoon was found in the Koukounara *Fyties* tholos tomb 2 (Pylos Museum-Neokastro, no. 1840: Korres 1974, 153, pl. 113, b; Kylafi 2025), and an elaborate gold spoon with a spiraling shaft and granulation from the Antheia tholos tomb near Kalamata (Museum of Messenia, no. 3994; Malapani 2025).

Fig. 1: *Gold spoon (SN24-0402) from the grave of the Griffin Warrior at Pylos. © Department of Classics of the University of Cincinnati. Photo: Jeff Vanderpool. Assembly: Tina Ross.*

Fig. 2: *Gold spoon (SN24-0671) from the grave of the Griffin Warrior at Pylos. © Department of Classics of the University of Cincinnati. Photo: Jeff Vanderpool. Assembly: Tina Ross.*

'Ear picks'

SN24-0402. Fig. 1. Gold spoon. L. 7.63 cm. Small, shallow bowl at one end, pierced disk at the other. Black accretion on the gold from decomposition of the body of the Griffin Warrior.[7]

SN24-0671. Fig. 2. Gold spoon. L. 6.6 cm. Small, shallow bowl at one end, pierced disc at the other.

Gold box

SN24-0862. Fig. 3. Cylindrical gold box, short projecting lip at bottom to receive the lid. Diam. 4.0; Th. 1.4. Outlined on its circumference, top and bottom, with two sets of concentric braided gold wires. Large central dark grey inlay, top and bottom, divided into octants to form an eight-petalled rosette; surrounded by braided gold wires. Four smaller, symmetrically arranged dark grey inlays (one missing) are enclosed in gold cloissons outlined with granulation. The box is pierced by two holes, crudely punched from both sides, and was meant to be suspended and worn as a pendant.

'Ear picks' and 'cosmetic' boxes

Christos Tsountas was first to call small metal spoons found in Shaft Grave Period graves "ωτογλυφίδες (ear picks)", because of their similarity to toilet objects employed in Greece to remove earwax in his own time; these are still used for that purpose in many parts of the world today, particularly in the Far East, and are sold on Amazon.com.[8] Although never common in Greece in the Bronze Age, small spoons in both gold and silver are associated with a number of wealthy mainland burials of the period. Tsountas recovered one from the cist in the Vapheio tholos tomb, another from tomb 55 at Mycenae.[9]

Small metal spoons are even rarer on Crete than the mainland. One in bronze has been discovered in a ritual context in a neo-palatial building at Archanes-Tourkoyeitona, found with a stone mortar, which Konstantinidi-Syvridi suggests was perhaps used in the preparation of cosmetics.[10] A gold 'ear pick' from Building 8 in the Archanes cemetery may

7 On this black substance, see Stocker et al. 2022, 245-7. The second spoon was found further away from the body and no black substance adhered to it.

8 See Salavoura 2012 for references and a catalogue of gold and silver spoons from prehistoric Greece. On the name, see Tsountas 1893, 77. Both Salavoura and Konstantinidi-Syvridi consider their possible cosmetic or medicinal uses.

9 Tsountas 1889, 147, from Vapheio, an ear pick of silver and a second silver spoon-like object with a shell-shaped bowl (pl. 7.16), both perhaps contained in a wooden pyxis that had disintegrated. For Mycenae, see Xenaki-Sakellariou 1985, 170, 172-3, pl. 70, no. 2883.

10 Sakellarakis & Sakellaraki 1997, vol. 2, 606.

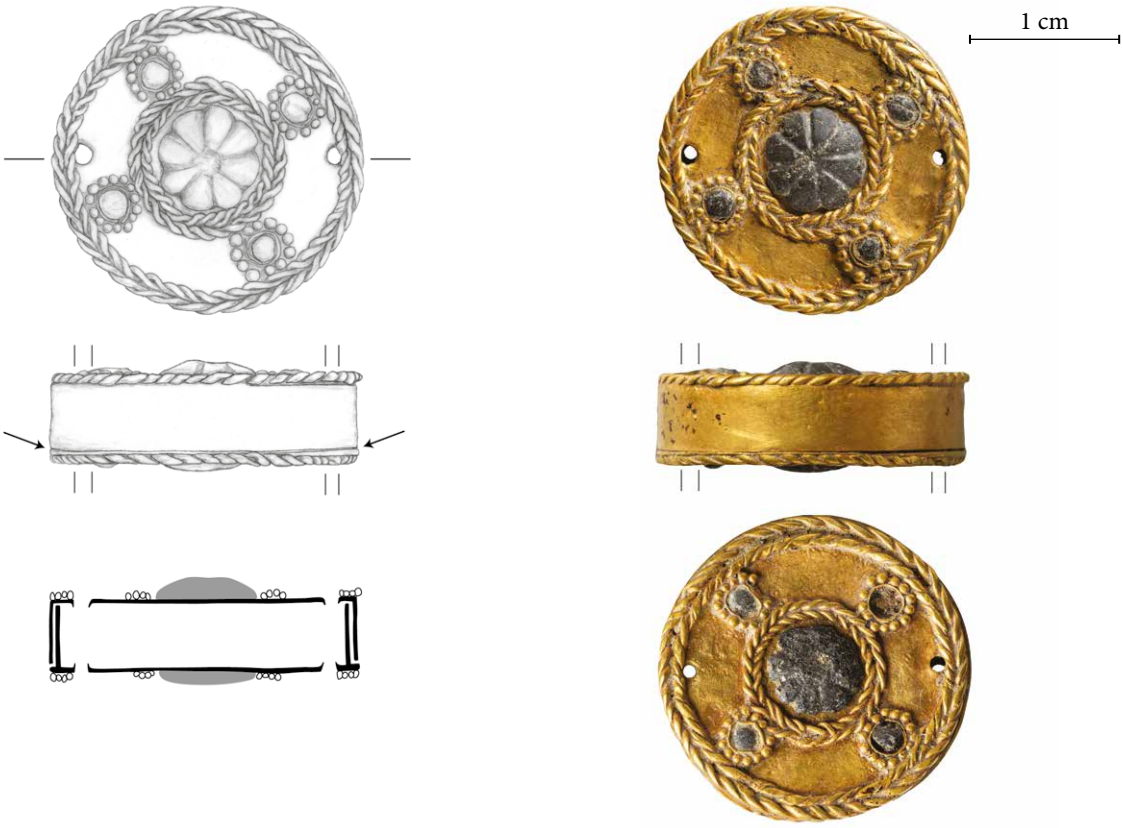

Fig. 3: *Gold box (SN24-0862) from the grave of the Griffin Warrior at Pylos. Courtesy of the Department of Classics of the University of Cincinnati. Photo: Jeff Vanderpool. Illustration and assembly: Tina Ross and Christina Kolb.*

be associated with the two small gold boxes from tholos B in a LH IIIA context.[11]

Two bronze boxes have, in addition, been found on Crete in the Minoan temple of MM IIB-IIIA date at Anemospilia on the northern slope of Mt. Iouktas, and two gold boxes from the side chamber of Tholos A at Archanes come from the "royal grave" of LM IIIA:1. The gold boxes are decorated with granulation.[12] Another gold box comes from a Neopalatial chamber tomb at Poros Herakliou.[13]

Our discoveries add support to Konstantinidi-Syvridi's hypothesis that 'ear picks' were employed to remove the contents from such boxes, in that the two types of objects were discovered in the same context, lying near each other between the ribs and right arm of the Griffin Warrior.

These items apparently reflect a concern for bodily care among the privileged men of the Early Mycenaean Peloponnese, not only women. As we have otherwise documented, various items associated with bodily care and personal adornment have been found in the grave of the Griffin Warrior, including a bronze mirror with an ivory handle, ivory combs, a necklace, and an ivory pyxis (which may have contained jewelry or cosmetics).[14]

In light of the appearance of small metal boxes on Crete at an earlier date, and of spoons in both mortuary and non-mortuary contexts there, we also suggest that the presence of such items on the mainland in the Shaft Grave Period, restricted to a period of especially intense interaction between Crete and the Peloponnese, reflects a short-lived, elite, behavioural fashion in imitation of Minoan precedents.

11 Sakellarakis & Sakellaraki 1997, vol. 1, 169. See Dimopoulou-Rethemiotaki 2005, 640, fig. 702, for additional photographs.
12 Sakellarakis & Sakellaraki 1997, vol. 2, 640.
13 Konstantinidi-Syvridi 2012, 50, no. 32 (citing an oral presentation by Nota Dimopoulou).
14 Davis & Stocker 2016, 650 (mirror), 650-1 (combs); Davis & Stocker 2018 (necklace); Davis, Stocker, & Aruz 2024 (ivory pyxis).

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The Argolid at the Transition to the Mycenaean Age Revisited

by Michael Lindblom

Like all terms that are intended to describe collective practices in the past, the term 'Mycenaean' is associated with a multitude of connotations among Aegean prehistorians. The term, which is both a curse and a blessing, is given meaning by a theoretically informed analysis of archaeological sources and a limited number of Linear B documents. Because of its abundance, the most frequently cited source for the chronological and spatial extent of the Mycenaean phenomenon is the ceramic material retrieved from archaeological excavations and surveys. This is fraught with difficulties and pitfalls, but the concept of archaeological culture remains an integrating force and reference point given the lack of better alternatives. For the foreseeable future, the Mycenaeans are here to stay.

In 1991, Søren Dietz published *The Argolid at the Transition to the Mycenaean Age. Studies in the Chronology and Cultural Development in the Shaft Grave Period* (hereafter ATMA).[1] This lavishly illustrated book is probably the work that has most often been referenced during the past three decades regarding the ceramic transition from the Middle Helladic (MH) to the Late Helladic (LH) periods on the Greek mainland. ATMA is a study of the relative ceramic chronology from MH II to LH I (currently c. 1830-1590/1540 BC) in the northeast Peloponnese. The ceramics are grouped and used to understand the changes in networks of ideas and patterns of exchange during discrete intervals of time. More specifically, 18 ceramic ware groups from domestic contexts at Asine are analysed and compared to funerary assemblages from contemporary Mycenae, Argos, Prosymna and Miloi in the Argolid. Dietz's study has been extensively reviewed, is still often referenced, is available online and remains an indispensable resource.[2]

As a token of gratitude for the intellectual stimuli offered by Dietz's study, this short contribution has three aims. It attempts to contextualise the background of ATMA, describes the possibilities offered and challenges inherent in the writing of this study during the late 1980s, and finally outlines the progress (or lack thereof) in academic understanding of what the MH-LH transition involves in ceramic terms.

Contextualising ATMA

The coastal settlement of Asine is at the core of ATMA. Beginning in 1922, different areas on and around the Kastraki promontory at Asine have been excavated in three major and several smaller projects, mainly by Swedish and Greek archaeologists.[3] Remains from late MH phases and the first LH periods have been recovered from three main areas (Fig. 1). The first excavations were undertaken by Axel W. Persson and Otto Frödin in the Lower Town immediately north of the Acropolis. These campaigns also included

1 It gives me great pleasure to present some thoughts on a study that has remained among my top five most frequently consulted works. The badly worn copy of ATMA in front of me, full of sticky notes and records in the margins, is a testimony to the extent it has tantalised and led me to follow various proposals suggested in its pages. I would like to thank Gullög Nordquist for accompanying me on a trip down memory lane while I wrote this text, and Jeremy Rutter and Benjamin Raffield for suggesting revisions and proofreading an early draft.

2 Reviews can be found in Tomlinson 1992; Rutter 1993; Maran 1993; Driessen 1993; Kilian 1994; Vanschoonwinkel 1995. The online version of ATMA is available via Dietz's Academia account (accessed on 18 January 2026).

3 Nordquist & Hägg 1996.

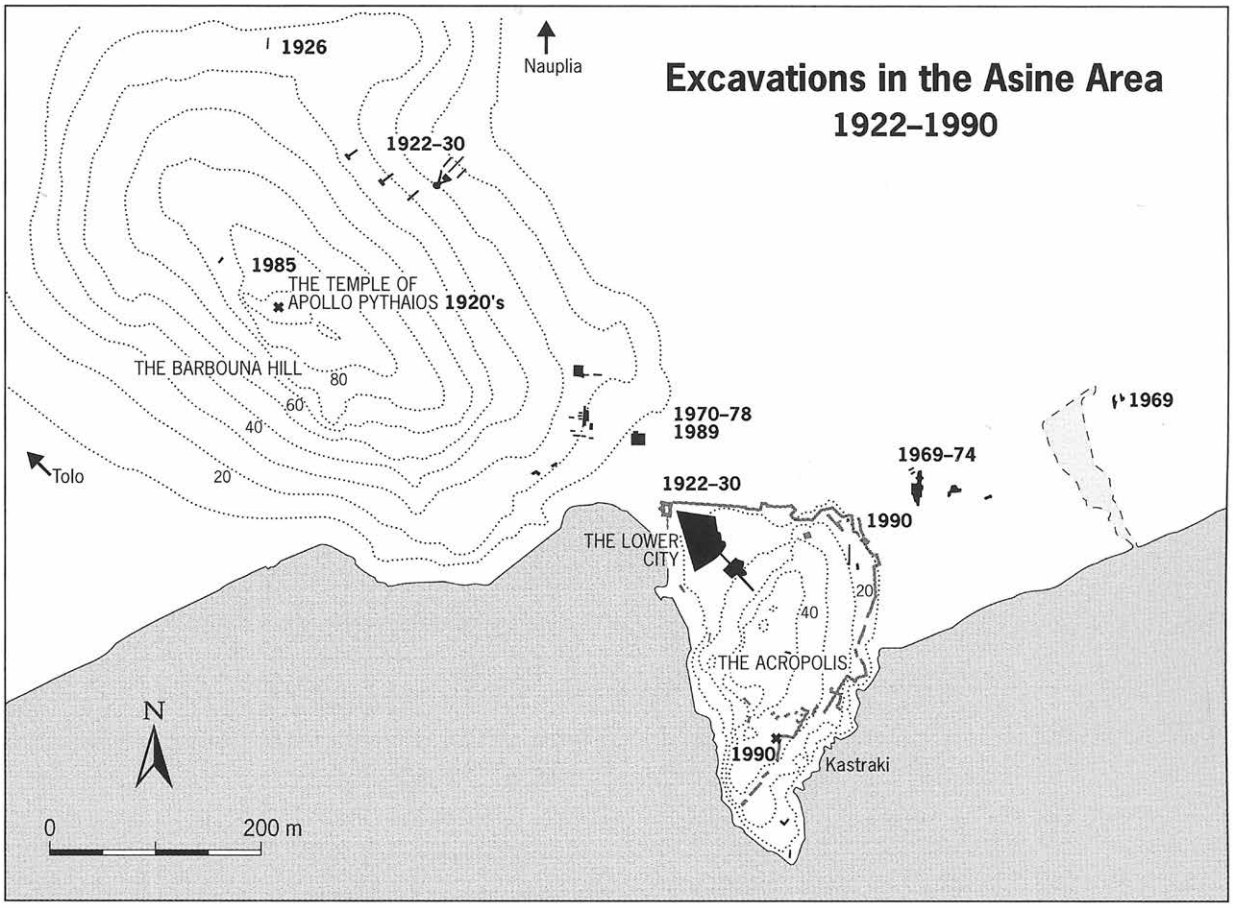

Fig. 1: *Excavation areas at Asine. From Dietz 1982, fig. 2, with additions by Stig Söderlind. Courtesy of the Swedish Institute at Athens and the Museum of Mediterranean and Near Eastern Antiquities in Stockholm.*

valuable excavations on the lowest terraces of the Kastraki promontory, which were joined to the large excavation zone by a long section running in a roughly southeast-northwest direction (Fig. 2). It was highly unusual for the time that all of the material retrieved during the excavations was kept for future studies.[4] Four decades later, the director of the Swedish Institute at Athens, Carl-Gustaf Styrenius, initiated excavations in two new areas north and east of the Acropolis. On the lower slopes of Barbouna Hill, Robin Hägg and his team found late MH and early LH I remains.[5] Further to the east, Styrenius and Dietz explored an area covered by alluvial deposits. It is this last area which we must briefly turn to in order to find the first reasons that explain why ATMA was written.

In 1969, the Ephorate of Antiquities of the Argolid invited the Swedish Institute at Athens to investigate the so-called 'Karmaniolas plot' east of the Acropolis. Tourism was rapidly increasing and a campsite was to be established next to the beach in an area that was previously dominated by fruit trees. Because of the proximity to archaeological remains excavated to the west four decades earlier, Evangelia Protonotariou-Deilaki had carried out initial trial excavations, which suggested that more extensive investigations were necessary. The project provided an excellent opportunity to learn more about the spatial extent of human activities in ancient Asine. Styrenius secured the necessary funding through the Swedish philhellene Gösta Enbom, who resided in Pireus at the

4 Frödin & Persson 1938.

5 Nordquist 1985; Nordquist 1987, 53, 85-6. Due to circumstances beyond her control, a complete, but now slightly outdated, book-length manuscript by Gullög Norquist on the late MH and early LH I pottery from the 1971-1973 and 1989 excavations on the Barbouna slope unfortunately remains unpublished. For other studies of the Barbouna finds, see three fascicles 4.1 (1973), 4.2 (1978) and 4.4 (1980) in the series *Boreas. Uppsala Studies in Ancient Mediterranean and Near Eastern Civilizations.*

Fig. 2: *View of the Lower Town at Asine from the Acropolis during the 1926 season. Barbouna Hill is in the background on the left. From Frödin & Persson 1938, 60, fig. 40. Courtesy of the Swedish Institute at Athens.*

time. Throughout his career, Enbom had cooperated closely with the Danish shipyard Burmeister & Wain and was eventually appointed Danish Consul General to Greece. Enbom suggested a collaboration between Swedish and Danish archaeologists and Dietz joined the new Asine project as a representative of the National Museum of Copenhagen.[6]

When Styrenius was appointed director of the Museum of Mediterranean and Near Eastern Antiquities in Stockholm in 1971, Dietz took on much of the responsibility and became the field director. During four seasons in 1970-1972, and 1974, he managed excavations in the area and the project resulted in seven studies in the Asine II series (to distinguish this from Asine I of 1938) with the subtitle *Results of the Excavations East of the Acropolis 1970-1974*.[7] This enterprise was an important experience in the early careers of both Swedish and Danish scholars. Among other remains, the project uncovered a MH cemetery containing a tumulus (Fig. 3). The tumulus was c. 8 m in diameter, and the graves were surrounded by a damaged *peribolos* wall, only one short segment of which was preserved. There were 20 graves in the cemetery, seven of which contained grave goods ranging in date between MH II and LH I. Dietz published the cemetery in 1980 and this study required him to formulate initial ideas on the relative ceramic chronology in the region.[8]

6 When he died in 1986, Gösta Enbom left his assets in Denmark to the National Museum in Copenhagen and his assets in Sweden to the Royal Academy of Letters, History and Antiquities. Scholarships from two separate foundations have benefited hundreds of mostly young Danish and Swedish scholars over the years.

7 Dietz 1982 (II:1. Introduction, stratigraphy and architecture); Dietz 1980 (II:2. MH cemetery with tumulus); Santillo Frizell 1986 (II:3. LH III period); Wells 1976 (II:4.1. Protogeometric graves); Wells 1983 (II:4.2-3. Protogeometric settlement); Rafn 1979 (II:6.1. Archaic-Classical graves); Poulsen 1994 (II.6.2. Archaic-Hellenistic remains and Hellenistic tombs). Asine II.5 on the Geometric finds still awaits publication. See Styrenius 1975 and Styrenius 1998, 17-9 for summaries of the whole excavation project.

8 Dietz 1980. Reviews are published in Dickinson 1982; Davis 1982; Laffineur 1983; Korres 1982-1983; Haider 1985.

Fig. 3: *Excavation in the East Cemetery at Asine during the 1972 season. Søren Dietz is in the middle and the partly uncovered tumulus in the foreground to the left. From Styrenius 1998, 40, pl. 8. Courtesy of the Museum of Mediterranean and Near Eastern Antiquities in Stockholm.*

In particular, the burial of a man aged around 30 along with 10 ceramic vessels found in grave 1971-3 prompted him to seek parallels among the grave goods in the complicated MH III-LH IIA sequence of burials in the shaft graves at Mycenae. Dietz proposed a division of the MH III period into phases A and B, suggesting that the latter was mainly or fully contemporary with LH I.[9]

The challenges and possibilities of ATMA

As an early-career scholar who had recently excavated and published the East Cemetery, it was only natural for Dietz to return to the contemporaneous settlement remains in the Lower Town at Asine, which until this point had only been published summarily. The rationale was obvious as several questions required further investigation. How did the East Cemetery, for example, relate to the finds in the Lower Town located only 100 m to the west? What characterised a domestic, as opposed to a funerary, ceramic sequence spanning the same centuries? Could certain ceramic traits and attributes in the largely untapped domestic assemblages be used to provide a sequence for the MH and LH I periods? How would such observations at Asine compare with previously published assemblages from other Argive sites? And finally, what would the combined results tell us about the ceramic transition to the Mycenaean period in the area?

As in all research, such an undertaking was associated with both challenges and possibilities. The 1922, 1924,

9 Dietz 1980, 141-4. The study had already been sent to the printers when the LH I pottery in levels XII-XVI from the East Alley at Korakou was published by Davis in 1979. Until this seminal article, LH I had predominantly been used to describe a *style* of Mycenaean lustrous decorated pottery rather than a *chrono-spatial phenomenon* during which many different ceramic classes were in contemporary use, see Dickinson 1974.

1926 and 1930 excavation seasons in the Lower Town had involved a large number of Swedish students and local workers. Excavation procedures had evolved over time and methodological rigour, judgement and terminology varied between supervisors in the various areas. The elevation of stratigraphic layers, architectural features and individual deposits were measured as the depth below the modern ground surface. The site records were written in Swedish and the usefulness of entries in the notebooks varies. Perhaps most decisive for any renewed study of finds from the Lower Town, however, were the accessibility, integrity and usefulness of the preserved ceramic assemblages.

The Second World War had caused disruption to the finds kept in the Leonardo stores in Nauplion. All contextual information on the originally labelled and ordered wooden boxes, containing settlement material from the 1922, 1924 and 1930 seasons at Asine, were lost, and to this day it is not possible to attribute more than a small number of sherds to more precisely defined areas, let alone individual layers and deposits.[10] The integrity of the stratigraphic finds from the largest campaign in 1926, however, remained intact. As a result of a bilateral agreement between the governments of Greece and Sweden in 1931, approximately 15 tons of finds were shipped to Uppsala University.[11] The finds were originally meant to be divided between Uppsala and Lund, the two universities in Sweden where classical archaeology was taught at the time, and to be used in teaching. But this never happened and the Asine Collection remained an underexploited resource for three decades.[12] In the late 1970s, however, Hägg encouraged Gullög Nordquist, a student of Uppsala University who had recently participated in the Barbouna excavations, to write a PhD dissertation on MH Asine.[13] In preparation for the moving all of the finds, Nordquist took on the laborious task of repacking them into new boxes, that were numbered consecutively. The now routinely used AS numbers, referring to single objects, parts of contexts or whole contexts, depending on how they were packed in 1926, were determined and the contexts noted on lists. Throughout the 1980s, the contents of c. 5000 boxes were provisionally noted on the same number of index cards. In retrospect, it is clear that the initial efforts by Nordquist constituted the birth of the Asine Collection at Uppsala University; a huge resource of neglected finds was gradually being made accessible to both students and academics.

When Dietz commenced his study of pottery from the Lower Town in Asine in 1987, the restraints and opportunities described above influenced his work. The term 'legacy data' was not used in archaeology at the time, but it succinctly summarises what he was faced with. During four visits to the Asine Collection in Uppsala, Dietz selected 62 AS numbers for detailed study, mainly from the central and eastern part of House B ('Oval House') and East Extension I and II in the Lower Town (Fig. 4).[14] A total of 3,353 sherds weighing 89.53 kg were examined according to a classification system provisionally agreed upon by him, Nordquist and Carol Zerner.[15] Based on a number of typological criteria, Dietz placed the domestic Asine pottery into the sequence MH II Late, MH II Final, MH IIIA, MH IIIB and LH IA. He divided LH I into A and B but, because of a lack of representative pottery from the Lower Town, was forced to rely entirely on external contexts for the latter phase.

The results obtained from Asine were compared with previously published grave assemblages from Mycenae, Argos, Prosymna and Myloi.[16] The study also included general summaries of non-ceramic funerary offerings, settlement patterns, pottery exchange and absolute chronology. Although valid and relevant, these chapters attracted less attention from scholars. For ceramic specialists working in the Peloponnese, on the other hand, ATMA immediately became the standard research tool. The study provided the only exhaustive examination of the ceramic sequence in MH Asine.[17] Secondly, in a convenient manner, it summarised ceramic grave offerings in Argive funerary assemblages published

10 Objects illustrated in Frödin & Persson 1938 and unpublished photographs have over the decades as far as possible been re-attributed to their place of discovery. The loss of contextual information provided the impetus for the establishment of the large reference collection in Nauplion, containing pottery from all periods of the Bronze Age and including samples from not only Asine, but also Mycenae, Tiryns and Berbati.

11 The details of the study of this extremely large body of material are summarised in Frödin & Persson 1938, 11-2. Nordquist 2020 describes the changing story of the Asine collection at Uppsala University.

12 The Asine Collection has been housed in no less than six different places since it came to Uppsala.

13 Nordquist 1987.

14 Dietz 1991, 41-3, 53, 59, 71, 93, figs. 5, 9, 13, 18, 26.

15 Dietz et al. 1988.

16 For an overview of the Argive funerary contexts, see Dietz 1991, 243-6, fig. 77.

17 For less detailed but complementary descriptions, see Frödin & Persson 1938, 259-94; Nordquist 1987, 47-54.

Fig. 4: *One of the boxes (AS3521) containing pottery from Asine included in ATMA. The pottery was excavated on 22 March 1926 and dated to MH IIIB by Dietz. Courtesy of the Museum Gustavianum at Uppsala University.*

up until the late 1980s. Finally, with a balanced blend of enthusiasm, selective typological observations and boldness, Dietz suggested that it was possible to refine the relative ceramic chronology to an extent that had not been previously attempted.[18] This entailed significant alteration of the phasing and terminology used in his 1980 study of the East Cemetery at Asine. Ceramic assemblages previously designated LH I were now referred to as LH IB and his earlier phase MH IIIB was now given the abbreviation LH IA. His previous MH IIIA was divided into MH IIIA and MH IIIB. Finally, MH II, which had been poorly represented in the East Cemetery, was divided into three sub-phases, of which Dietz only included examples from the late and final stages in ATMA.[19]

For the relative dating of various pottery groups, Dietz relied on a combination of changing ratios in the 18 ware groups (29 with sub-groups included) identified by him at Asine and typological criteria. The latter included vessel form (shape), shape accessories (minor variations in rims, handles, stems, bases and plastic decoration), surface treatment and painted decoration of vessels from all the Argive assemblages included in the study.

The changing ratios were exemplarily expressed in absolute numbers of sherds as well as weights. In order to evaluate their significance, however, it is necessary to be familiar with the premises on which they are based. The boxes from Asine selected for inclusion in ATMA contain parts of the ceramic contents of contexts excavated during single days in 1926. They are samples which were dictated by what could fit into cardboard boxes the size of shoe boxes, designed to contain approximately 100 sherds after the pottery had been washed and dried (on site in 1926) and studied (on site in 1926 and at Uppsala in 1931-1936). Dietz did his very best, but it was impossible for him to search for and find all the pottery from the same trench and level in 5,000 boxes. The relevance of the recorded ratios of the ware groups for each period thus presupposes that the contents of the boxes included for study reflect averages of all sherds retrieved from often large contexts. This appears to be the case, but it is far from certain and could be tested in the future.[20]

18 For a robust but chronologically less detailed analysis of the sequence of the shaft graves at Mycenae, see Graziadio 1988. Dietz 1998 returned to this complicated matter. In this article he suggested that his MH IIIB could be subdivided into an early and late phase.

19 Dietz 1991, 26, fig. 1. What ceramic assemblages at Asine and Lerna were assigned to either side of the suggested MH II Final/IIIA transition was complicated by the criteria not articulated in ATMA (e.g., Dietz 1991, 51, 54, n. 105) and in unpublished, but widely circulated, work notes by Zerner (1987).

20 After pottery sherds are washed and dried, but before they are packed, it is today common that individual sherds found in the same context and thought to be from the same vessel are grouped together on drying screens for subsequent joining together. It is also not uncommon for decorated and undecorated sherds or diagnostic and undiagnostic sherds from the same context to be kept separate. When packed in several bags or boxes, each such element therefore does not reflect the composition of the totality. We know that the original contexts from the 1926 excavations are intact and it is also apparent that different ware groups and both diagnostic and undiagnostic sherds from the same context were packed together after washing and study. It is not known, however, to what extent sherds were grouped together in each box, and thus how representative a sample in a selection of boxes is in comparison with the contents of the complete context as originally excavated.

The ceramic taxonomy used in ATMA also warrants some comments. When published, the 18 ware groups offered a convenient way for scholars to classify often fragmentary sherds, and the ware (or class) system has withstood the test of time admirably well; with only minor modifications, ceramic specialists continue to use it. Slightly more complicated are the strong connections that the study identifies between wares, forms and decorative motifs. While the study provides an excellent overview of the range within each ware, it is cumbersome to use in relation to form alone, regardless of the vessel's fabric, surface treatment or decoration. The vessel forms and, where applicable, decoration were the main variables used to identify changes within each ware over time. It is apparent that it was (and still is) difficult to decide which relative emphasis should be placed on the two variables. This occasionally resulted in inconsistencies, such as when matt-painted vessels were fitted into the very detailed chronological sequence.[21] The analysis of unpainted goblets, on the other hand, is extremely useful and commendably clear.

Towards making the ATMA data FAIR

Archaeological publications are selective with regard to what material is presented and interpreted. Although all of the Asine data summarised in ATMA has in theory been available to the academic community since it was excavated in 1926, it has not been findable, accessible, interoperable or reusable to any meaningful extent (the FAIR principles in data management).[22] In 2013-2016, the Museum Gustavianum and the Department of Archaeology and Ancient History, both at Uppsala University, as well as the Swedish Institute at Athens, undertook a project funded by the Bank of Sweden Tercentenary Foundation to make the records from the Swedish excavations in Greece available. The aims of the project were twofold: firstly, to create an online repository of finds and relevant field documentation from the Swedish excavations in Greece from 1894 onwards and, secondly, to assemble the records from these projects in the archive of the Swedish Institute at Athens. The result of the project is an online resource named PRAGMATA (pragmata.sia.uu.se), hosted by Uppsala University but annually updated by the Swedish Institute at Athens. The excavations in Asine, both old and new, including the Asine Collection, are now available online together with other Argive sites excavated in the past.[23]

Over a period of approximately 18 months, Gullög Nordquist and this author undertook systematic recording of the 5,000 boxes of objects (excluding the animal bones) in the Asine Collection. The recordings were entered into a database before inclusion in the online repository PRAGMATA. The first level of classification of the objects was according to the material: pottery, terracotta, stone, metal, glass, bone and mollusc. Pottery sherds were dated according to style, from Early Helladic I to the Byzantine period. The degree of mixing in the contexts was expressed as percentages of intrusive sherd material. Finally, quantification was recorded, both as approximate number and weight. Photographs were taken of all objects.

In a sense, the work on the Asine Collection will never be completed, but has now moved more towards curation, student training and detailed enquiries into various aspects of the prehistoric settlement. PRAGMATA and an in-house database now enable easier and more complete investigations into various aspects of the settlement; what took Dietz several hours to do during the late 1980s can now be done in minutes. Online high-resolution photographs of groups of pottery give the user an idea of what the material looks like. It is now possible to develop a research plan and select contexts for further study far more easily than it was only a decade ago.

The total ceramic contents of a box from which only one or a few sherds were illustrated in ATMA can be accessed and cursorily evaluated, even online, by scholars. The material can be investigated in more detail in ways that Dietz did not have sufficient time for, for example, by assembling pottery from the same context but stored in different boxes. Excavation

21 A number of unsuccessful attempts in Dietz 1991 to date MH III-LH I vessels more precisely include two matt-painted cups from Prosymna and Mycenae, where their forms are dated to MH IIIB, but their decorative motifs to LH IA (see 162-4, figs. 48:AB-8, AB-12 [MH IIIB], 49:AB-8.1-2, AB-12.3 [LH IA]); a bichrome decorated *hydria* from Mycenae with a LH IA form but MH IIIB decoration (see 225-7, fig 71:KB-2 [LH IA], KB-1 [MH IIIB]); a matt-painted cup from Prosymna dated by form and decoration to LH IA, but found in a single interment grave dated to MH IIIB (see 160, AB-13, 244, context 52 [MH IIIB grave], 162-1, figs. 48:AB-13, 49: AB-13.2 [LH IA cup]); a matt-painted juglet from Mycenae "dated by associated finds to MH IIIB", but with LH IA decoration (see 179, AF-15/15a, 244-5, context 8 [MH IIIB], 184-5, fig. 55:AF-15.4-9 [LH IA]); and a matt-painted juglet from Miloi, dated differently to both LH IA and LH IB (see 147, 182-5, figs. 54: AF-13, 55 [LH IA], 244-5, context 85 [LH IB]).

22 Wilkinson et al. 2016.

23 Nordquist & Lindblom 2020.

dates and context descriptions allow a user to link objects, excavation photos, scans of field diaries and English translations of these diaries. The entire body of preserved data is transparent and open to reinterpretations, and there are thousands of additional sherds that add further support to or undermine proposed relative dates and quantitative ceramic assessments in ATMA.

The transition to Mycenaean today

Although there are also short chapters on settlement dynamics, mortuary practices, trade and absolute chronology, it is clear from the introduction of ATMA that it is the pottery that provides the more profound insights into the transition to the Mycenaean period. Progress in this particular area is very briefly outlined thematically below. Emphasis is placed on progress in the analysis of ceramic assemblages in MH III-LH I in the northeast Peloponnese.

Specialist studies of ceramics from several *sites* that were not available at the time ATMA was written have appeared. Scholarly understanding of ceramic regionalism in the late MH and early LH periods has been significantly advanced by stratified assemblages from the following sites: Nichoria in Messenia, Trapeza in Achaea, Ayios Stephanos in Laconia, Kolonna on Aegina, Ayia Irini on Kea, Eleusis and Kiapha Thiti in Attica, Thebes and Eleon in Boeotia, Mitrou in Lokris, Lefkandi on Euboia and Pefkakia in Thessaly.[24] More specifically, in the northeast Peloponnese, settlement assemblages from Tsoungiza in the Nemea valley and the Aspis in Argos have increased the known corpus of highly relevant reference material.[25] A set of richly furnished LH I graves from Nauplion can now be fruitfully compared with the ones in the East Cemetery at Asine.[26] Two separate studies on the MH I-LH II pottery excavated at Lerna, across the bay from Asine, have (finally) been published.[27]

The *ware groups* used in ATMA have remained more or less unchallenged in subsequent studies. With only slight variations in terminology, scholars have continued to describe different pottery traditions or technologies, with the aim of identifying changing outputs in various production areas or even individual workshops. Some noteworthy examples include the following: the manufacture of different "Aegina Gold Mica Fabrics" at Kolonna on Aegina; the central Greek production of "Gray Minyan" and "Polychrome Mainland Ware" vessels; the attribution of "Red Silver Mica Ware" and MH "Lustrous Decorated Ware" to Kythera; and the first production in the northeast Peloponnese of what most students recognise as Mycenaean decorated pottery, the "Lustrous Decorated Ware – Argive".[28] The suggestion in ATMA that imported "Polychrome Mainland Ware", "Polychrome Aegina/Bichrome" and regionally produced "White on Burnished Ware" first appear in MH IIIB deposits at Asine has not been confirmed elsewhere in the region.[29] At Tsoungiza, Lerna, Korakou and Kolonna, the three wares groups are instead considered important elements of LH I.[30]

It is noteworthy that no scholar has attempted to establish a ceramic *form typology* independent of ware groups for the MH-LH I southern and central Greek mainland (and thus only minimally overlapping with the system devised exclusively for LH I-III Mycenaean Decorated pottery by Arne Furumark in 1941). ATMA assembled most of the necessary MH II-LH I Argive forms and enough is known from additional sites to make this possible.[31] Such a system is a prerequisite for making very large amounts of ceramic data FAIR in the online databases of the future. The appearance of single vessels is not as important as statistically significant patterns that emerge from aggregated data, whether this is

24 Howell 1992; Dickinson 1992 (Nichoria); Mercogliano 2022 (Trapeza); Zerner 2008 (Ayios Stephanos); Gauβ & Smetana 2007; Pruckner 2010 (Kolonna); Schofield 2011; Abell 2021 (Ayia Irini); Cosmopoulos 2014 (Eleusis); Maran 1992a (Kiapha Thiti); Aravantinos *et al.* forthcoming (Thebes); Burke et al. 2020 (Eleon), Lis 2017; Hale et al. in preparation (Mitrou); Dickinson 2020 (Lefkandi); Maran 1992b (Pefkakia).

25 Rutter 1990; 2020 (Tsoungiza); Philippa-Touchais 2002; 2003; 2007 (Argos).

26 Piteros 2015.

27 Spencer 2024 (MH pottery); Lindblom 2024 (LH I-II settlement, graves and finds).

28 Lindblom 2001; Gauβ & Kiriatzi 2011 (Aeginetan vessels); Hale 2016; Mathioudaki 2010 (central Greek Gray Minyan and bichrome painted); Kiriatzi 2003, 125-7; Kiriatzi 2010, 689-90; Lindblom 2024, 233, 262, 334-35 (Kytheran Silver Micaceous Ware); Zerner 1993, 45-7; Whitbread et al. 2024a, 382-6 (Kytheran MH Lustrous Decorated Ware); Rutter 2020, 648 n. 366, 652-3; Whitbread et al. 2024b, 289-91 (NE Peloponnesian LH I Mycenaean Decorated).

29 Dietz 1991, 212-3, 218-9, 303-4.

30 Lindblom & Rutter 2021 (general overview); Rutter 2020, 553-4, 563-4, 565-6 (Tsoungiza); Lindblom 2024 (Lerna); Davis 1979 (Korakou); Pruckner 2010, 204-76 (Kolonna).

31 See Gauß & Lindblom 2017 for an attempt to develop such a form typology.

derived inductively or through deductive models. As shown by a recent attempt to describe just one of the numerous forms which characterise the MH III/LH I transition, the use of additional repositories for ceramic data is urgently needed.[32]

Macroscopic analysis of fine-grained pottery will only take scholars so far in identifying different potting traditions. To a much greater degree than three decades ago, *petrography* and *chemical characterisation* add important insights into technological choices and probable sources of raw materials. Such studies are now available from, for example, Argos, Tsoungiza, Berbati and Lerna.[33] Together with Ian Whitbread and Hans Mommsen, I have recently proposed that we can identify the first workshop on the Argive Plain that produced Mycenaean Decorated pottery in a mature stage of Late Helladic I.[34] This insertion of a previously alien potting tradition in the area represents the transition from Dietz's LH IA to LH IB.

The *absolute chronology* at the beginning of the Late Bronze Age has been debated for decades because of conflicting evidence between dates derived from historical synchronisms, calibrated radiocarbon ages of short-lived samples, dendro-climatological observations, and tephra analysis from Antarctic and Greenland ice cores. ATMA followed the high chronology advocated at the time, which assumed there was a Late Minoan IA volcanic eruption on Thera in or around 1644 BC. Dietz therefore tentatively suggested that MH II Final began around 1800 BCE, LH I in c. 1700 BCE and LH IIA around 1625 BCE.[35] While the beginning of the relative sequence has remained secure, currently sulphuric acid in ice cores suggests that the eruption occurred in 1611, or 1561/1558/1555 BCE, thus meaning that the LH I/IIA transition should be placed later, around 1590 or 1540 BCE.[36] Be this as it may, radiocarbon dates are increasingly being used to independently evaluate the homogeneity or sequence of ceramic deposits. This can take the form of multiple age estimates for single deposits, such as the middle-late LH I Lerna shaft graves, or single age estimates for several deposits, such as those from MH graves at Asine, Lerna and Aspis in Argos. A long settlement sequence, which has been proposed with the help of radiocarbon dates, at Kolonna is another example.[37]

Let us then finally return to the question of what defines the ceramic *transition to Mycenaean*. Ceramic specialists increasingly recognise that there is a larger toolbox than was previously thought to be available for investigating this process. A minimum of five interaction zones, or orbits of engagement, of variable size and intensity can be identified from the distribution of various LH I ware groups on the southern and central Greek mainland.[38] Using the terminology employed in ATMA, "White on Burnished Dark Ware" represents the regional sphere of the Argive Plain and the Corinthia. "Aegina Gold Mica Fabrics" produced at Kolonna occupy a core area from the southern Argolid to northern Lokris. "Red Silver Mica Ware" originated on Kythera and was primarily used along the eastern side of the Peloponnese. Boeotian products of the "Polychrome Mainland Ware" mainly occur in contexts from Euboea in the north to Lerna in the south. Finally, the Mycenaean Decorated or "Lustrous Decorated Ware" of non-Kytheran origin was initially only produced in southern Laconia, but soon after also somewhere on the western edge of the Argive Plain. In this area, and especially at coastal settlements, such as Asine or Lerna, all five interaction zones coalesced.

ATMA attempted to place the long 'Shaft Grave Period' into a sequence of shorter timespans, which better corresponded to human experience. With a solid foundation based on the evidence from Asine, Søren Dietz explored networks of ideas and goods in communities through the most abundantly represented material category that is available – pottery. He traced how a rapidly changing society merged into something we today call Mycenaean. For that, we thank him.

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32 Rutter & Lindblom 2022. The panel cup ("semi-ovid cup" in ATMA) was only a moderately popular form with a brief peak, primarily in the northeast Peloponnese. The wealth of ceramic data available in storerooms, dispersed (and soon obsolete) databases and previous publications are resources that await further quantification.

33 Kilikoglou et al. 2003 (Argos); Hoffman et al. 2020 (Tsoungiza); Whitbread 2011 (Berbati); Whitbread et al. 2024a and 2024b (Lerna).

34 Whitbread et al. 2024b; Lindblom 2024, 291-94.

35 Dietz 1991, 316-21, fig. 93.

36 Pearson et al. 2022 with references.

37 Lindblom & Manning 2011 (LH I Lerna); Voutsaki et al. 2009 (Asine); Voutsaki et al. 2010 (MH Lerna); Voutsaki et al. 2006 (Argos); Wild et al. 2010 (Kolonna).

38 Lindblom 2024, 349-57; Cf. the similar concept of "communities of practice" in Knappett 2011, 98-123.

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The Paradox of Regional Studies: Distinctive Introverted Communities with Histories and Prehistories of Internal and External Population Mobility

The Case of Boiotia, Central Greece in the Iron Age

by John Bintliff

My good friend Soren Dietz has travelled widely in space but also in time to penetrate the mists of later Prehistory and Antiquity, surveying several millennia and many diverse landscapes (Central Greece, the Dodecanese, the Argolid, Carthage and rural Tunisia). In this homage to a generous and kindly spirit, I wish to investigate how people in the past could be migrants and foreigners in other people's lands and yet over time blend into their new landscape to become sons and daughters of that earth and find 'their place in time'.

At the end of the Greek Bronze Age, all the palaces of the Mycenaean Mainland were destroyed, and there was no revival of these states in the subsequent Early Iron Age. Massive depopulation occurs in their core regions, but population rises in peripheral areas – war creates large-scale people movement due to insecurity, as we see in the modern Middle East and Africa. In place of centralised states, we see political downscaling to local chiefdoms – known as 'basileis' in the earliest historic sources. The Lefkandi 'Chieftain's House' and elite burial tumulus around 1000 BC are early evidence for this class.[1] International trade declines but never ceases.[2]

There are traditions in historic times of major migrations now around the Aegean Sea, associated with the later distribution of Greek dialects and shared names for months and forms of social organisation. Recent scholarship has challenged these legends, preferring to see small-scale movements of population.[3]

Some scholars argue that the fall of the Bronze Age palace-states freed the merchant class, previously constrained by the palaces, to form links between the new chieftain elite and exchange systems to Italy, Cyprus and the Levant.[4] The breakdown of the obsessive control of local communities by these palaces could also have encouraged individuals and small groups to migrate to form new independent communities. De-population and political downscaling might then even be seen as a golden age of opportunity for ordinary people in the Aegean. Yet the fall of the state – defined as an institution monopolising the use of force, would also have created a situation of permanent insecurity. The emergence of the chieftain-focussed society might thus have been its response. The word for this elite class – Basileis – comes from a minor official in the palace hierarchy, and when the upper elite levels were destroyed perhaps this provided the basis for the subsequent survival of a small-scale elite.[5] Certainly when, at the end of the Early Iron Age, figurative art re-emerges and the first written texts appear, Southern Greek society is dominated by such oligarchic societies.

Morris and van Wees argue that Early Iron Age Greek society consisted of a small elite ruling class, propped up by a middling body of armed, free prosperous farmers, dominating a populous, unfree lower peasant class.[6] It is clear from archaeological survey that population levels remained low, so it was

1 Bintliff 2012.
2 Murray 2017.
3 Hall 2004.
4 e.g. Sherratt 2003.
5 Morris 2000.
6 Morris 2000; van Wees 1998.

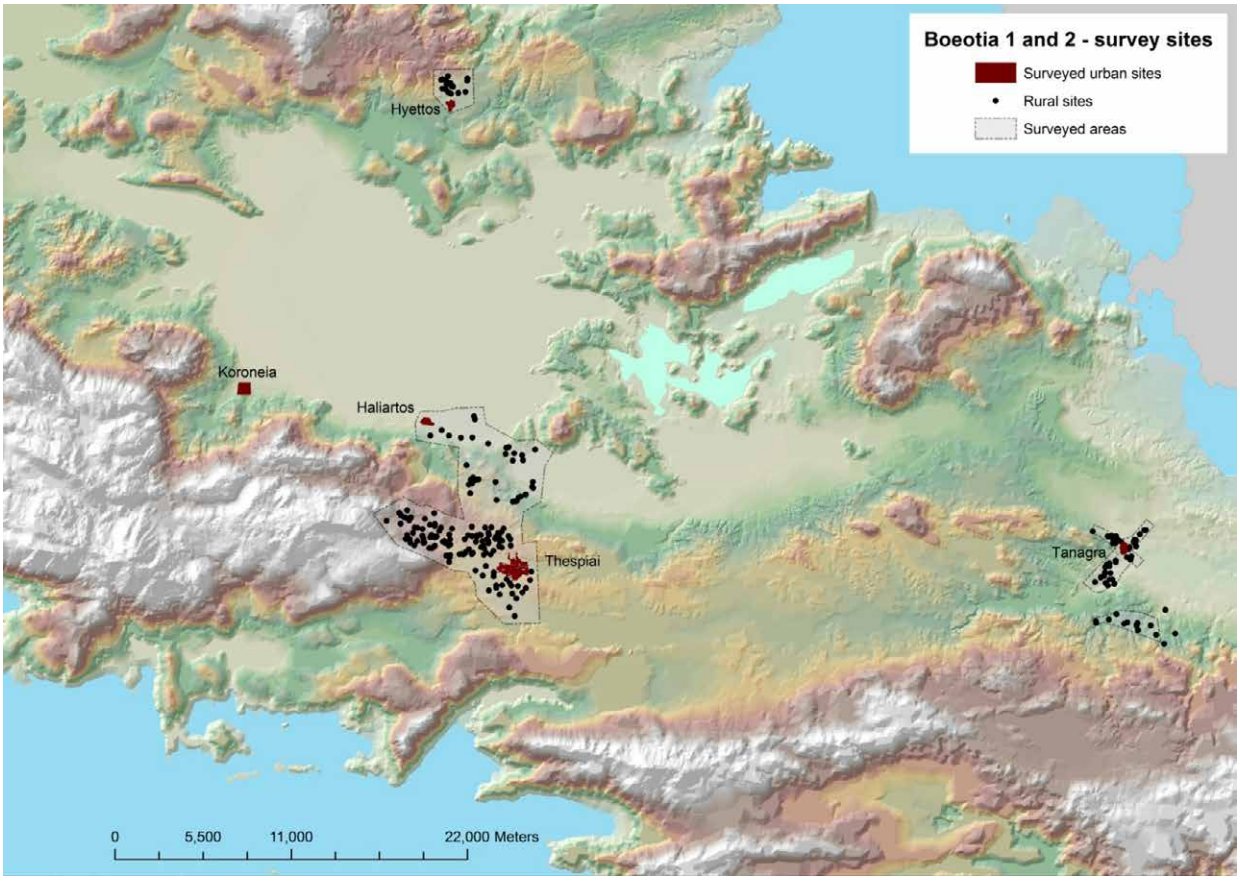

Fig. 1: *The ancient cities and landscapes surveyed by the Boiotia Project since 1978 (created by Emeri Farinetti, project GIS specialist).*

control over labour rather than land that conferred wealth and access to outside trade items.[7]

Much of the preceding reconstruction is speculative and controversial, so it is preferable to focus on small regions to plot what is happening on the ground. For over 40 years we have been studying the settlement history of the Central Greek province of Boiotia through surface survey (Fig. 1). Two patterns emerge. On the one hand, the erasing of Bronze Age power centres and internal population movement can be observed in numerous landscapes – many of the later 13 independent poleis or city-states (Fig. 2) of the region are founded by Archaic times in locations formerly occupied by small rural communities or are totally new locations, such as cities we have studied through urban survey – Thespiai, Koroneia and Tanagra. On the other hand, other towns which *were* Bronze Age centres survive in shrunken form to re-emerge as Archaic cities, such as Thebes, Hyettos and Haliartos.

Interestingly, these two contrasting trajectories are reflected in myth and monumentality. Boiotian legends relating to the Bronze Age focus on *actual* Mycenaean centres such as Thebes, Haliartos and Eutresis. *New* urban foundations plausibly had to invent a tradition linking them to a heroic past: thus, Thespiai recounted a story that the demigod Heracles had impregnated 40 elite maidens, probably an origin myth legitimating the elite family oligarchy that ruled the city in Archaic times. The monumental record marks cities with a genuine Bronze Age leading role as celebrating their heroic ancestry. Haliartos still possessed much of its Bronze Age Cyclopaean fortification wall until the end of the Hellenistic town, and even when the city repairs and enlarges its circuit wall in late Archaic and early Classical times, it builds in a polygonal style, perhaps to symbolise its earlier

7 Bintliff 2006.

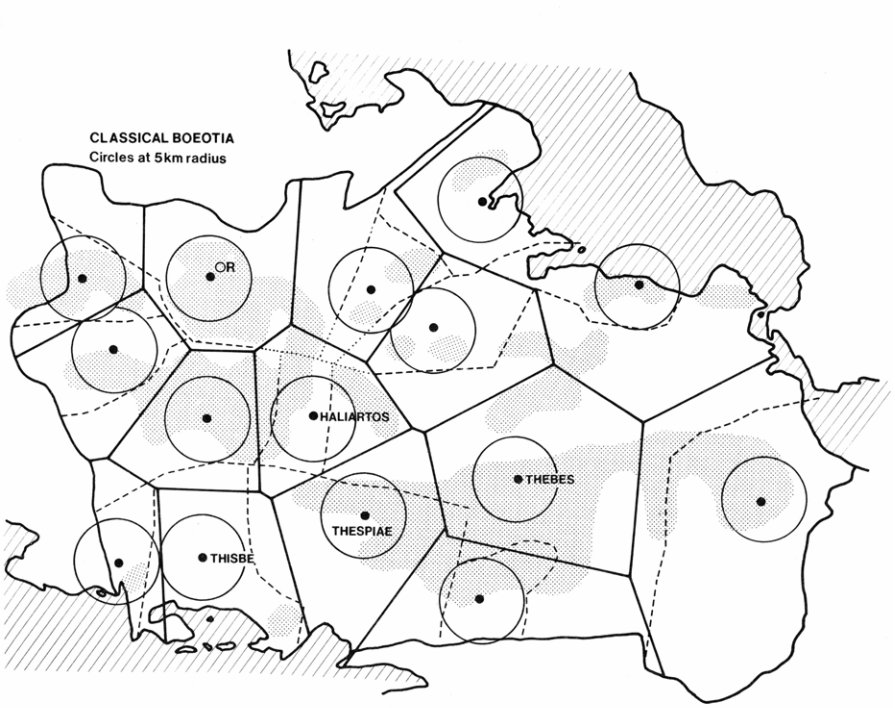

Fig. 2: *The classical city-states of Boiotia, with proposed boundaries in dashed lines (source: author).*

glory. As my colleague Lieve Donnellan has shown, two other monuments indicate a deliberate display of its mythical past: in the Lower Town a Bronze Age burial tumulus appears to become a locus for ancestor worship in historic times, and in the heart of the Acropolis a Middle Bronze Age apsidal house is surrounded by a later ritual enclosure.[8]

These patterns over time reveal the contrast between continuity and discontinuity in the regional landscape, clearly evidencing internal migration in the creation of new political centres. Yet there is also undeniable evidence for long-distance migration. Just one Boiotian city is recorded as having participated in historic times in a formal settlement abroad, Tanagra, and the town of Heraclea Pontica in the Black Sea, but Boiotia has always been an agriculturally-focussed region without notable exports or maritime economy. Greek legends generally agree in portraying the Boiotians as a people who migrated in the Early Iron Age from Thessaly to the North,[9] but apart from a shared dialect, there is little else to support such a major population transfer. Greek legends also (in competing versions) refer to numerous other movements of people into and out of Boiotia in what would have been Bronze Age times, which historians are more enthusiastic to give credence to than archaeologists (Fig. 3). A better case can be made for linking Boiotia to the region of Aeolia in North-West Anatolia, not only also through its shared dialect in Archaic times, but based on a vital firsthand witness: the first author in European literature.

The poet Hesiod's poetry is now placed around 700 BC or a few decades earlier by Martin West[10] and other authorities, perhaps a century before the final appearance of the standard form of Homer's Epic poems (placed in the 6th century by Nagy[11] and plausibly within a similar period by Snodgrass[12]). His poetry shows specific linguistic links to Aeolia, as well as cultural references. Moreover, in his autobiographical poem 'The Works and Days' he tells us that his father originated from the community of Kyme in Aeolia, lived as a merchant sailor but finally, driven by poverty, migrated to the inland village of Askra in Central Boiotia to take up the farming life, the subject of Hesiod's poem.

The Works and Days is nonetheless, and rather surprisingly, about a very localised life in a rural village, how to farm well, and it fits a recognised

8 Donnellan 2017.
9 Buck 1979.
10 West 1978.
11 Nagy 2012.
12 Snodgrass 2017.

It is clear that three very discrepant historical traditions can be seen to deal with early Boeotian history, as the following chart makes plain:

	Hecataeus	Hellanicus	Pherecydes
1.	?Leleges and Pelasgians?	Ogygus autochthonous	*Ogygus, s. of Boeotus, king of Boeotia
2.	Barbarian Aones, Temmikes and Hyantes from Attica	Founding of Thebes by Ogygus and Ektenes	Founding of Thebes by Amphion and Zethus
3.	Cadmus subdues above and founds Thebes, walling the Cadmea	Native Aones and Hyantes from elsewhere in Boeotia to Thebes. They attack Athens.	Phlegyians destroy Thebes
4.	Amphion and Zethus found Eutresis. Possibly here a Thracian incursion	Cadmus subdues above; founds Cadmea	**Cadmus refounds Thebes
5.	Usual stemma Cadmus-Oedipus	Amphion and Zethus as usurpers in reign of Laius	Cadmus-Oedipus
6.	Oedipus	Oedipus and Jocasta	Oedipus and three wives
7.	Seven and Epigoni	Seven and Epigoni	Seven and Epigoni
8.	Expulsion of Cadmeans to Thessaly and Encheleis under Laodamas; returnees under Thersander	Expulsion of Cadmeans to Histiaea or Thessaly; Laodamas killed	Expulsion to Doris; return to Thebes under Creon
9.	Trojan War	Trojan War and friendly Phlegyians	Trojan War; Pelasgi expel Thebans
10.	Phlegyians expel Thebans and Minyans	Thracians expel Minyans	———
11.	Cadmeans return	Cadmeans return	Boeotians return

*Ogygus, s. of Boeotus in Corinna.
**Cadmus as son of Ogygus in Mythographer Phot. App. Nov. 5, 42.

Fig. 3: *Competing legendary traditions for the early history of Boiotia (from Buck 1979, 51, with permission).*

genre of rural wisdom literature.[13] Despite being a second-generation foreigner, Hesiod is totally embedded into Boiotian life and society. For Ian Morris he represents a rising middling class of successful farmers, who will challenge the traditional elite families for a share of political power, the origin of the hoplite class that will control politics in some half of later Classical city-states.[14] Morris contrasts Hesiod's very local worldview with that of the elite, with their interregional marriages and trade connections, not the future direction for much of Greek society. Hesiod includes details of maritime life, doubtless taken from his father, only to discourage it. His only sea voyage was a very short one to participate successfully in a literary contest at Chalcis on the adjacent Euboea island, yet this connection may well have been relevant to his ability to write in the new Greek alphabet, as Euboea was a major hub in interregional trade and the migration of Greeks around the Mediterranean.

13 Schmitz 2004.
14 Morris 2000.

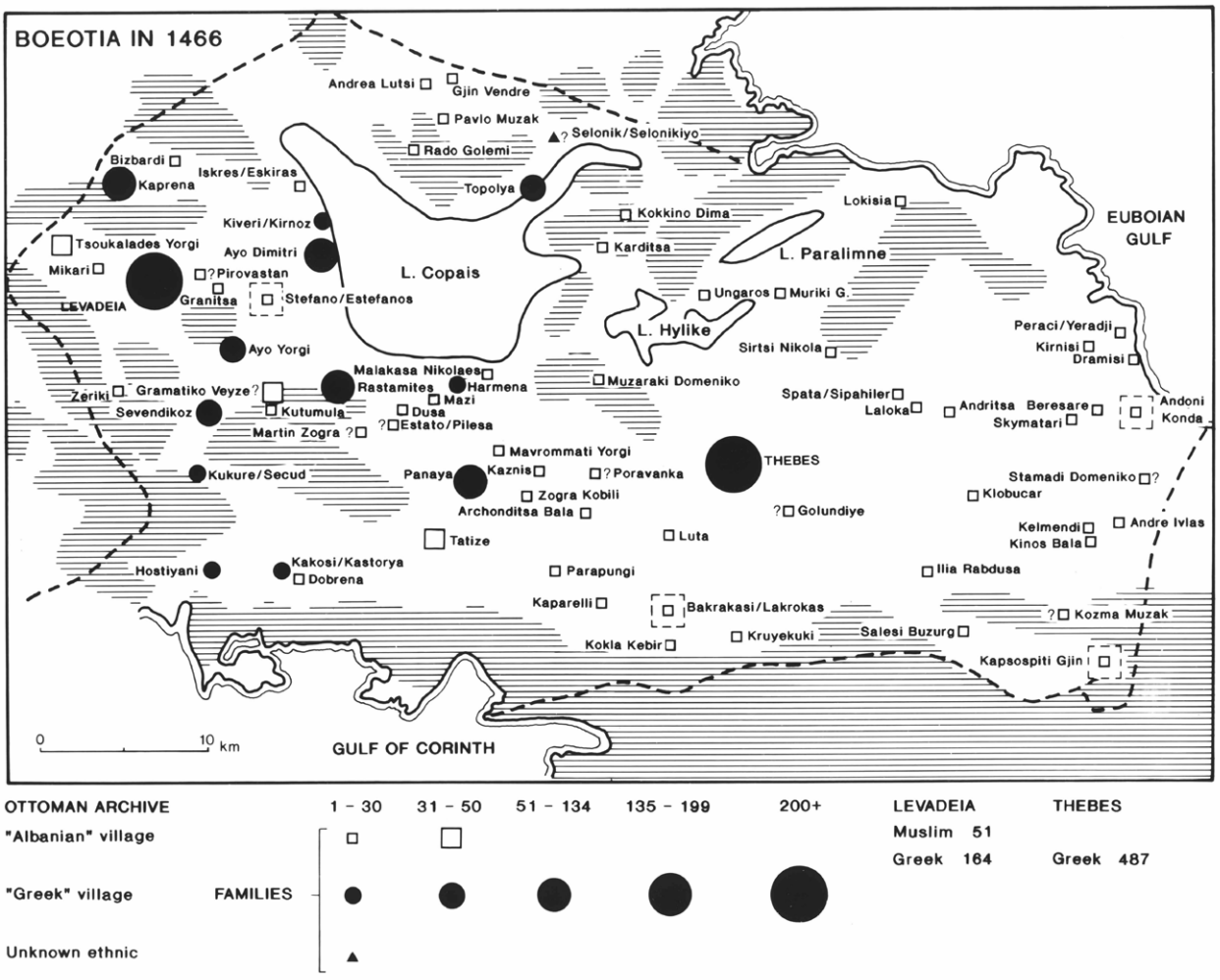

Fig. 4: *The size and distribution of settlement in Boiotia in AD 1466, from Ottoman tax records and the author's localisations (source: author and M. Kiel with permission).*

By the High Classical period, a confederation of city-states in Boiotia appears to outsiders as a distinct population, in opposition, often violent, to powerful neighbours such as the Athenians and the Thessalians. Yet closer inspection reveals deep cracks in this façade. Each city has unique cults and myths,[15] and Boiotian history is replete with wars and destructions pitting each city against each other. But as we have seen, it is likely that these 13 city-states were an unstable conglomerate of communities: some survived from being Bronze Age centres, while others were created in the ensuing half empty landscapes of the Early Iron Age through internal migration. Overlying these trajectories are long-distance migrations, perhaps small-scale but repetitive, taking people out of the region to new landscapes like the Black Sea but also into the region, such as Hesiod's father and poor people like him seeking a better future abroad. Recent scholarship, driven by advances in the use of DNA to trace prehistoric migration around Europe, has alerted scholars to the incessant mobility of individuals and groups of smaller or larger size.[16]

A central feature of both continuity and discontinuity in the historical landscape is the phenomenon of place-making and creative embeddedness. Over time local communities of whatever origin seek to identify with the local landscape where they reside. They resurrect or *create* stories that give them roots

15 Schachter 1981-1994.
16 Fernandez-Goetz et al. 2022.

Fig. 5: *A traditional rural dwelling type of medieval and later date in Boiotia (source: author).*

in local topography, marking places and monuments with legendary ties of origin and belonging.[17] This is well-known in ethnography, as was shown in Karakasidou's study of the modern village of Assiros in Greek Macedonia: the inhabitants are Slavic, Early Modern in-migrants in origin, yet identify as proud Greek citizens and believe themselves to be descendants of Alexander the Great, whose visit to the village in Antiquity they suggest is the reason they possess a large tumulus – actually a prehistoric settlement mound.[18] Likewise our own research into post-medieval Boiotia has shown that the majority of the region's villages, which self-identify in politics and culture as entirely Greek, are in origin due to a large-scale settlement of Albanians (Fig. 4) following population collapse with the 14th century AD Black Death pandemic.[19] Archaeologically their houses (Fig. 5) and ceramics (Fig. 6) are identical to those of the surviving post-medieval *Greek* villages, but until the early 20th century they did not speak Greek but a form of medieval Albanian (Arvanitika).

It was that notable geographical theorist Patrick Geddes, who summed up the centrality of place-making and creative embeddedness in traditional and early modern communities with the phrase (modified from a French original) – 'Place, Work, Folk'.[20] We all – if we just scratch the surface of our family trees and the etymology of our names – owe something or much to people who migrated, yet most of us have a keen sense of once or still belonging to a particular landscape or townscape with its hills, streams, streets and buildings, people close to us, traditions and memories.

17 Bintliff 2013.
18 Karakasidou 1997.
19 Bintliff 1995; 2003.
20 Meller 1973.

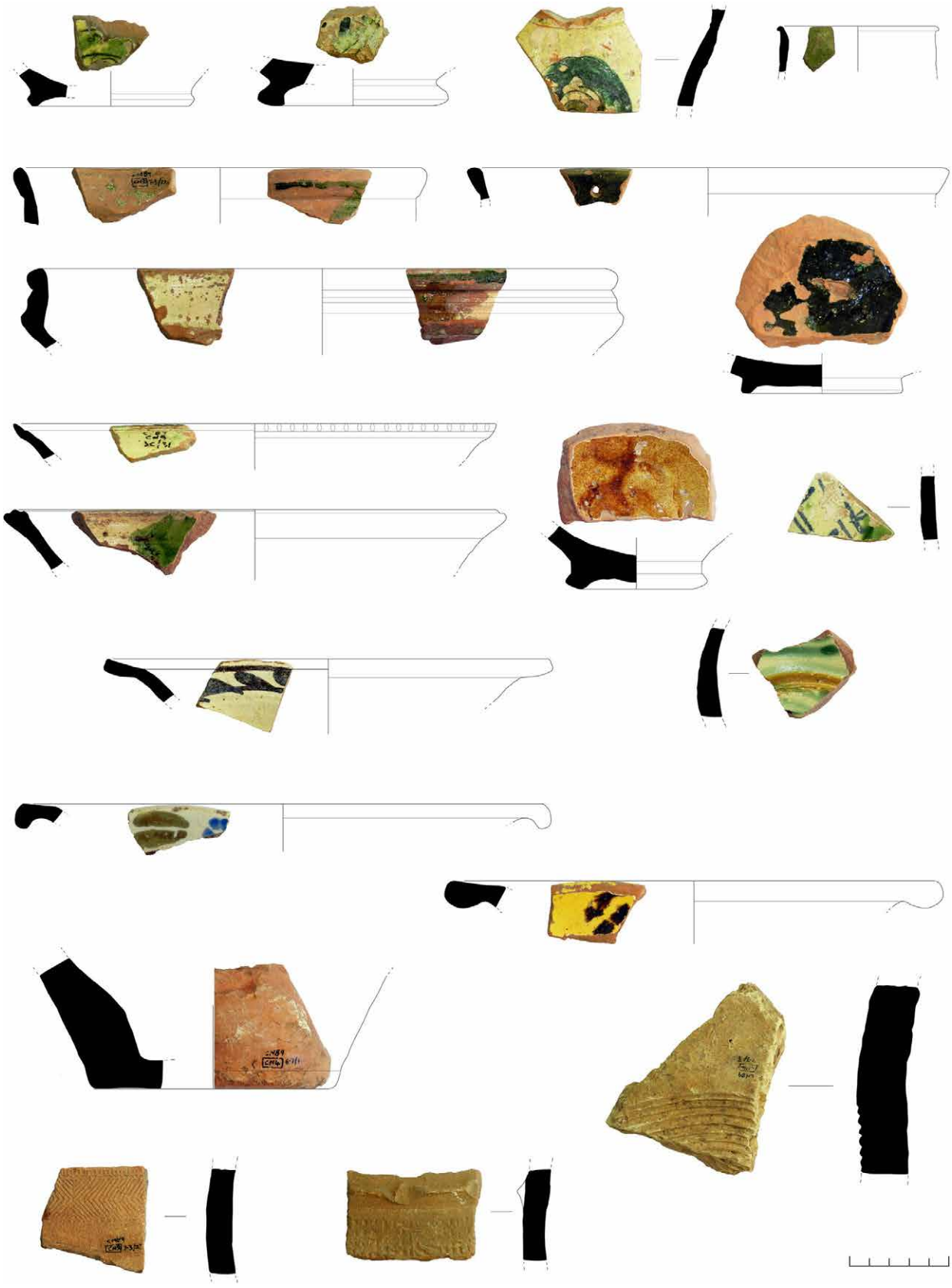

Fig. 6: *Late Frankish-early Ottoman pottery from the Boiotia Survey collection (source: A. Vionis, with permission).*

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The First-generation Settlement in Archaic Chalkis in Aetolia: Courtyard Houses, Feasting and Weaving

by Sanne Houby-Nielsen

For Søren Dietz with gratitude for our many memorable excavation seasons in Kato Vassiliki and for his hard work as an editor of Chalkis Aetolias II: The Archaic Period.

The small promontory of Agia Triada on the coast of Aetolia is situated in between two mountains: Varasova to the west and Klokhova to the east. For thousands of years, these twin mountains have formed an important landmark for maritime traffic moving along the corridor formed by the gulfs of Patras and Corinth.[1] At the beginning of the 7th century BC, after more than 500 years of oblivion, a group of households founded a community on the small hill.[2] Judging by their pottery, this happened during the Early-Middle Proto Corinthian period (690-670 BC). The initial establishment activities would have involved several phases, from temporary living to the allocation of plots, which are not archaeologically preserved. Only remains of the community that eventually became established have survived.[3] These remains were easy to identify during the excavations, as they were found directly on top of the Bronze Age level, and as the Early-Middle Proto Corinthian settlement was temporarily abandoned and not resettled until Middle Corinthian pottery was used.[4] Moreover, as field strategies combined an intensive survey, many trial trenches, large excavation trenches in areas with deep stratigraphy and a geomagnetic investigation, it was possible to map the extent of the various settlements. Søren Dietz estimated that the entire inhabitable area of the hill covered 3.7 or perhaps 4 ha, and allowing for 100-150 inhabitants per ha, he calculated a maximum of 600 inhabitants.[5] If we use these estimates and only focus on the extent of the Early-Middle Proto Corinthian findings, the first generation settlement consisted of no more than 200 to 300 people, or 20 to 30 households with an average of 10 members, including workers and children (Fig. 1). This article focuses on the best-preserved households and seeks to understand who these people were, where they came from and their motivations for establishing a community on the small coastal hill.

1 The hill of Agia Triada lies to the east of the modern fishing village Kato Vassiliki. For detailed maps of settlements, harbours and hinterlands of the Gulf of Patras and the Gulf of Corinth, see Bonnier 2010.

2 The bay of Kato Vassiliki was inhabited in the Late Neolithic period as indicated by remains at Pangali on the eastern slopes of the Varasova mountain; in the Early Helladic I period, people settled on Agia Triada, and large buildings were erected on the waterfront during the Late Helladic IIIC/Sub-Mycenaean period, while there was no sign of Early Iron Age habitation anywhere on the hill. The prehistoric remains have been published in *Chalkis Aetolias I*; for the site of Pangali, see also Dietz & Bangsgaard 2018; for the pits in the House at the Harbour with the earliest Archaic remains (phase K-Ia), see *Chalkis Aetolias II*, 63-83.

3 Malkin 2022, 29-30, interprets the establishment in Magna Graecia as generally involving two major phases which are normally not preserved archaeologically (temporary habitation such as tents or huts, and primary organisation and allotments), whilst a subsequent, third establishment phase (filling up house plots and *kleroi*) is the one that can be archaeologically detected.

4 A third settlement was established in the early 5th century BC and a fourth settlement followed in the late 4th-early 3rd century BC. *Chalkis Aetolias II*, 471-8, provides a summary of the three Archaic settlement phases. The second Archaic settlement, dating to the early 6th century BC, was larger and possibly covered the maximum inhabitable space, as finds from this settlement were more widely distributed than those from the first settlement. The third Archaic settlement, dating to the early 5th century BC, and the Late Classical/Early Hellenistic settlement were smaller.

5 *Chalkis Aetolias III*, 50-2: S. Dietz estimates 100-150 inhabitants per ha and a maximum of 600 inhabitants during the Archaic period and perhaps 400 people during the Late Classical/Early Hellenistic period.

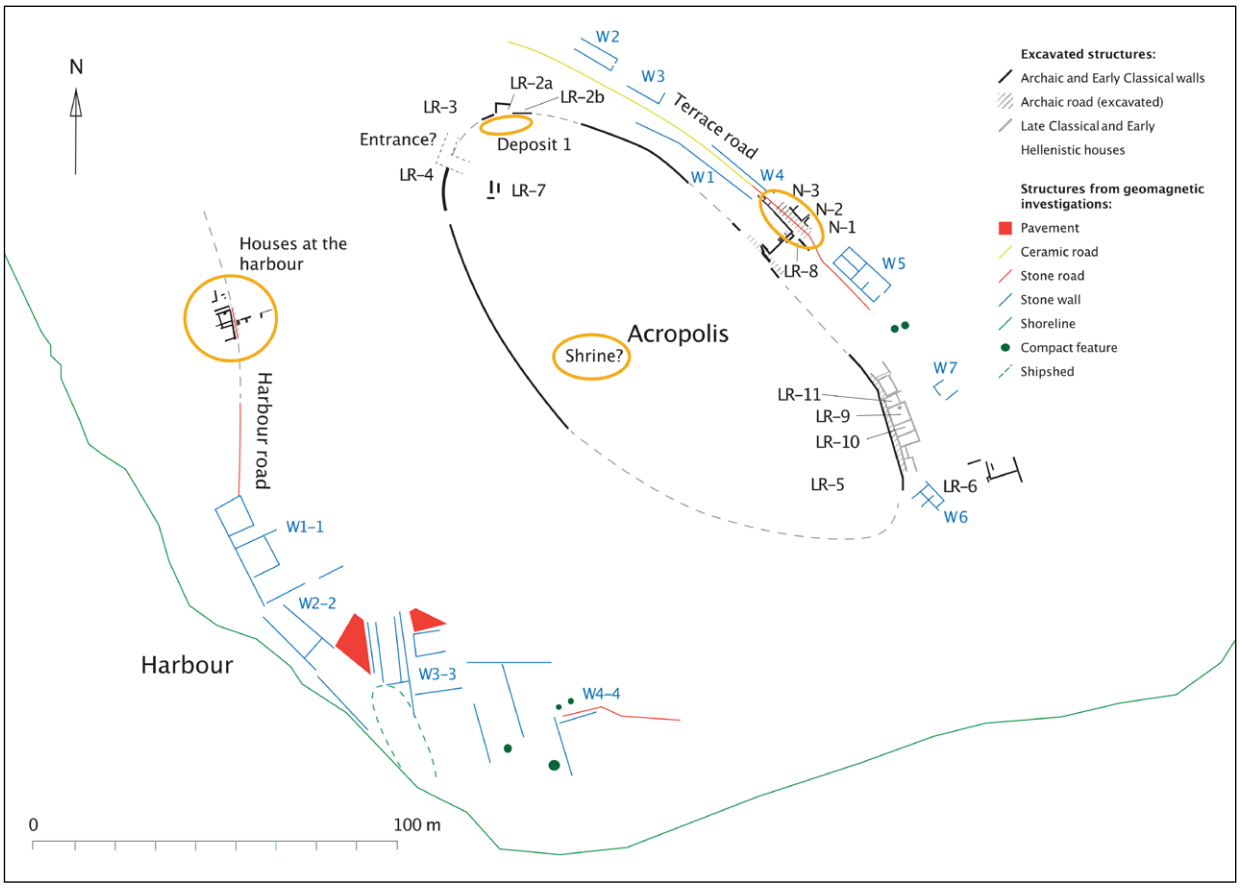

Fig. 1: *The hill of Agia Triada: remains of the first-settlement generation (thick orange circles) in relation to remains from later settlements and features revealed in geomagnetic studies from 2014 (after* Chalkis Aetolias II*, 49 Fig. 8, based on* Chalkis Aitolias III*, 40 Fig. 16, 43 Fig. 19 and structure maps by C. Marinopolos).*

The pull towards the coast

During the Early Iron Age (1100-800 BC), markets and production in mainland Greece were largely controlled by a small number of prominent 'big men' who ruled over dispersed settlements, and sometimes exploited networks and cultural traditions from the Bronze Age era. At the time that the Archaic settlement was established on Agia Triada, after centuries of slow but profound structural changes, the markets and production were in the hands of a much larger number of individual households, many of which now lived in nucleated communities.[6] Coastal zones, key straits, navigable rivers connecting the coast and inland areas and bays providing good anchorage were of new importance. Coastal settlements increased in number and many colonizers settled on small headlands and began a life as semi-pastoral farmers, trading with people further inland, and joined or established trading networks.[7] Hierarchies among settlements changed, as settlements with access to or contact with the coastal zone became more important compared to those in isolated locations further inland.[8] The range

6 Eder 2006 discusses the LHIIIC period in Western Greece (Messenia, Elis, Laconia, Achaea, Aetolia, Epirus and the Ionian Islands) which never involved a Bronze Age palace, and attributes the growth of this region during the Early Iron Age to factors such as surviving networks and traditions from the palace in Pylos; see also Knodell 2021, 192-236; Malkin 2022, 27, who notes that some 400 hundred Greek foundations were established along the coasts of the Mediterranean and the Black Sea between 750 and 500 BC.

7 See Malkin 2021; Morgan (in prep.), chapter 2.1, on the mainland-island (cross island) relationship in the Odyssey.

8 For the importance of 'straits', see Houby-Nielsen 2009, 196-7: the 'Invention' of the Strait and Harbor Spring; Knodell 2021, 53; regarding the strait of Euripos, see Morgan (in prep.), chapter 3.2 (Fluvial systems) and chapter 3.3 (Coasts and islands, with mention of important straits); for changed hierarchies, see Papadopoulos 2016; for profound structural changes in village societies in the Early Iron Age, see Knodell 2021, especially 151-236.

of subsistence economies became broader in response to increased demand for specialised products. Besides olive oil, wine and salt, households now produced or traded numerous products, such as amber, bitumen, different kinds of wood, coral, murex, pottery, iron and bronze objects, products for textile production and ready-made textiles.[9] This diversified market in food products, goods, raw materials and specialised crafts increased regional spheres of interaction, and caused clusters of established regional trade networks to multiply.[10] In the Gulf of Patras, communities developed, whose maritime lifestyle increasingly contrasted with semi-pastoral, tribal communities (*ethne*) living further inland.[11] Some of these settlements had been established long before, whilst others, such as the Agia Triada community, were newly established and eager to take advantage of the new market opportunities.[12]

The settlement

The Agia Triada hill rises no more than 30 m above sea level. A sizable harbour, protected by the twin mountains, is located to the west. To the north, a 4 km-long valley constitutes a fertile hinterland, watered by a tributary of the Evenos river, and the slopes of the mountains provide access to extensive pastures. Following typical trends among colonizers, groups of households came to the headland with ideas for a new existence. These households were hardly a homogenous group. Some chose plots of land close to the harbour and large structures, which were identified in the geomagnetic survey and interpreted as warehouses for offshore trading and ship sheds (Fig. 1).[13] Others chose plots of land facing the hinterland with its rich fields and pastureland. These different approaches to the hill possibly reflected different preferences and experiences of subsistence economy among the households, with some largely concentrating on seafaring and fishing, and others on farming and herding. This impression was supported by the presence in the cultural strata of many species of shellfish and of bones from goat/sheep, cattle and to a lesser degree pigs, which pointed to specialised economies and exchange of dietary products amongst the new inhabitants.[14] The households also seem to have represented different economic classes. As discussed below, a well-preserved house at the harbour appeared 'grander' and more sophisticated than a house on the rear side of the hill. Despite such social and economic diversity, the settlers must have shared a rough idea about the kind of community they were establishing. This rough idea included a preference for a rectilinear layout of houses and roads, as far as possible on a hill with natural terraces, and a characteristic preference for houses with courtyards. The new inhabitants apparently agreed to invest in public buildings at the harbour as well as in roads, but not in a defensive wall.[15] There must also have been a shared notion that an equal share of the new territory should be allocated to the gods to secure their protection, as was a common practice among

9 For amber export via Verucchio on the Adriatic coast of Italy, see Rondini & Zamboni 2020; regarding bitumen, see Morris 2006 and 2014; for export diverse of wood species from Kephallonia, see Karadima (forthcoming); for coral and murex, see Theodoropoulou 2017 with further references; regarding textile production and trade, see *Chalkis Aetolias II*, 383-452; Houby-Nielsen (in prep.)

10 Malkin 2011, 21-64, 97-118; Malkin 2021.

11 On the growing contrast between coastal and inland settlements in Aetolia and northwestern Greece, see Morgan 2001; Morgan 2003, 10-16; regarding the problematic translation of *ethnos* as 'tribe', see Knodell 2021, 196-205; Malkin 2011, 19-20; Papadopoulos 2016; Dietz 2019.

12 Bonnier 2010, with a bibliography of the sites in the Gulf of Patras 153-64 (southwestern region) and 165-81 (northwestern region). Late Geometric-Early Archaic sites with a Bronze Age and Early Iron Age background: for Kalydon, see Bollen 2011; Dietz 2011a; Dietz 2011b; Dietz 2019; for Patras, see: Rizakis & Petropoulos 2005; Gadolou 2008; 2011; 2018 (Late Geometric finds, including Thapsos-class ware, from burials in Patras and Achaea). Late Geometric-Early Archaic settlements: for Makynia, see Saranti & Georma 2018a; Saranti & Georma 2018b; Saranti & Nikolovieni 2018; for Olenos & Dyme, see Tsaknaki (forthcoming), who describes five excavation sites in the vicinity of Olenos and seven excavation sites in the modern city of Dyme with Late Geometric and Archaic finds from burials, and from cultic and settlement contexts with abundant evidence of feasting and textile production; see Morgan (in preparation), for an analytical discussion of the sites mentioned.

13 S. Dietz in *Chalkis Aitolias III*, 50; for the Archaic ship sheds in Sicilian Naxos, see Lentini, Blackman & Pakkanen 2008.

14 For animal bones, see P. Bangsgaard in *Chalkis Aitolias I*, 178-95 and *Chalkis Aitolias III*, 259-61; for shellfish, see K. Strand Pedersen in *Chalkis Aetolias I*, 171-77; for the significance of the pinna molluscs (in the Middle Corinthian strata), see Houby-Nielsen 2017b, *Chalkis Aetolias II*, 436-45. The slopes of the Varassova mountain, in the area known as Pangali, were still used as pasture for cattle and sheep during the period of Greek-Danish archaeological investigations.

15 The earliest wall with a defensive function at Agia Triada dates to the 6th century BC, probably the latter part of this century. The wall in question was a strong sandstone wall which encircled the upper part of the hill, and functioned as both a terrace wall and a defensive wall, and possibly also as an enceinte wall around a sacred space. The date of the wall (referred to as the Acropolis Wall) has been extensively examined and discussed by S. Dietz in *Chalkis Aetolias III*, 57-9, 66-9, figs. 27-8; *Chalkis Aetolias II*, 265-71, figs. 148-49, table 13 drawing on the studies by Dietz. Regarding the general lack of defensive walls in Corinthia and mainland Greece until the end of the 7th century BC, see Frederiksen 2011. For a discussion of urban plans based on topography in coastal Aetolia, see Morgan (in prep. chapter 4.1.1)

Greek colonisers, and was chiefly the responsibility of female members of a household.[16] This sacred enclosure was very probably delimited on the highest point of the acropolis in the area of the later Early Christian basilica, and perhaps devoted to Artemis, who was popular in the Bay of Patras.[17] Finally, the settlers must have had a shared perception which necessitated the separation of the living from the dead, as no Archaic burials were found anywhere on the hill and therefore must have been located further away.[18] Such a notion of a community layout and values reflects familiarity with settlement trends around 700 BC in the gulfs of Corinth and Patras, other parts of mainland Greece and in Magna Graecia.

Roads and plots of land

The Harbour Road connected houses at the harbour with houses facing the hinterland. Excavated parts indicated that the road was a narrow, mule-wide path, less than 1 m wide, but the geomagnetic survey indicated that it was wider near the warehouses and ship sheds. The road was lined on either side by more or less equal-sized house plots which were oriented north-south (Figs 1-2). The Terrace Road was approximately 3 m wide and therefore considerably wider than the excavated parts of the Harbour Road. Judging from preserved house walls along the road, the house plots may have been smaller (Fig. 3). The Terrace Road was an important road, perhaps leading to the sacred enclosure on the acropolis. For comparison, a main road of similar width and date divided Sicilian Naxos (founded in 734 BC) into a grid system.[19] Interestingly, loom weights and iron pins, perhaps from spindles, along with fragments of *pyxides* and small conical *oinochoai* (long-necked jugs), perhaps originating from processions on the road, were imbedded in the pavements. Such items were popular as votive offerings in many sanctuaries and in Archaic imagery of ritual processions, girls, *kanephoroi*, often carry folded pieces of textile and small conical *oinochoai* in their baskets filled with votive offerings.[20]

Courtyard houses

The settlers at Agia Triada erected houses of the type known as a courtyard house, often characterised by one or two rooms in the north facing a small courtyard in the south. The courtyard house was a new type of house. At the end of the 8th century and in the 7th century BC, it gradually replaced apsidal buildings or smallish houses in agglomerated communities in various parts of Greece. In Magna Graecia, the courtyard house was instrumental in the rectilinear layout of the new settlements. In the Corinthia and the Gulf of Patras, courtyard houses started to appear around 700 BC, as exemplified by houses in Corinth, as well as perhaps Dyme, Makynia and Agia Triada, and can be seen flanking main roads.[21] The best-known house at Agia Triada was named the House at the Harbour.[22] Its remains were interpreted as stemming from an exceptionally large, one-storey, multi-roomed courtyard house, which faced both towards the waterfront and the Harbour Road.[23] The building consisted of two sections, each of which had one or two rooms in the north facing a small courtyard and, in the northern section, an additional room in the west. Rooms and courtyards were of almost equal size (8.80-9.20 m^2) and the northern courtyard was equipped with a water channel. The total size of the house may have exceeded 100 m^2, although only 56 m^2 was excavated. By comparison, the average size of ancient Greek houses has been estimated as increasing from 70 m^2 to 240 m^2 between the 9th and 4th century BC.[24] Pits found inside the

16 Malkin 2021; 2022.

17 Houby-Nielsen 2002; *Chalkis Aetolias II*, 270-4, 471-7, discusses the finds which are possibly associated with the earliest cult on Agia Triada.

18 Tombs, published by Moschos 2000, 291-360, dating to the Late Classical-Early Hellenistic period were found during rescue excavations within half an hour's walking distance of Agia Triada, along the modern road which links Kato Vassiliki with the highway to Agrinion; two Late Classical-Early Hellenistic cist burials, published by Eiring 2004, were found in close proximity to the House at the Harbour and interpreted as possible evidence for veneration of ancestors in the late 4th/early 3rd century BC, see *Chalkis Aetolias II*, 477-78; see Mazarakis Ainian 2007-2008, 389, on the relationship between burials and dwellings as reflecting *polis* formation in Athens, Corinth and other key sites.

19 Road 'Si' in Naxos: Lentini & Whitbread 2015.

20 *Chalkis Aetolias II*, 221, fig. 117, shows a Middle Corinthian bottle in the British Museum (cat. Nos. 65-7-20.20) with a depiction of girls carrying conical *oinochoai* and folded textiles; Foxhall 2018, 1027, concludes that hundreds of loom weights with individual characteristics from the Pantanello sanctuary in the *chora* of Metaponto were clearly votive gifts, which must have been carried on the road leading to this sanctuary.

21 Lang 2007; Westgate 2015 with references to earlier discussions; Bergemann (forthcoming).

22 *Chalkis Aetolias II*, 63-113.

23 Interesting parallels for courtyard houses with many rooms, some of dating to as early as the Early Iron Age, have come to light in Attica (Athens, Eleusis and Thorikos), Corinth and perhaps Dyme and Olenos.

24 Morris 2004; 2005; Ault 2007.

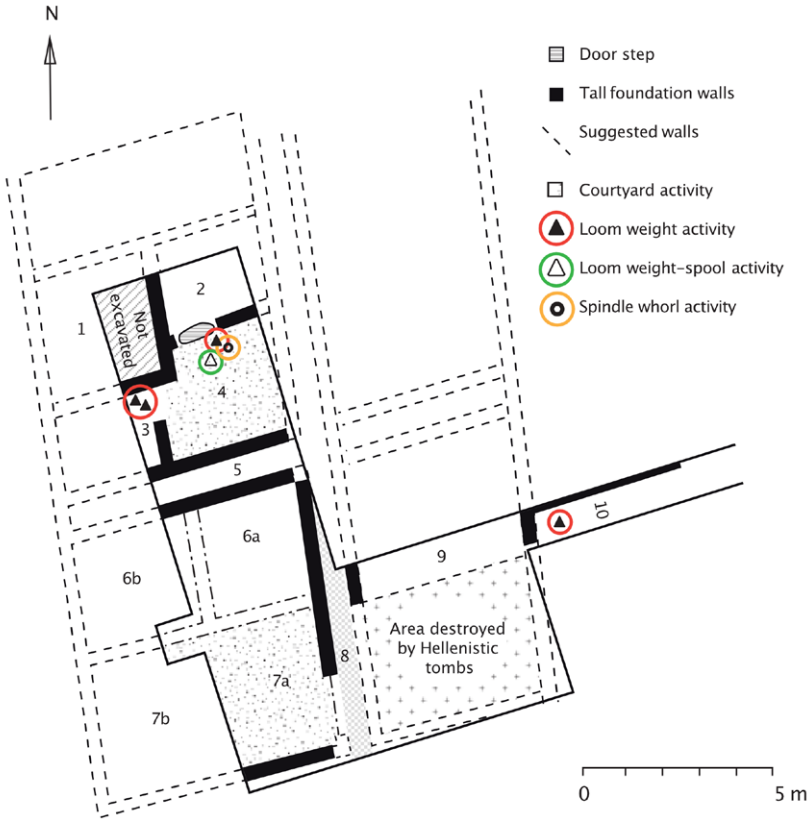

Fig. 2: *The House at the Harbour and neighbouring plots of the first-generation settlement (phases K-Ia and K-Ib) (based on* Chalkis Aetolias II, *69 Fig. 13 and 85 Fig. 23; copyright: Houby-Nielsen).*

courtyards may date to a slightly earlier building phase. These pits contained elaborate pottery from feasting which suggested that earlier phases of the house had not been any less ostentatious.

House walls adjoining the Terrace Road were associated with three courtyards, while rooms in the northeast lay outside the excavation trenches in heavily eroded terrain. One of these courtyards, N-1, and a wall underneath a second courtyard, N-2, belonged to the first-generation settlement.[25] These walls were sufficient to suggest that a row of courtyard houses had been laid out at right angles to the Terrace Road. The best-preserved house, N-1, must have been smaller than the house at the harbour, as it probably only consisted of one courtyard and one or two rooms facing it, but the size of its courtyard was similar to that of the northern courtyard of the House at the Harbour, and it had a similar water channel. Courtyards were therefore prioritised in both areas.

Feasting and textile manufacture

Well-preserved find contexts from the two best-preserved houses, the House at the Harbour and house N-1, offered glimpses of everyday activities at the first-generation settlement, ranging from heavy-duty tasks, such as milling, cooking and small-scale smithing, to feasting and manufacture of valuable textiles.[26] In both houses, the courtyard was the location for the many different activities, but feasting and textile production had been spatially prioritised. The settlers' preference for the courtyard house as house model was therefore linked to a specific desire to facilitate feasting and textile manufacture, and to allow these two activities to take place at the same time.[27]

Feasting

Almost all pottery from the House at the Harbour may be associated with communal eating/drinking

25 *Chalkis Aetolias II*, 235.

26 Regarding a saddle quern from the courtyard of house N-1, see *Chalkis Aetolias II*, 246, no. 668, fig. 134; for parallels in Iron Age Attica and Crete (Azoria), see Vlachou 2011, 90-1, fig. 4 with further references; Haggis *et al.* 2011, 471-772, fig. 30.2; for saddle querns from Archaic and Classical sites in the Mediterranean and from Archaic and Classical farmsteads in the *chora* of Metapont, see Schwall & Gluhak 2014.

27 Houby-Nielsen (in preparation) discusses in more detail the connection between the popularity of the early Archaic courtyard house and specialised textile craft and feasting.

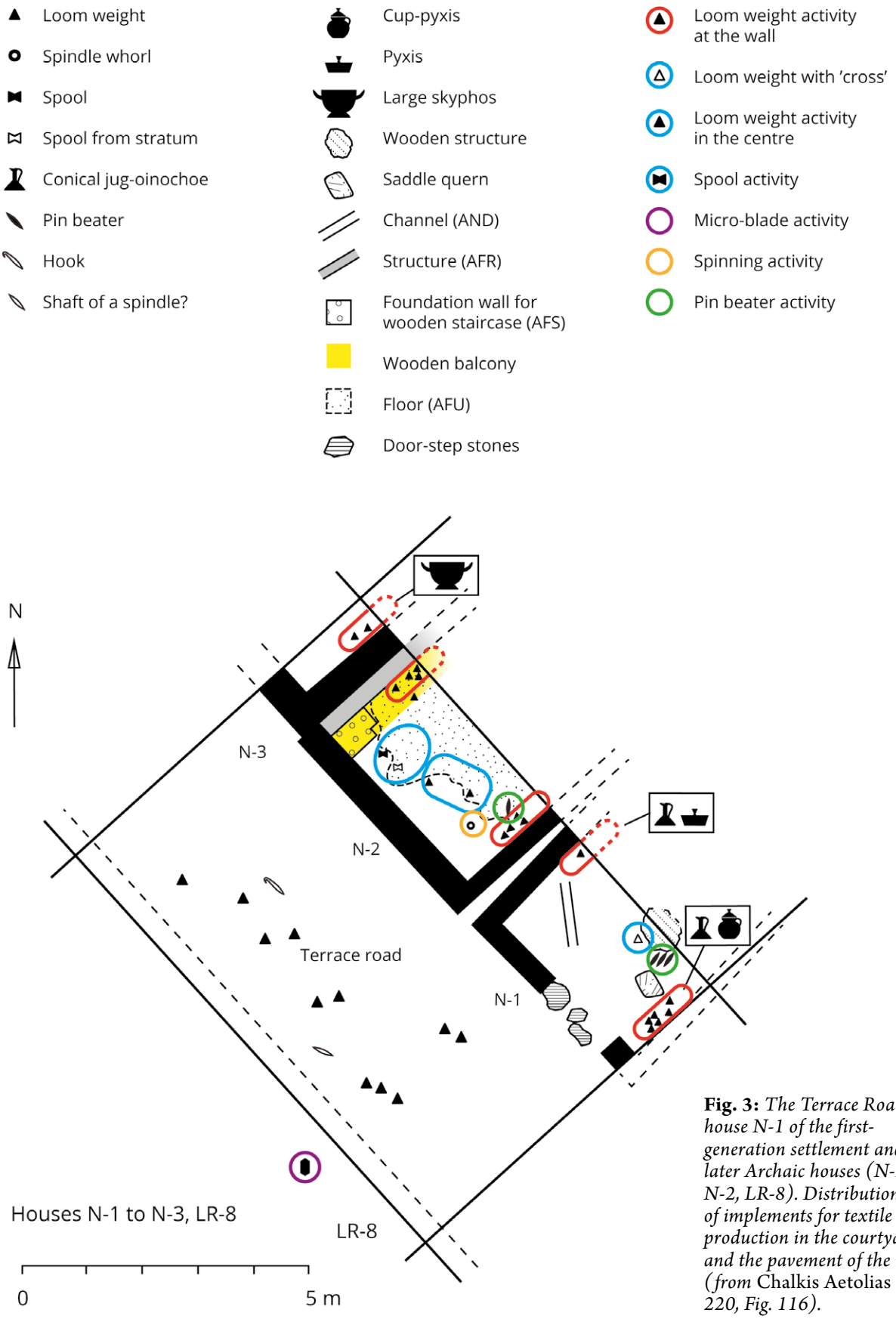

Fig. 3: *The Terrace Road, house N-1 of the first-generation settlement and later Archaic houses (N-2, N-2, LR-8). Distribution of implements for textile production in the courtyards and the pavement of the road (from* Chalkis Aetolias II, *220, Fig. 116).*

and wine consumption. A range of thin-walled and elegantly produced vessels, made locally or in the region, with a diameter below 20 cm, were used for drinking and eating. These consisted of cups, *kantharoi* of the Western Greek class, *kotylai*, ray-based *kotylai* and medium thin-walled Thapsos-class *skyphoi*. The most exclusive vases, perhaps figure-decorated, were used for mixing wine and water, and were probably imported, perhaps from Corinthia.[28] Movable coarse ware stands had apparently not been used as supports for cooking pots, as they did not bear any traces of secondary burning.[29] They may instead have supported a large, shallow and decorated basin in situations which required the basin to be raised from the ground (Fig. 4). Such a situation may have involved feet washing, as this activity clearly formed part of Early Archaic hospitality rituals, as demonstrated by the famous Homeric episode, in which Odysseus disguised as beggar has his feet washed by his old nurse (*Od*.19, 393-398) and by Middle Corinthian imagery of family feasts.[30] Various large bowls, *lekanai*, were used for preparing the meal, while one exceptionally large, standed basin, with a rim diameter of 58 cm, must have served a very specific purpose, which was perhaps associated with domestic purification rituals.[31] Plates were used for serving food and table amphorae for serving water or wine. Most cooking pots were large (rim diameter 20-26 cm) and had been used for preparing multiple servings. Generally, almost all of the pottery belonged to a well-known repertoire of shapes and pottery wares characteristic of the Gulf of Patras, western Greece including the Ionian islands, and in the Greek/Greek-influenced settlements in South Italy and eastern Sicily. Even the standed basin, which is a relatively rare form, had close parallels not only in the Gulf of Patras (Olenos), but also in Corinth and Magna Graecia.[32] Figure 5 is an attempt to reconstruct the pottery service together with the weaving and spinning implements from the northern courtyard of the House at the Harbour. Seen collectively, this 'service' represents a typical high-status *koiné* service in the colonial-Greek Adriatic-Ionian region, and it would have been immediately recognisable as such by any prominent visitor, who was accustomed to networking in this part of the Mediterranean and even beyond.[33] The service therefore signalled the high status of the owners of the House at the Harbour and that they belonged to a certain well-known social class. This class successfully interacted and traded with one another, and maintained formalised friendship liaisons by hosting and taking part in lavish meals using a standard 'set' of pottery and offering certain hospitality rituals, one of which may have been feet washing.[34]

Pottery from house N-1 on the Terrace Road was less ostentatious and lavish, but did attest to communal dining and wine drinking. The household used the same repertoire of drinking and eating vessels as in the House at the Harbour, but spouted basins, large standed basins and table amphorae were absent, and cooking pots were smaller. However, as at the harbour, a wine and water mixing vessel was the finest of the range of ceramics that was present and this may have been imported.[35]

Textile manufacture

The households of Agia Triada were mainly involved in weaving rather than spinning. Moreover, the textile workers exclusively used loom weights of a small size

28 *Chalkis Aetolias II*, 73, no. 21a-b, 78-9, no. 56a-b.

29 *Chalkis Aetolias II*, 91-2, no. 81, figs. 28-29b and pl. 6, and 202 no. 514, pl. 33. The suggested function of the stands as movable supports for various pots recalls that of *lásana* for cooking pots. *Lásana* can be traced back to Late Geometric Athens and became increasingly popular in Magna Graecia with the spread of the Greek cuisine; for identification of *lásana*, see Morris 1985; regarding their history, see also Barretta 2018 (includes discussion of the abundant evidence from the Artemis sanctuary at Pantanello in the *chora* of Metaponto).

30 See *Chalkis Aetolias II*, 82 no. 64, 123 figs. 54a-d, 388-89 for the suggestion that basin no. 64 was used for feet washing, drawing on parallels with a Middle Corinthian *pyxis* in Paris. On the latter is a depiction of a family feast, in which a woman is washing the feet of a seated, male banqueter, using a basin like no. 64, which is resting on three probably separate stands, similar to stands nos. 81 and 514.

31 *Chalkis Aetolias II*, 78-79, nos. 56a-b with references to parallels from Timpone della Motta outside Sybaris, Syracusa and Metaponto.

32 *Chalkis Aetolias II*, 52-60 (wares); Sieverling 2018 (for a functional analysis of pottery forms in Stratos and northwestern Greece with summaries of earlier discussions); see Tsaknaki (forthcoming) on pottery associated with feasting from Olenos, Site 1 (12 km west of Patras, 800 m from the coast) with a particularly rich deposit comprising vessels such as kraters, *skyphoi*, Thapsos-class pottery, *kantharoi*, basins with stands and *lebetes* with elaborate decoration, a *lasanon* fragment, loom weights and spools.

33 The vases in Fig. 5 have been reconstructed using more complete pots as guides, published from Achaea (Gadolou 2008, 2011, 2018) and Acarnania (Sieverling 2018), Athens (*Agora XXIII*) and Corinth (*Corint XV*: *iii*, *Corinth XVIII*: I); for a comparison with a contemporary 'service' from Athens, see reconstructions of the 7th century BC banquet service from the offering trenches in the Kerameikos cemetery of Athens (Houby-Nielsen 1992, 350-1, pl. I-IV; Kistler 1998, 224, Abb. 15, 236-9 Beil. I-II; Doronzio 2018, 154-7); for the emergence of the banquet and wine-drinking ceremonies as rituals of central importance in Early Greece, see Wecowski 2014 with bibliography.

34 Concerning colonial-style dining services in the Sibaritide, see Jacobsen 2013.

35 *Chalkis Aetolias II*, 242, no. 655.

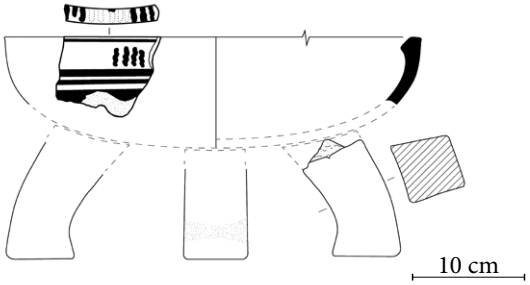

Fig. 4: *A wash basin on separate stands which perhaps was used for feet-washing among other hospitality and feasting rituals in the northern courtyard of the House at the Harbour. (A tentative reconstruction based on fragments of a shallow, decorated basin and supports of coarse ware, after* Chalkis Aetolia II*, nos. 64, 81, 514 and Fig. 29b).*

and low weight (42-100 g), which were not suited for making the wide range of heavy-duty textiles that a household needed. The loom weights were even light in comparison to small, light loom weights from Archaic Corinth (64-178 g, average 123 g), which are believed to have been used for specialised production of fine weaves.[36] The households at Agia Triada had used the small loom weights for a certain type of fine weaves, which were probably mantles, shrouds, or as the finds seem to indicate, used to make borders for such items.[37] This kind of specialised production, together with the limited evidence for spinning, was also indirect proof that a household could at this time buy ready-made yarn and heavy-duty textiles on the market and instead concentrate on specialised textile crafts, perhaps in order to produce items for sale or to be used for gift exchange in certain situations.[38]

20 loom weights were retrieved from the House at the Harbour (Figs. 2, 5 and 6). They represent two different shapes: a pyramidal shape (9) and a near-conical shape (11), and three different, low weight ranges (overall range 42-100 g). The presence of two very light loom weights, weighing less than 50 g, was noteworthy as such light examples normally date to the Classical period in Greece.[39] They therefore indicate that the House at the Harbour produced innovative and unique textile craft items. A small lead weight (10 g) may have been used as a spindle whorl (Fig. 6).[40] In the northern part of the house, two or three weaving activities, possibly including the making of borders, and one spinning activity took place in the doorways of the rooms facing the northern courtyard (Fig. 2). In the southern part of the house, a tight cluster of 14 pyramidal and near-conical loom weights, representing all three previously mentioned low weight ranges, was found in the far corner of the room facing the southern courtyard (Fig. 6). The implements were interpreted as originating from a wide border weave, the warp threads of which had decomposed causing the loom weights to fall straight to the ground. As weaving would have been impeded by lack of sufficient light in this corner, the weave may have been moved from the adjoining courtyard and stored here temporarily. A miniature loom weight of pyramidal shape in the opposite corner and a near-conical loom weight in the doorway facing the southern courtyard were possibly associated with the manufacture of fringes using the tablet-weaving technique. Apart from Corinth, which used loom weights of conical shape, the pyramidal-shaped loom weight became widely used in mainland Greece, including the Gulf of Patras, and in Magna Graecia during the Early Archaic period. The near-conical loom weight was unique and must have been invented by the workers in the House at the Harbour.[41] Its characteristic shape pointed to multiple functions as a weight and as a spool for fibre storage during band weaving. A similar tool is also known from Central and South Italy.[42] This use of pyramidal loom weights of different weight classes and the invention of a weaving tool with multiple functions therefore testified to a household in which the textile workers possessed diverse experience of weaving, both within and beyond the Gulf of Patras. Many of these workers would have been women/girls judging by the fragments of typically 'female' toolboxes (a

36 Dimova & Gleba 2018. I warmly thank Bela Dimova for providing me with the information from this study.

37 Houby-Nielsen 2017a; *Chalkis Aetolias II*, 398-400; Dimova & Gleba 2018 reach a similar conclusion concerning the low weight and homogeneous character of the loom weights from Archaic Corinth. Thanks to Bela Dimova for providing me with the information from this study.

38 See Saranti & Georma 2018, for Makynia, with evidence of semi-commercial textile production.

39 Dimova & Gleba 2018.

40 *Chalkis Aetolias II*, 69, fig. 13, 85, fig. 23.

41 See Lawall 2014, for distribution in the Mediterranean; for Corinth, see Dimova & Gleba 2018; 2020; concerning the many hundreds of pyramidal loom weights from Makynia, see Saranti & Georma 2018; for a summary of textile production in Chalkis and in relation to evidence from Greek and Italian Art in the Archaic period, see *Chalkis Aetolias II*, 392-416.

42 *Chalkis Aetolias II*, 96-9, figs. 36-7, 107-9, figs. 43a-b and fig. 44, 405-8, 416-18.

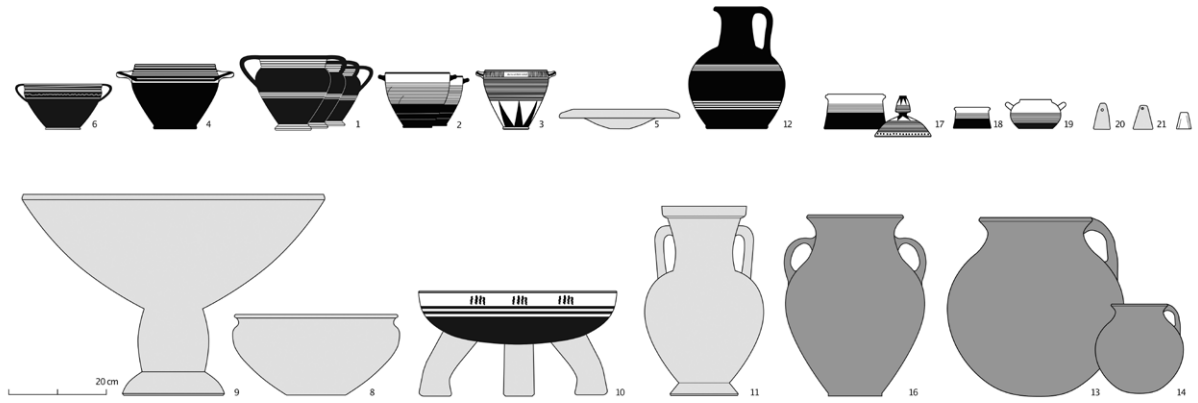

Fig. 5: *A tentative reconstruction of the main pottery shapes, weaving and spinning tools, from the northern courtyard of the House at the Harbour of the first-generation settlement (phases K-Ia and K-Ib) (after Houby-Nielsen (forthcoming); copyright: Houby-Nielsen).*

concave *pyxis* and a Thapsos-class *pyxis*) found near the weaving activities.

In contrast to the complex set of textile implements in the House at the Harbour, in house N-1 only small pyramidal loom weights of two low weight ranges were used (overall range 49-86 g). Eight such loom weights were found in the courtyard and came from three different weaving activities associated with border manufacture, two of which took place in the corners of the courtyard. The third activity was associated with a very small, decorated and secondarily burnt loom weight found near a burnt area in the centre of the courtyard alongside three bone pin beaters (Fig. 3).[43] This latter group of finds may originate from a tablet weave attached to a large wooden structure that, for some reason, had burned. Two small jugs for perfumed oil (conical *oinochoai*), a cup-*pyxis* and a concave *pyxis* were found in situ close to the activities, and two of the vessels were still standing on the floor. The small jugs may have contained a specific oil used to moisten the weaves and/or add a shiny appearance. The cup-*pyxis* and concave *pyxis* perhaps functioned as toolboxes.[44]

Based on this evidence, the households at the Harbour Road and the Terrace Road apparently prioritised space for the production of fine textiles even if their textile skills varied. The courtyard offered a private and protected space for textile workers with natural light, whilst its walls also provided shade from the sun. When necessary, unfinished weaves could easily be moved indoors into the adjacent rooms. During communal meals and feasts, the host and his guests would gather in the centre of a courtyard, perhaps on rolled-out mattresses and cushions rather than wooden furniture, whilst textile workers displayed the products of their skills and crafts, along the walls and in the doorways facing the courtyard.

Conclusion

The first-generation settlement at Agia Triada was not a project that was led by the *polis* of Corinth, as has often been assumed.[45] It was instead a private initiative, involving land occupation by a few households of diverse background as well as economic and social standing, but all of which participated in a general movement towards the coast. Some households were already familiar with a maritime lifestyle and perhaps came from another coastal settlement in or near the Gulf of Patras, while other households had led a more agrarian/pastoral life. Some household members no

43 *Chalkis Aetolias II*, 220, fig. 116, 237, fig. 130.

44 *Chalkis Aetolias II*, 237-49, figs. 130, 135.

45 Thucydides (Thuc. I.108.5, 2.83.3) refers to Chalkis in Aetolia as a Corinthian *polis*. This has generally been assumed by scholars to imply that Chalkis was founded by Corinth or was a Corinthian dependency. The Archaic settlement in Chalkis, published in *Chalkis Aetolias II*, does not support this assumption. Its material culture was not 'Corinthian' but followed trends in the region and often looked more to the west than to the east (*Chalkis Aetolias II*, 479); see also Morgan (in prep. chapter 7.1) for a critical discussion of the meaning of Thucydides (I.108.5) and the need to see this passage as reflecting an Athenian perception of Chalkis as within a Corinthian sphere of interest.

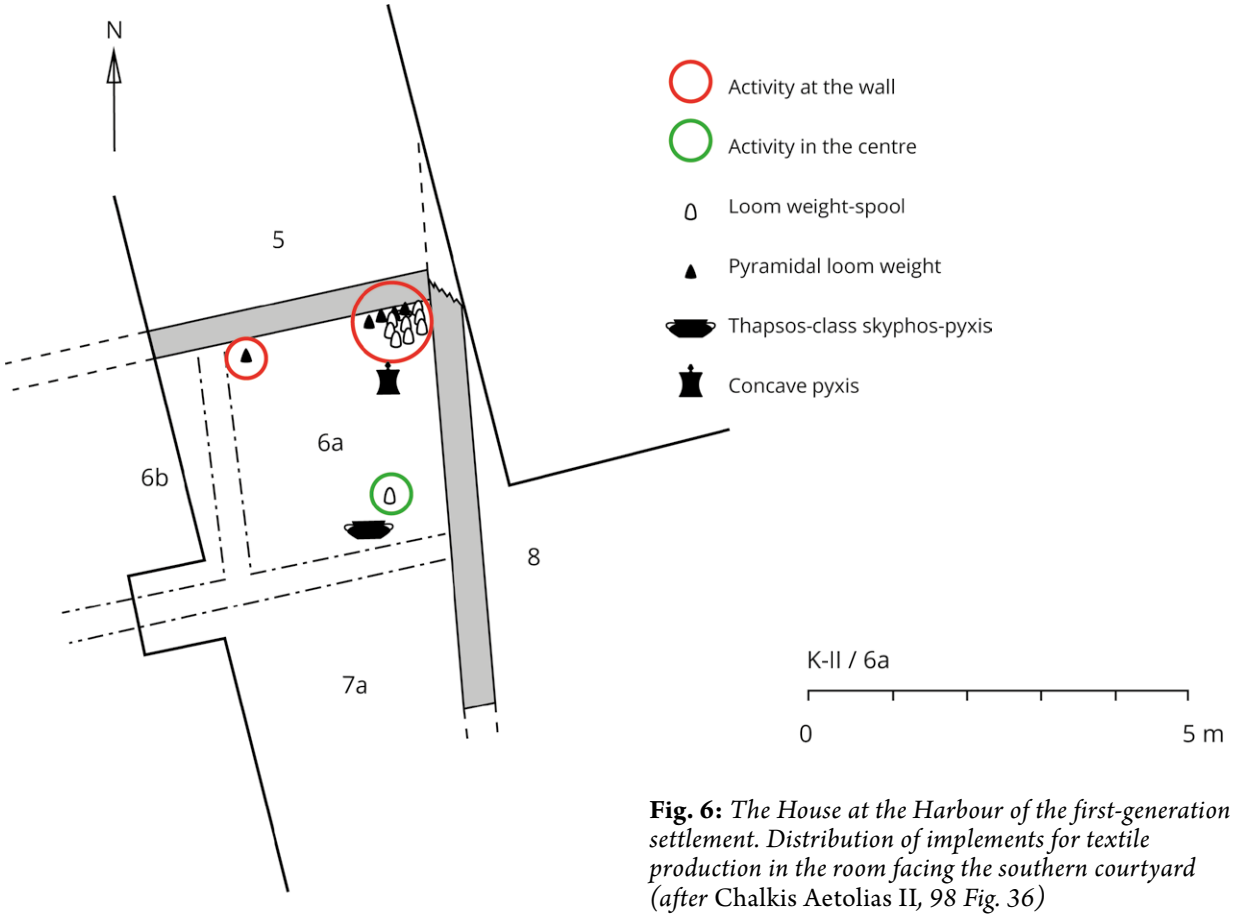

Fig. 6: *The House at the Harbour of the first-generation settlement. Distribution of implements for textile production in the room facing the southern courtyard (after* Chalkis Aetolias II*, 98 Fig. 36)*

doubt originated from Kalydon, which had a rich Early Iron Age background and was the nearest neighbour to the west. Despite their differences, they shared similar ideas in relation to public and private values, and built courtyard houses with the specific intention of hosting guest meals and displaying products of a specific textile craft, partly for sale and partly to impress and consolidate their status and strengthen their social networks. Female household members played a key role from the beginning, in defining and maintaining the rituals of their newly established shrine and overseeing the valued textile production. After a few decades, although it is not known why, the founders abandoned Agia Triada, but they managed to retain memories of their possessions on the small coastal hill.[46] This enabled their successors to return half a century later to 'their' houses and resume the same activities of feasting and a specialised textile craft.[47] By then, cities with a grid plan had been founded on Corinthian initiative in north-western Greece, commemoration of the *nostoi* (the heroes who returned from Troy) had become popular, and many other changes in society had occurred, of which this new, second settlement was now part.[48] It was most likely during this period that households at Agia Triada agreed on a mutual story of their origin being linked to Corinth and on the name 'Chalkis'.[49]

46 For symbolic homecomings as a 6th century phenomenon, and ways to memorise descent and distant possessions through the tomb cult and employment of bards and poets, see Morgan 2003, 47 with references.

47 The second settlement is dated to the Middle Corinthian period; the remarkable similarity of feasting and weaving practices between the first- and the second-generation settlement is discussed in *Chalkis Aetolias II*, 117-22, 392-4.

48 Cities with a grid plan: Ambracia, Anactorium and Leucas (see Morgan in prep. chapter 4.1.3); *nostoi*: a small loom weight, found near the basilica on Agia Triada, featured a depiction of the Palladion of Trojan Athena Ergane, standing inside a shrine and dated stylistically to the early 5th century BC (*Chalkis Aetolias II*, 290, no. 795, fig. 162a-e).

49 The earliest reference to the name 'Chalkis' in Aetolia is the Homeric ship catalogue (*Il.* 2.638-640); see Morgan 2003, 47, for dating symbolic homelands to the 6th century BC; see Skafte Jensen 2011, for dating the earliest compilation of Homeric stories into one, written version to Peisistratid Athens; see West 2014, for 7th century date of the Odyssey; see Morgan (in prep.) chapter 11.2, concerning dating the written version of Homer to the late seventh 7th century BC and the problems of dating the earliest received form of Homer.

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The Theatre at Kalydon[1]

by Rune Frederiksen

The aim of this contribution is to present the theatre at Kalydon, a monument that was extensively explored in the period when Søren Dietz was active at Kalydon (Fig. 1). It is due to Søren's ambitions and his excellent collaboration with Greek colleagues over the years that we have been able to unearth, study and now present such a unique ancient structure as the theatre at Kalydon. We are most grateful to Søren for that, and I thank you also for allowing me to be involved in the work on the theatre, over 20 years ago, when I was connected to the project as a student. At the time I was preparing my MA thesis on ancient Greek theatre architecture, and to be entrusted with the excavation of an actual ancient Greek theatre was a fantastic opportunity for me at such an early stage of my career. I also want to thank the then ephor of the ephorate of Aitolakarnania and Lefkada, Maria Stavropoulou-Gatzi, as well as Olympia Vikatou, the ephor of the 36th Ephorate of Classical Antiquities in Mesolonghi between 2011 and 2024, with whom I have enjoyed a splendid collaboration when we both worked together at Kalydon (Fig. 2).

In this contribution, I will present a synopsis of the theatre at Kalydon and the most significant results of our research on the monument.[2]

The theatre institution is a phenomenon of the ancient Greek world that has attracted the attention of scholars since the Enlightenment. A number of classical and later dramas are preserved, and quite a bit is known about the role of the theatre in ancient Greek society, at least in relation to Athens.

The physical environments of ancient Greek drama, the theatre buildings, are also well known: before large-scale excavations were undertaken anywhere in the areas that once constituted the ancient Greek world, ruins of theatres were among the most prominent and visible monuments, comparable to fortification walls and temples. This resulted in early general publications, such as Dörpfeld and Reich's *Das Griechische Theater* from 1896 and Bieber's *The Greek and Roman Theater* published in 1926.

The large theatres of Athens and Epidauros, as well as the majority of all other theatres ever built in the ancient Greek world, were constructed with the canonical, semicircular design, which has long been thought to have emerged in the second half of the 4th century BC. It has, however, been known for many years that some theatres were designed and planned differently, such as Thorikos and Thrakones, both in Attica. The discovery of the ancient theatre at Kalydon has provided the scholarly world with yet another theatre building of non-canonical design, yet also with one which is perfectly symmetrical and much larger and more carefully designed than anything previously observed in this category of non-canonical ancient Greek theatres.

The Kalydon theatre inspires us to ask a number of new questions and to come up with possible new interpretations, both in relation to ancient Greek architecture and architectural practice and with regard to the nature of ancient Greek dramatic performances. This theatre was unknown until fairly recently, unlike so many other

1 Rune Frederiksen presented this paper at the conference in Honour of Søren Dietz in Athens on 26-28 April 2022, but he sadly passed away in August 2023, before he could prepare an annotated version for the present volume. We are thankful to Silke Müth-Frederiksen for putting Rune's manuscript at our disposal and to Søren Handberg for helping us prepare it for publication.

2 For the full documentation, see Frederiksen & Vikatou (eds) 2023a-b.

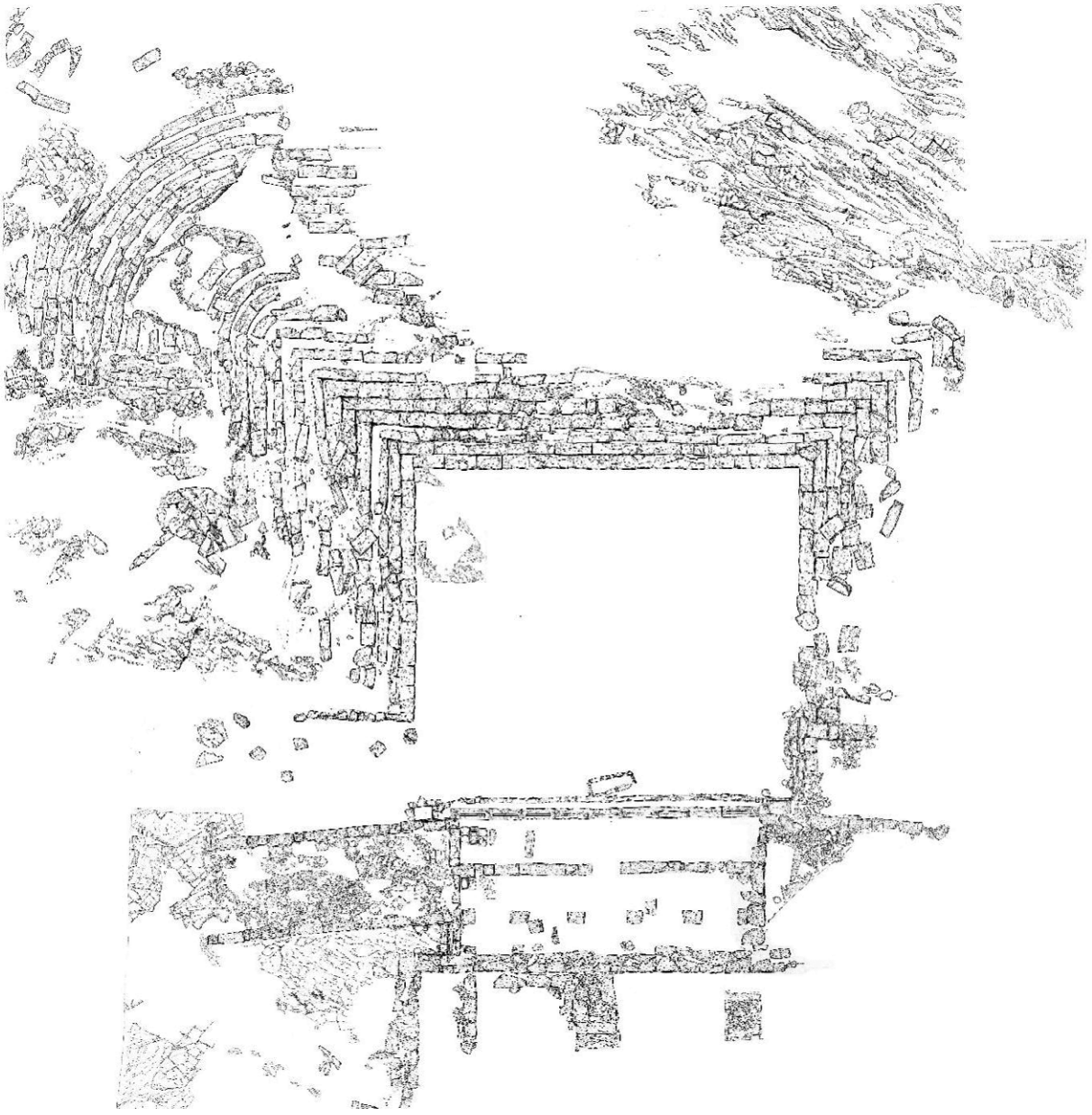

Fig. 1: *Stone plan of the theatre at Kalydon in 2013 (N. Chatzidakis), Frederiksen & Vikatou (eds) 2023b pl. I.2.*

theatres. It was completely covered in soil which had eroded from the east side of the Sanctuary of Artemis Laphria.[3] On a new plan of the site produced by Søren Handberg in connection with the current synthesis about Kalydon, the location of the theatre can be seen in relation to the main features of the city: the city wall, the Heroon, the sanctuary and the acropolis (Fig. 3).

The theatre, which consists of the main elements: an orchestra, *koilon* and scene building, was accidentally found in the 1960s during work associated with the construction of the main road from Antirrio, past Mesolonghi and up north towards Agrinio. A rescue excavation revealed parts of the *koilon*, which – due to its unusual square design – was referred to as a 'bouleuterion' by the excavator Euthynios Mastrokostas. Damage caused by a bulldozer used to remove the hillside, before it became clear that an archaeological monument was present, is still visible. The new road

3 Cf. Frederiksen & Vikatou 2023, 7 fig. 2.a.

Fig. 2: *Rune Frederiksen in action in the theatre of Kalydon.*

was finally constructed some distance further south, instead of where the structure is located, and the excavated trenches were backfilled.

The Danish-Greek collaboration at Kalydon dates back to the 1920s and 30s, when Frederik Poulsen, Konstantinos Rhomaios and Einar Dyggve excavated the Heroon Sanctuary of Artemis Laphria. This collaboration – a project of the Archaeological Society in Athens – was revived in the second period of intensive excavations in 2000-2005, when Søren Dietz was active at Kalydon, in collaboration with Lazaros Kolonas and later Maria Stavropoulou-Gatsi. It was during this work in 2001 that the scene building of the theatre, which was clearly constructed symmetrically in front of the *koilon*, was discovered (Fig. 1). The edifice could thus finally be definitely identified as a theatre. It was not, however, fully excavated until work recommenced at Kalydon during a series of field seasons from 2011 to 2014, in a new collaborative project directed by the author and the then Ephor of Aetolakarnania, Olympia Vikatou. The lower acropolis excavation project, directed by Søren Handberg and Olympia Vikatou, was begun in 2013.

The main elements of the theatre

The scene building is of the *proskenion* type and originally had 10 pillars in the Ionic style (Figs. 4-5). Ramps on either side, parallel to the *parodoi*, would provide access to the *logeion*, the stage on top of the *proskenion* portico. Behind the *proskenion*, the completely preserved and very well-built foundation of the scene building itself, the *skene*, has been identified. Only fragments of the proskenion pillars were found, but these fortunately included fragments of all the important elements: bases, shafts and capitals, which were scattered in the area in front of the *proskenion* and in the ruined scene building behind.

Part of the base of a pillar was in situ, so the association of these fragments with the identified *stylobate* is certain. Further architectural fragments, found in front of the scene building and in the area around it, most likely originate from the entablature of the *proskenion* above the columns and the structure supporting the *logeion* floor. Enough fragments were preserved to enable the reconstruction of the dimensions and design of the pillars and entablature. Figure 4 shows a reconstructed section of the *koilon* and the scene building with two types of roof for the *skene*.

The analyses of the finds of pottery and all other small finds have been completed, and the chronology of the individual structures of the Kalydon theatre, as well as their interrelationships, can be summarised as follows: The auditorium or *koilon* is likely to be the oldest part of the theatre, probably dating back to the first half of the 4th century BC or perhaps even to the 5th century.[4] We have not been able to find datable material, such as pottery or coins definitely associated with the actual structure of the *koilon*, so these dates are a suggestion based on the nature of the structural elements of the *koilon* and the way they are constructed.

We are on more secure ground when it comes to dating the construction of the scene building, which has been placed at 250 BC. All excavation contexts that have been interpreted as either earlier, contemporary with or later than the scene building support this date. A section through the middle of the scene building and down to bedrock or sterile layers generated a number of contexts containing datable

4 For a detailed discussion of the dating evidence, see Frederiksen 2023b, 76-77.

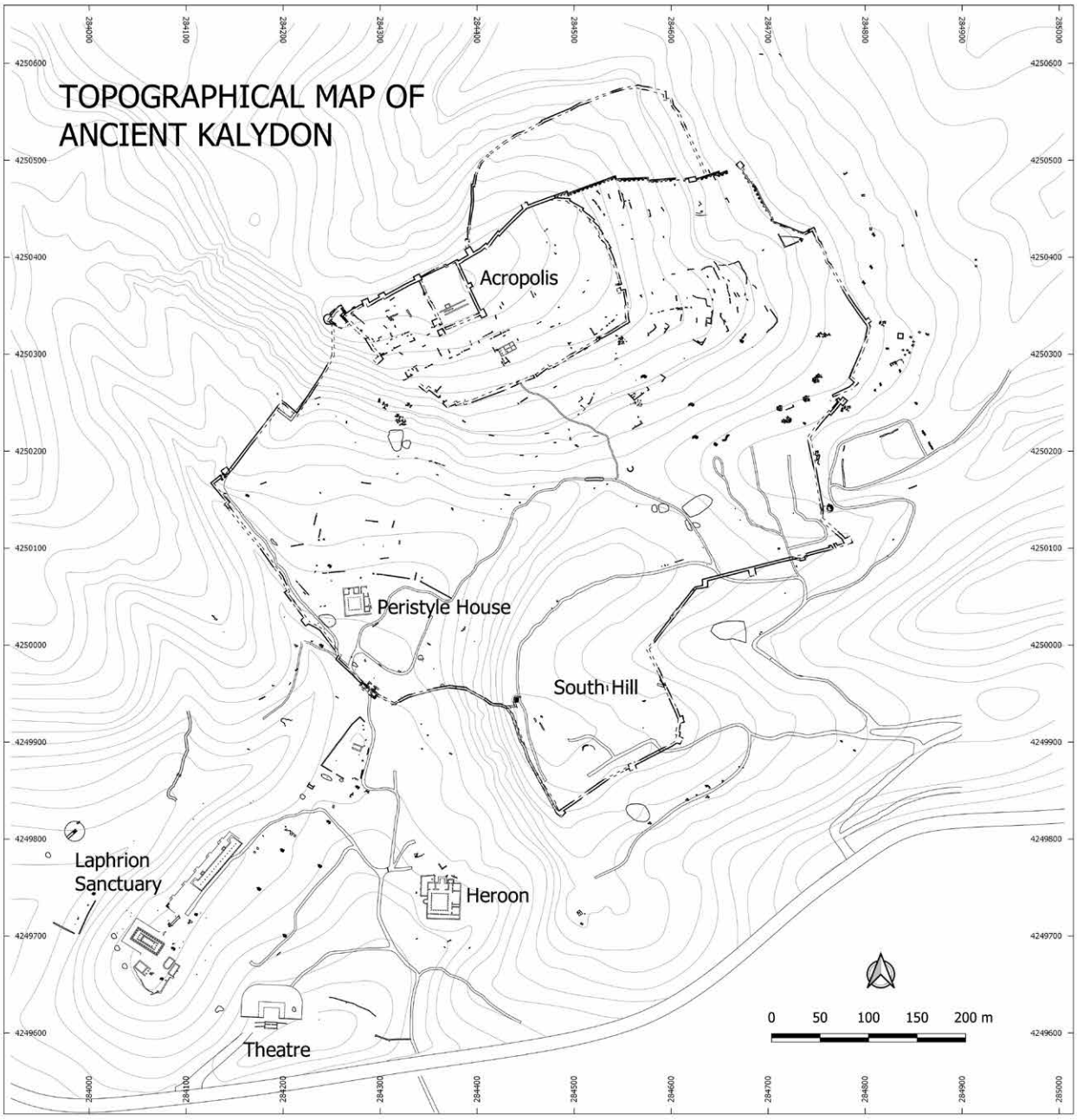

Fig. 3: *Plan of the site of Kalydon, by Søren Handberg.*

material, some of which have enabled the dating of the scene building.[5] It also provided an insight into the construction technique used for the orchestra and scene building. We have concluded that the scene building stopped being used around 100 BC.[6] At this time, the roof had fallen in, and this situation was identified as a thick layer of tiles that spread over much of the scene building, *proskenion* and part of the orchestra in front of the scene building. Tile stamps suggest that the roof was extensively repaired around 200 BC, and was repaired again around 150-125 BC.[7] One of the inscriptions reads *epi tamia phylakos*, which may be

5 Frederiksen & Vikatou (eds) 2023b pl. II.2.
6 Frederiksen 2023b.
7 See Frederiksen, Andreasen & Kabalan 2023.

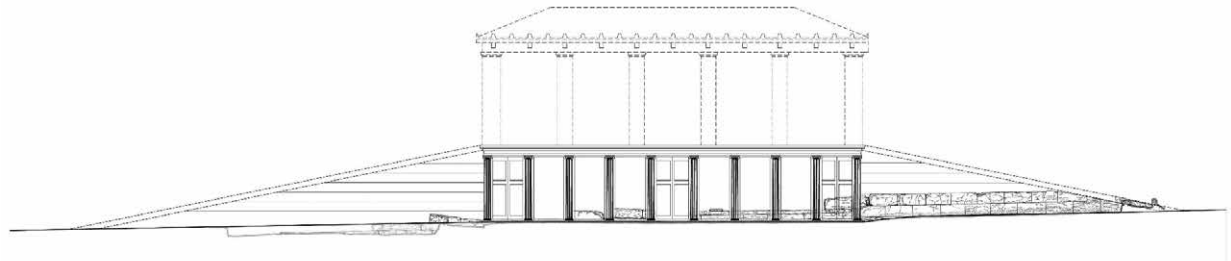

Fig. 4: *Reconstruction of proskenion and skene (N. Chatzidakis), Frederiksen & Vikatou (eds) 2023b pl. IV.1.2.*

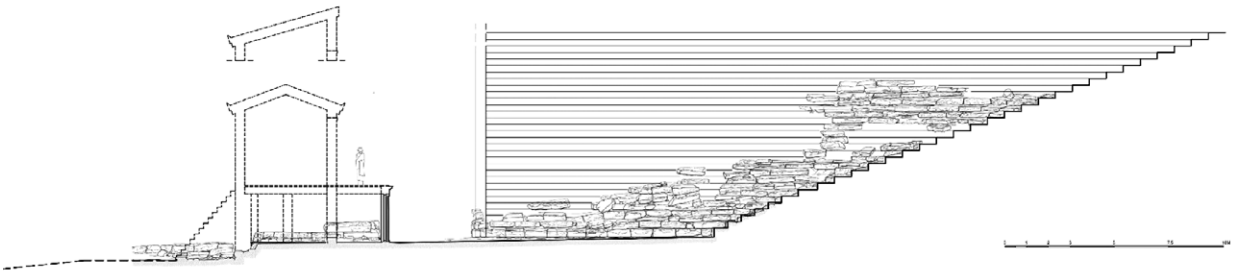

Fig. 5: *Elevation with remains of western half of the theatre with added reconstruction of the scene building with two versions of the roof (N. Chatzidakis), Frederiksen & Vikatou (eds) 2023b pl. IV.1.2.*

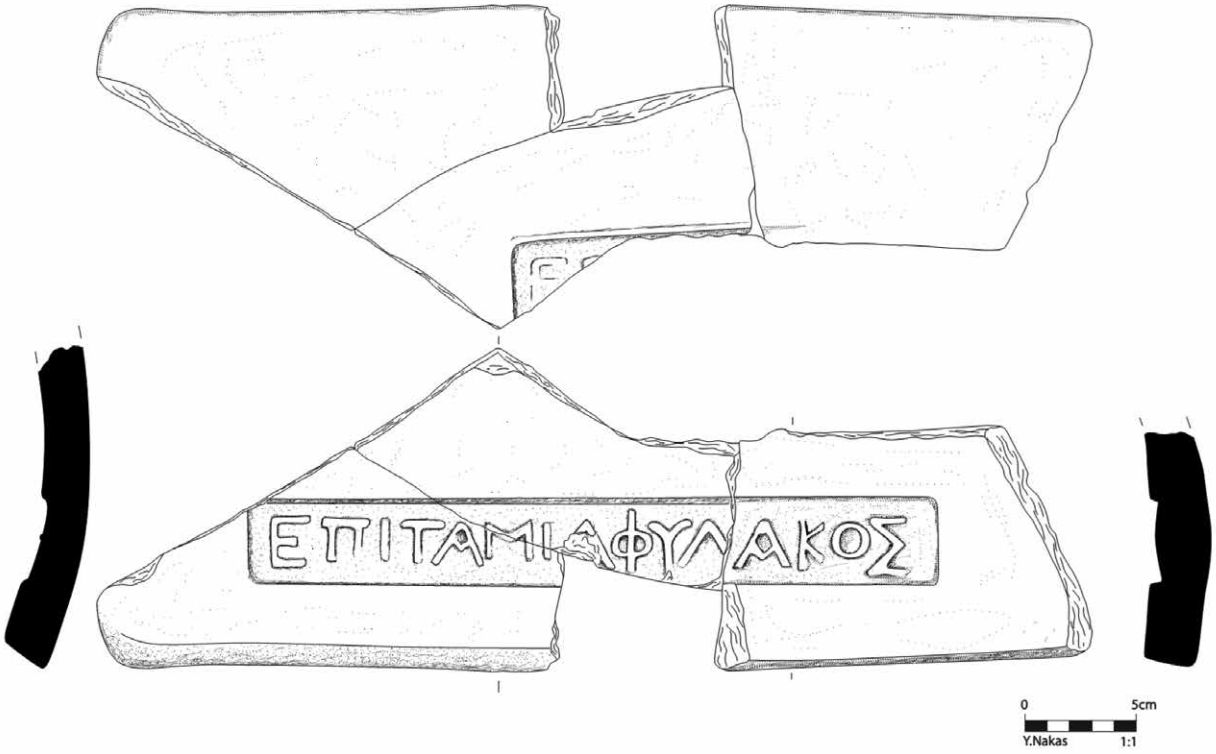

Fig. 6: *Laconian pan tile with stamp, Frederiksen, Andreasen & Kabalan 2023b, 47-48 no. C24 pl. 13.*

Fig. 7: *General view of the theatre, seen from the proskenion, photo Rune Frederiksen.*

paraphrased as from the time when a certain Phylax was in charge of the finances of the polis or some other administrative entity at Kalydon (Fig. 6). Two inhabitants of Kalydon with this name, who may have held such an office, are known from other epigraphic sources: one from the years 225-200 BC and the other from the decades around the middle of the 2nd century BC.

Figure 7 shows the whole theatre. The form of the orchestra – defined as the space between the first row of seats of the *koilon* and the *proskenion* – at Kalydon is almost square and its size, 246 m^2, suggests that the theatre was primarily built for dramatic performances that included choragic dances. The theatre could of course have been used for all sorts of assembly purposes: religious, political and even private. Ancient theatres were multifunctional, especially in smaller or middle-sized *poleis*, such as Kalydon.

The rows of seats in the theatre of Kalydon were laid out based on two design principles. The nine lowest rows of the central part and those of the two wings meet at 90-degree angles, while from row 10 and upwards the rows of benches meet in a curve. This difference may be of chronological significance, with the bottom nine rows belonging to an original phase and the ones above representing a later addition. We did not, however, identify any other evidence, which supported the theory that there was a chronological element in this difference. The seats blocks have the usual dimensions of Greek theatres – they are around 30 cm high and from row 8 and upwards on average 78 cm deep, and have the simplest and most common type of seat, that is with a horizontal and a vertical line meeting at a 90-degree angle.[8] The rows of seats are not interrupted by stairways, which is very unusual for a Greek theatre. It is perhaps significant that there are no stairways either in the theatre at Makyneia, which is also in Aitolia. Makyneia is located quite close by and this may therefore reflect a local tendency. A number of features in the Kalydon theatre point in a certain direction, which is perhaps high antiquity, low cost or 'provincial'. The phenomenon of straight rows

8 Frederiksen 2023a, 55.

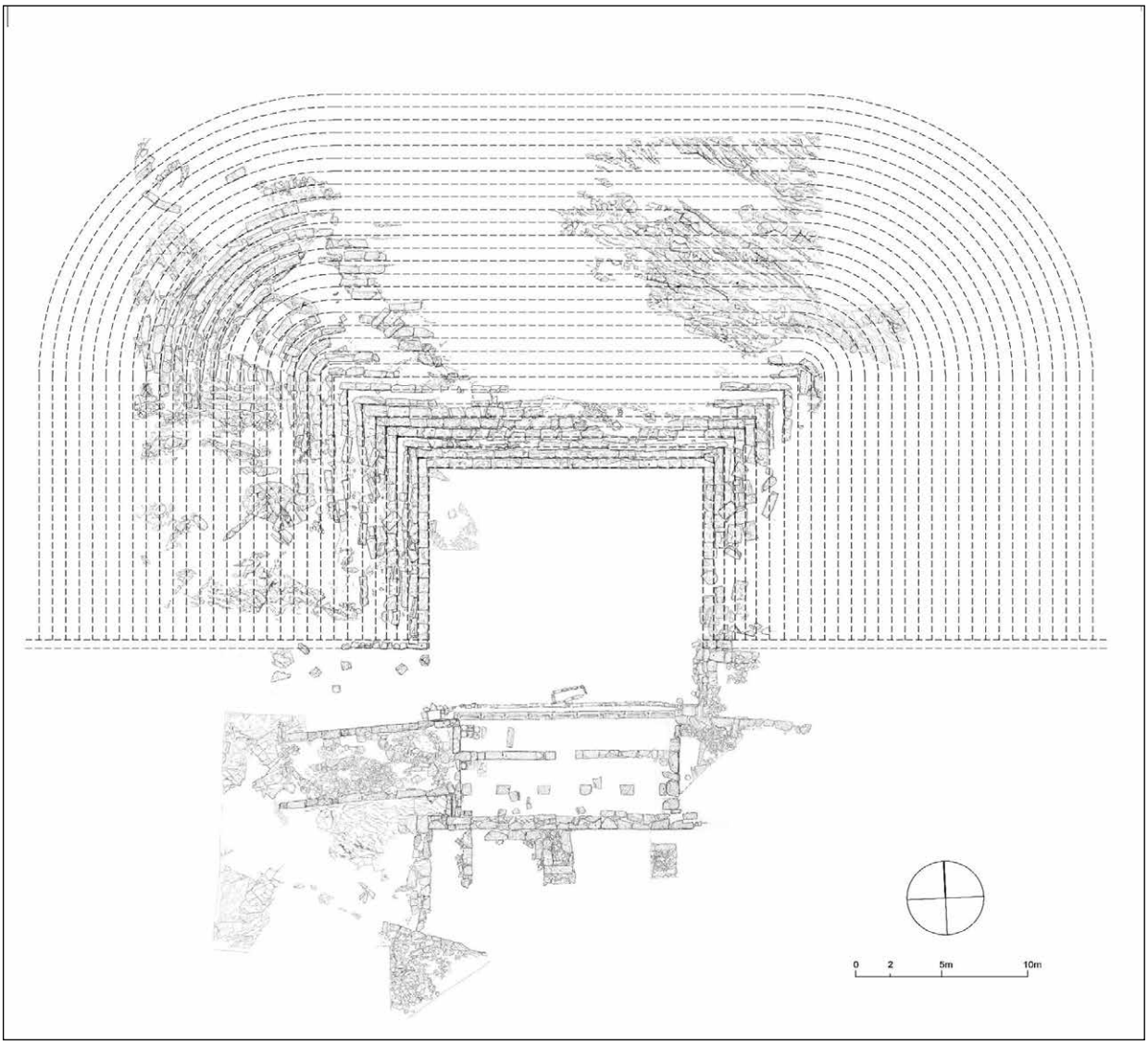

Fig. 8: *Reconstructed plan (N. Chatzidakis), Frederiksen & Vikatou (eds) 2023b pl. IV.1.1.*

of seats has long been known in theatre research. In this respect, Kalydon seems to resemble Trakhones, as has already been suggested, although at Trakhones the rows of seats above the first row were not arranged in straight, but in slightly curving lines.

The pi-shaped design is clearer and more perfectly symmetrical at Kalydon than anywhere else, and this theatre is therefore of great importance not only to our understanding of the development of the *koilon* in the Greek theatre, but also because its pi-shaped design constitutes another example of a rectangular orchestra space. In addition, the theatre at Kalydon is much larger than any of the other examples of rectilinear design: the orchestra space at Trakhones, for example, covers around 120 m^2, compared to the 246 m^2 at Kalydon. If we assume that the *koilon* at Kalydon was originally symmetrical, with 31 rows all the way up, it would have seated an estimated maximum of 5,600 spectators, well above the average capacity for ancient Greek theatres in the 4th century, which was around 4,500 spectators.

But why do the seat rows begin to curve between seat rows 9 and 10? Architects or designers of theatres were faced with increasingly pressing practical issues relating to space and visibility during the 4th century BC. Theatres grew in size, and it continued to be a requirement that all spectators had the best possible conditions to see and hear the performances.

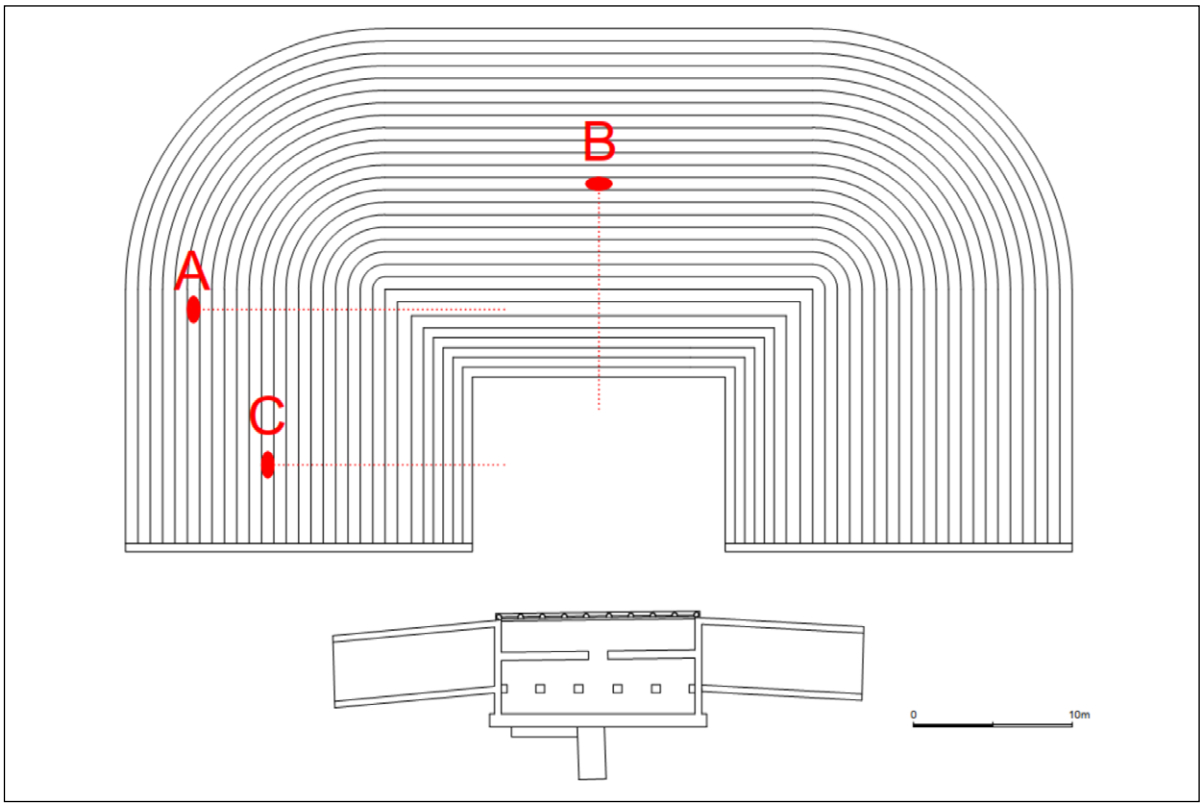

Fig. 9: *Reconstructed plan of the theatre at Kalydon with indications of the straight ahead vision lines from three spectators randomly located in the* koilon *(N. Chatzidakis), Frederiksen 2023, 131 Fig. 8.2.*

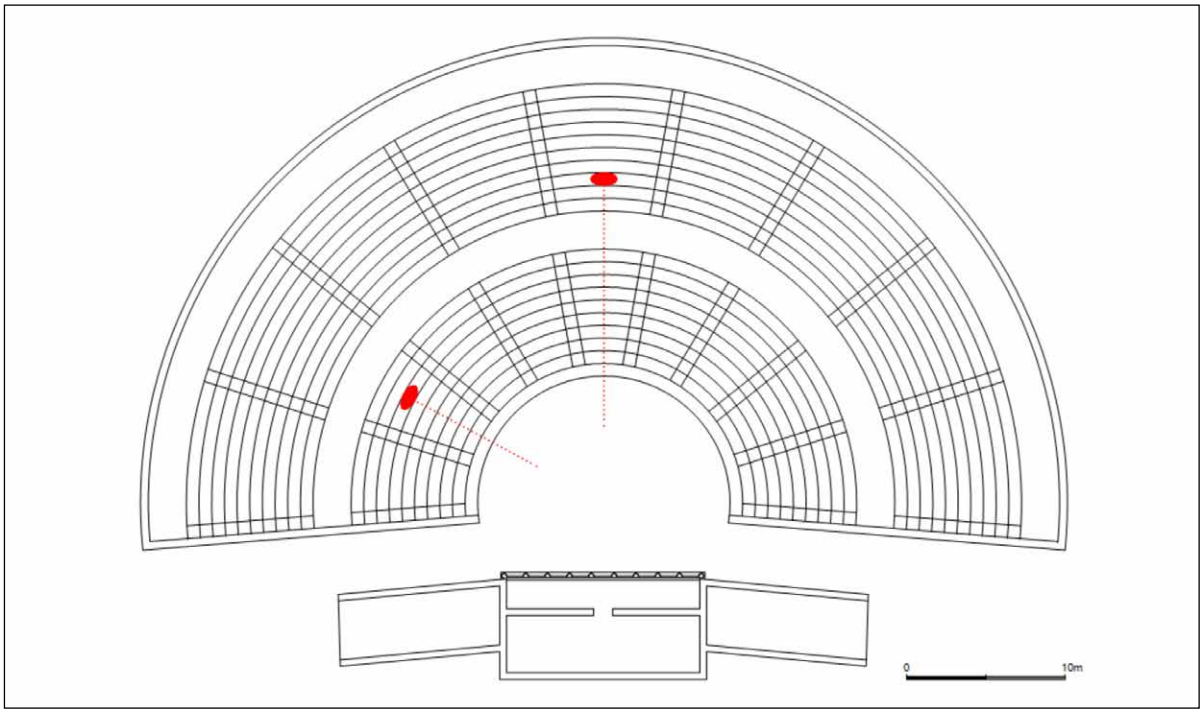

Fig. 10: *Direct frontal view of two spectators sitting in two random locations in an imagined canonical* koilon *with 20+ rows (N. Chatzidakis), Frederiksen 2023, 130 Fig. 8.1.*

The rectilinear and pi-shaped designs simply ceased to be a functional option, because they did not work well when applied to large theatres. Figure 9 shows the viewing situation for spectators located in three different places in a *koilon* with straight seat rows. Figure 10 shows a theatre design of canonical type with the sight lines indicated by two randomly placed spectators, and it can clearly be seen that – because of the circular design – they are facing exactly the same point. The only variables in seats in such a theatre are the varying distance from the various seat rows to the performance and the height difference between the rows.

If we accept that the 'equal view angle for all' principle, in connection with the need to accommodate more and more spectators, determined the development of the design of the ancient Greek theatre, it follows that we must understand the theatre design process from the outside in and not from the inside out. In other words, it was not the existence of a 'circular' orchestra, or a square one for that matter, which determined the design of the rest of the building. It was instead the shape of the seat rows of the *koilon* that determined the shape of the orchestra. When the time came when the semicircular *koilon* became established around the ancient Greek world, it shaped the orchestra space too. After the semicircular theatre had become dominant, its architectural form became a new standard to such an extent that even small theatres, which could in fact have been built with other designs, and would almost certainly have been before this development, were mostly built in a semicircular shape like the larger structures. This was how a 'real theatre' should look.

The theatre at Kalydon thus became a conservative relic from the past, in that the *koilon* was not updated into a semicircular one when the scene building was constructed in the 3rd century BC, at which time the semicircular *koilon* would have been the expected design. It is important to consider that the square form of the orchestra in the theatre at Kalydon is due to the form of the rectangular *koilon*, rather than the result of what took place in the orchestra.

Apart from being generally important in the history of architecture, the canonical semicircular Greek theatre design has always been central to our overall perception of ancient drama. The circular aspect has sometimes been associated with the interpretation of the ancient Greek concept of dramatic space, and may be valid to some extent. However, this approach also leaves us with the need to explain, for example, whether the theatres that were *not* semicircular functioned as settings for performances that were different from those that took place in semicircular theatres.

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"Kalydon inside the walls": Re-examining the Urban Fabric and Demography of the Ancient City[1]

by Søren Handberg

When Søren Dietz and his colleagues relaunched the Danish-Greek collaborative exploration of the ancient Greek city of Kalydon in 2001, more than 60 years after the previous systematic exploration of the archaeological area, it was with the explicit goal of investigating the "city inside the walls", which had never been explored.[2] The work, undertaken with an interdisciplinary approach, that included geophysical work, topographical surveys and targeted excavations, provided a valuable first glimpse into the urban fabric of ancient Kalydon.

Since the research conducted by Dietz and his collaborators, the intramural city has been further explored through excavations and topographical surveys, which provide additional information about its urban layout. In this contribution, I aim to provide an update on our understanding of the urban structure of Kalydon's intramural city. The question of the city's demography will be a central theme. This necessitates a review and discussion of the city's topographical layout, which was one of the central questions that guided Dietz's work two decades ago.

Until now, less than 1% of Kalydon's intramural area has been investigated through archaeological excavations, which is, of course, a significant obstacle to the topics I aim to address. Consequently, I do not intend to draw any definitive conclusions. Instead, I hope to demonstrate that even the limited evidence we have at our disposal allows us to formulate new hypotheses about the nature of the city's urban layout and point the way forward for future investigations.

The topography of ancient Kalydon

Ancient Kalydon is located in the southern foothills of the Arakynthos mountain range on the western side of the estuary of the Evinos river in Aitolia (Figs. 1-2). The city is centred around two imposing hills. The acropolis is located on the North Hill, the lower part of which was covered by built terraces (referred to as the Lower Acropolis area). The northern foothills of the South Hill start to rise almost immediately south of the Lower Acropolis, and there is thus a narrow passageway between the two hills. The city is thus effectively divided into eastern and western parts that are separated by the two hills. The eastern part of the city is known as the Central Town, where the city's commercial *agora* was probably located. The western part is dominated by the Lower Town, which gradually slopes towards the northern Hill. The large fortification circuit that surrounds both hills was not constructed until sometime in the first half of the 4th century BC, although the acropolis was fortified by the early Classical period, if not earlier.[3] The Heroon and the theatre are located below the extramural sanctuary of Artemis and Apollo, which is situated outside the city's western

1 I am extremely grateful to Søren for his unwavering support of our continued efforts to explore the ancient Greek city of Kalydon. We owe him a great debt for resuming the exploration of the archaeological site more than two decades ago, and I would like to take this opportunity to officially congratulate him on his work. I would also like to express my heartfelt appreciation for his invaluable assistance and encouragement to me and my colleagues over the years.

2 See Dietz et al. 2007. The quote "Kalydon inside the walls" is taken from Dietz & Stavropoulou-Gatsi 2011, 9, and Dietz 2011a, 79, and reflects the central focus of the fieldwork in 2001-2005.

3 For the most recent discussion of the date of Kalydon's fortifications, see Vikatou et al. 2019, especially 166-9.

Fig. 1: *Map of western Greece with main sites mentioned in the text. Map: Søren Handberg.*

gate, on top of an elongated plateau, that rises above the surrounding terrain and is known as the Laphrion Hill.

In relation to this, it is also worthwhile providing a very brief overview of the main archaeological fieldwork conducted in the ancient city. Frederik Poulsen and Konstantinos Rhomaios explored and excavated the sanctuary and the Heroon in the 1920s and 1930s. Their work in the Heroon was published in 1934, and that in the sanctuary in 1948.[4] Except for some excavations in the 1960s in connection with the construction of a new main road through the area, there was a pause in the exploration of the archaeological site until Søren Dietz and the then Ephor of Antiquities Maria Stavropoulou-Gatzi resumed work in 2001-2005, as already mentioned above.[5] Part of this programme included the partial excavation of the theatre, which was completed between 2011 and 2014 under the direction of Rune Frederiksen and the present Ephor of Antiquities Olympia Vikatou.[6] Recently, still in collaboration with the archaeological service in Mesolonghi, the author has conducted excavations on the Lower Acropolis in 2013-2016, as well as a topographical survey of the entire archaeological area in 2015-2018.[7] Ongoing work at the site includes a re-examination of the sanctuary on the Laphrion Hill and the Heroon, both of which are being directed by the author in close collaboration with the local Ephorate of Antiquities of Aitoloakarnania.[8]

Kalydon's ancient demography

Based on the results of the fieldwork, Dietz calculated the intramural area of Kalydon to be between 30-35 hectares and estimated that 80 % of that space was built up. He concluded that the intramural city would have accommodated roughly 5,000 people, based on the assumption that there were on average 200 inhabitants per hectare.[9] With the recent completion of the excavation and study of the theatre, this assumption of the city's demography can now be compared to the number of spectators the theatre could accommodate. Based on the standard measurement of 40 cm per spectator, the theatre could most likely have accommodated 5,642 spectators, which places

4 For the Heroon, see Dyggve et al. 1934 and regarding the sanctuary, see Dyggve & Poulsen 1948. Along with these main publications, they also published several preliminary reports, references to which can be found in the mentioned works.
5 The results of the archaeological program have been published in Dietz & Stavropoulou-Gatzi 2011.
6 The results of the full excavation of the theatre have recently been published, see Frederiksen & Vikatou 2023.
7 For the excavations on the acropolis, see the preliminary reports in Vikatou & Handberg 2017, 203-4; Vikatou & Handberg 2018, 309-10. Concerning the topographical survey, see Vikatou et al. 2019.
8 For a preliminary report on the investigations on the Laphrion Hill, see Vikatou et al. 2025 and Birk et al. 2025 for the work carried out in the Heroon.
9 Dietz 2011a, 79.

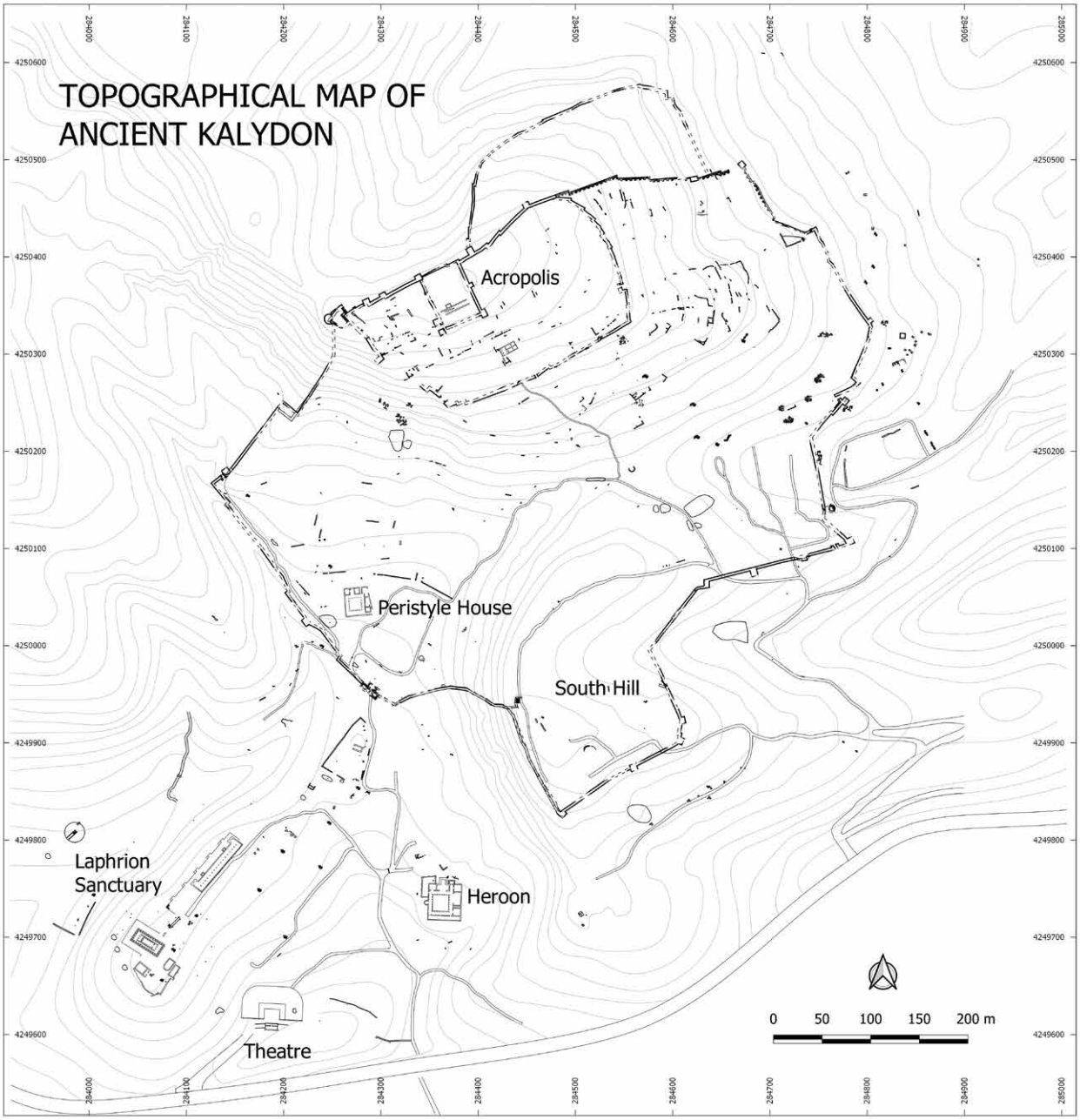

Fig. 2: *Topographical map of the archaeological area of ancient Kalydon. Map: Søren Handberg and Neoptolemos Michaelides.*

it in the upper range of mid-sized ancient Greek theatres.[10] However, according to modern methods for calculating ancient Greek demographic patterns, 5,000 inhabitants may be too many for Kalydon's intramural area.

In his 2006 book *The Shotgun Method. The Demography of the Ancient Greek City-State Culture*, Mogens Herman Hansen defined three critical issues for estimating the size of the intramural populations of Greek *poleis*:[11]

10 Chatzidakis et al. 2023, 87-8.

11 Hansen 2006, 28 (for a detailed description of the assumptions that his model is based on). See also Hansen 2008, 276.

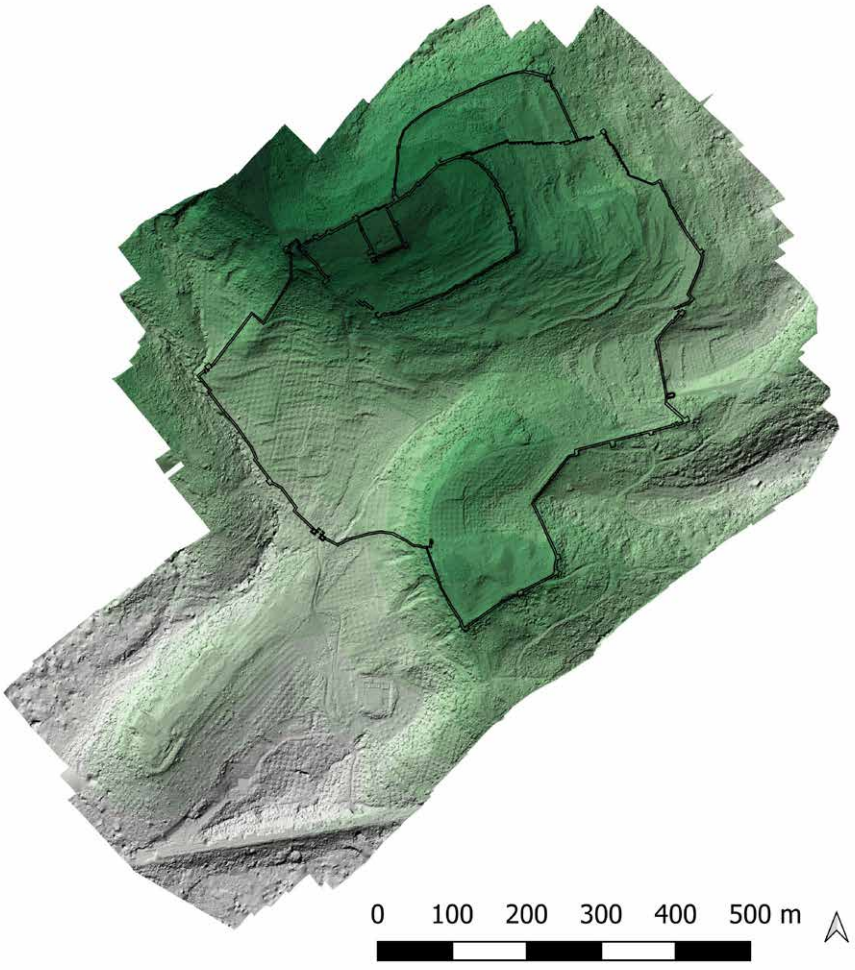

Fig. 3: *Digital elevation model of the archaeological area of ancient Kalydon. Map: Søren Handberg and Neoptolemos Michaelides.*

- How much of the intramural area was used for habitation.
- The density of houses.
- The number of members per household.

Hansen estimated Kalydon's intramural area to be roughly 25 hectares, classifying it as a mid-sized *polis*, which according to his survey of the most well-known cities of that size normally dedicated approximately 50% of the intramural space to habitation.[12] Although Hansen did not specifically calculate the population of Kalydon, using his figures, the intramural area of Kalydon could potentially have accommodated between 1,875 and 2,475 people.[13]

Hansen had no knowledge of the urban structure of Kalydon's intramural area when he constructed his model, and therefore relied on several other well-researched cities. Since Hansen's estimations, archaeological fieldwork in Kalydon has yielded much more evidence regarding the character of the intramural area, which provides us with the opportunity to evaluate the accuracy of his model. In the following sections, I will review the evidence that is relevant to Hansen's three main criteria in turn.

Habitation areas

The first of Hansen's criteria is the proportion of intramural area that was used for habitation compared to areas used for other purposes, such as public buildings, roads, squares and empty places. The total intramural area of Kalydon can now, using GIS software, be estimated as 27.6 ha, which is 10.4 % more than Hansen's original estimate of 25 ha (Fig. 3).

12 For the intramural size of Kalydon, see Hansen 2006, 102, 109.

13 Hansen used an average of 30 houses and 5 members per household for calculating the minimum number of inhabitants and 33 houses and 6 household members for the maximum number of inhabitants, see Hansen 2006, 60-81.

Fig. 4: *Interpretation of the results of the geophysical survey superimposed on the digital elevation model of the Acropolis. Map: Søren Handberg.*

As previously stated, less than 1% of Kalydon's intramural area has been investigated through archaeological excavations, making it difficult to determine which areas of the city were used for dwellings. Nevertheless, the geophysical work, as well as the overall topographical survey and mapping of visible structures in the city, provide sufficient information to evaluate whether Hansen's rough estimate of a 50% habitation area applies to Kalydon.

The acropolis appears to have been mostly occupied during the Hellenistic period. According to the geophysical work, the majority of the plateaus on the Lower Acropolis, which cover an area of just over 3 ha, were covered by parallel streets, which ran along built-up terraces and intersected with perpendicular streets with flights of steps (Fig. 4). The excavation of a Hellenistic house of the *prostas* type on one of the terraces in the years 2013-2016 supports the theory of this general layout (Figs. 5-6).[14] The house has four rooms and a large courtyard, with access to the street in the southern wall. The floors of the two northern rooms are about 60 cm higher than those of the southern rooms, and access was provided by a short flight of stairs. A street with a stairway runs along the western side of the house. The excavations uncovered signs of levelling operations to the north of the house, although it is not clear whether there was a street behind the house or the area was an open space.

The mapping of visible monuments from 2015 to 2018 revealed many wall sections on most of the Lower Acropolis hill, which must represent similar houses; in some cases, stone doorposts are even preserved (Fig. 7). Apart from a large anomaly in the southwestern corner of the plateau, which could be a cistern or the foundations of an unexcavated temple, it is reasonable to assume that domestic architecture

14 For a preliminary presentation of the Lower Acropolis *Prostas* House, see Vikatou & Handberg 2017; 2018; Vikatou et al. 2019, 169.

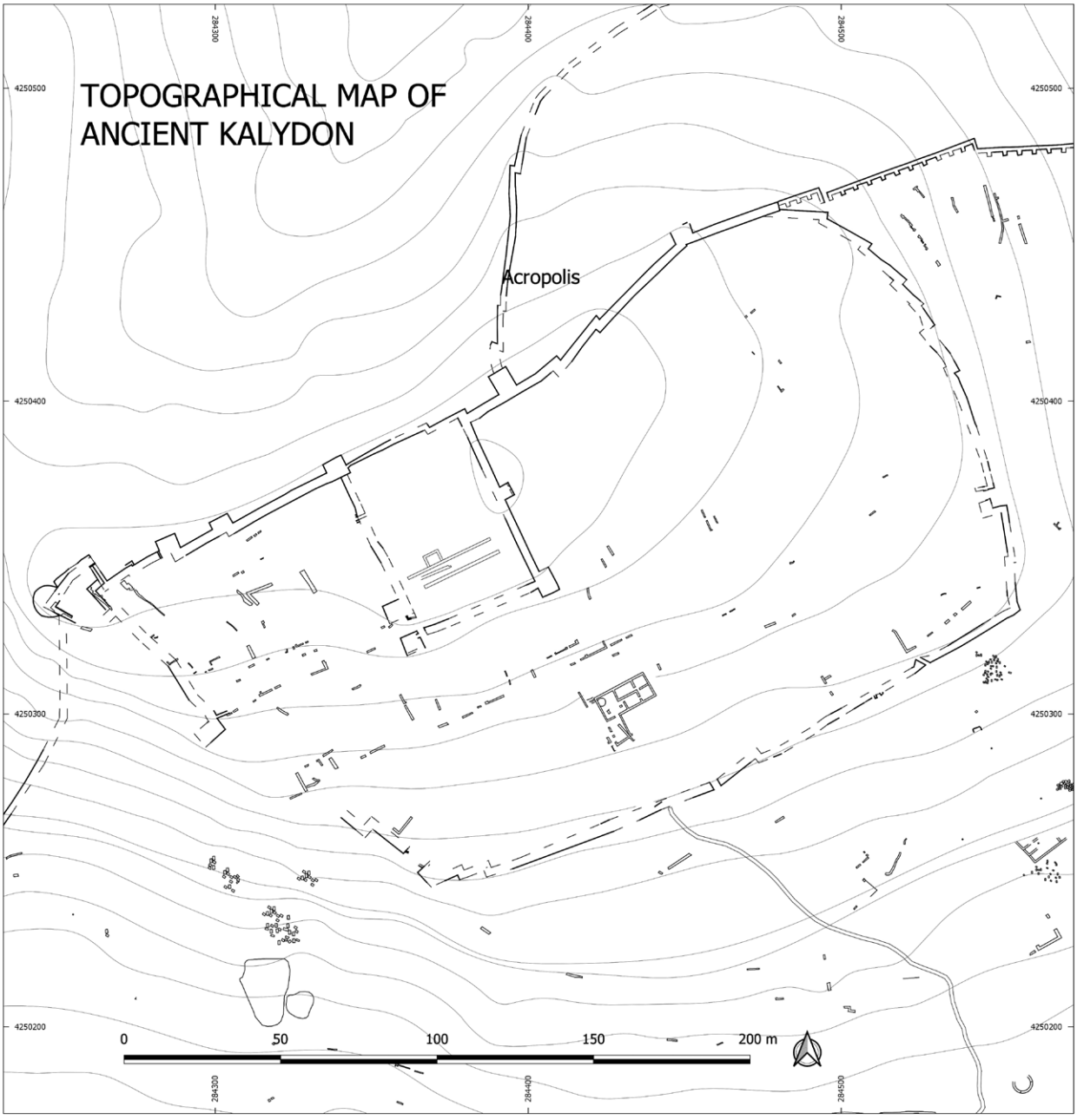

Fig. 5: *Topographical map of the Acropolis. Map by the Søren Handberg and Neoptolemos. Michaelides.*

covered most of the Lower Acropolis during the Hellenistic period.[15]

The Lower Town covers approximately 6.39 hectares (Fig. 8). This area of the city has been interpreted as the industrial district, and there is little reliable evidence of domestic architecture in this area.[16] Part of a pottery workshop was excavated in 2003 and 2004, and the geophysical survey indicates the presence of four additional ceramic workshops as well as an open square.[17] The discovery of 10 coin blanks 20 m south of the pottery workshop raised the possibility that the city's mint was located nearby.[18]

15 For the possible presence of a temple on the Lower Acropolis, see Smekalova 2011, 55.
16 Regarding the Lower Town as the industrial quarter, see e.g. Dietz 2011a, 80.
17 For the partially excavated pottery workshop, see Ljung 2011.
18 Dietz & Stavropoulou-Gatsi 2011, 85 with note 1.

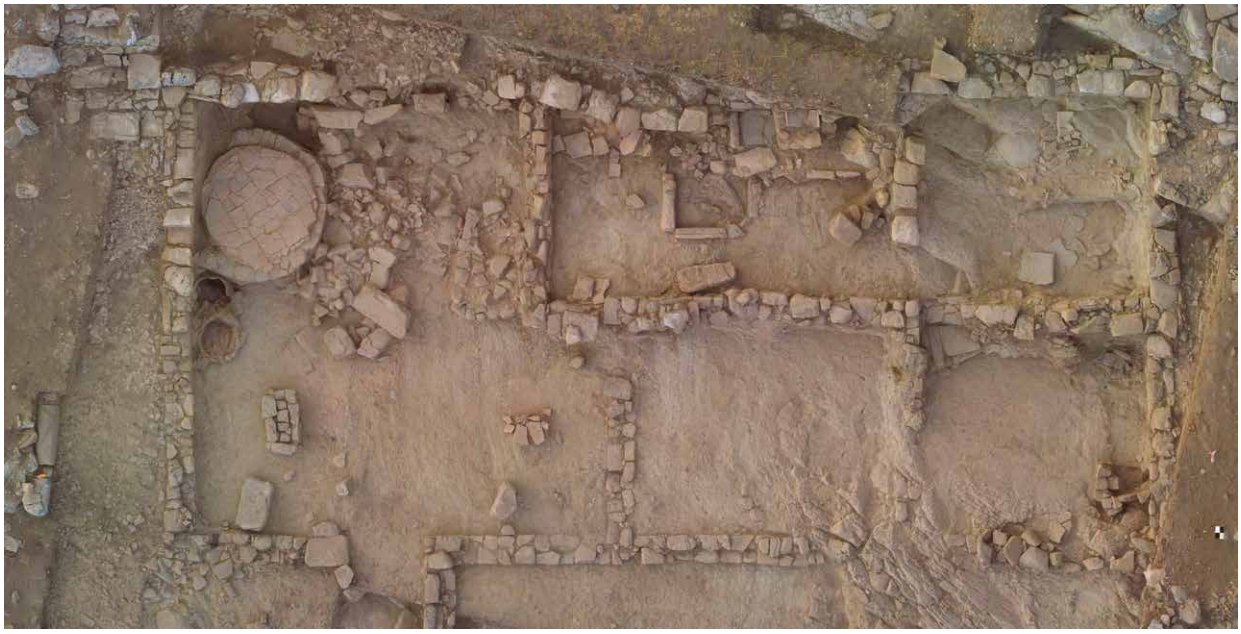

Fig. 6: *Orthomosaic photograph of the* Prostas *House on the Lower Acropolis hill. Model: Giannis Dikaioulias. (© Hellenic Ministry of Culture and Sports). The archaeological site of Kalydon falls under the jurisdiction of the Ephorate of Antiquities of Aetoloacarnania and Lefkada.*

Fig. 7: *Stone door posts in the western part of the Lower Acropolis. Photo: Søren Handberg. (© Hellenic Ministry of Culture and Sports). The archaeological site of Kalydon falls under the jurisdiction of the Ephorate of Antiquities of Aetoloacarnania and Lefkada.*

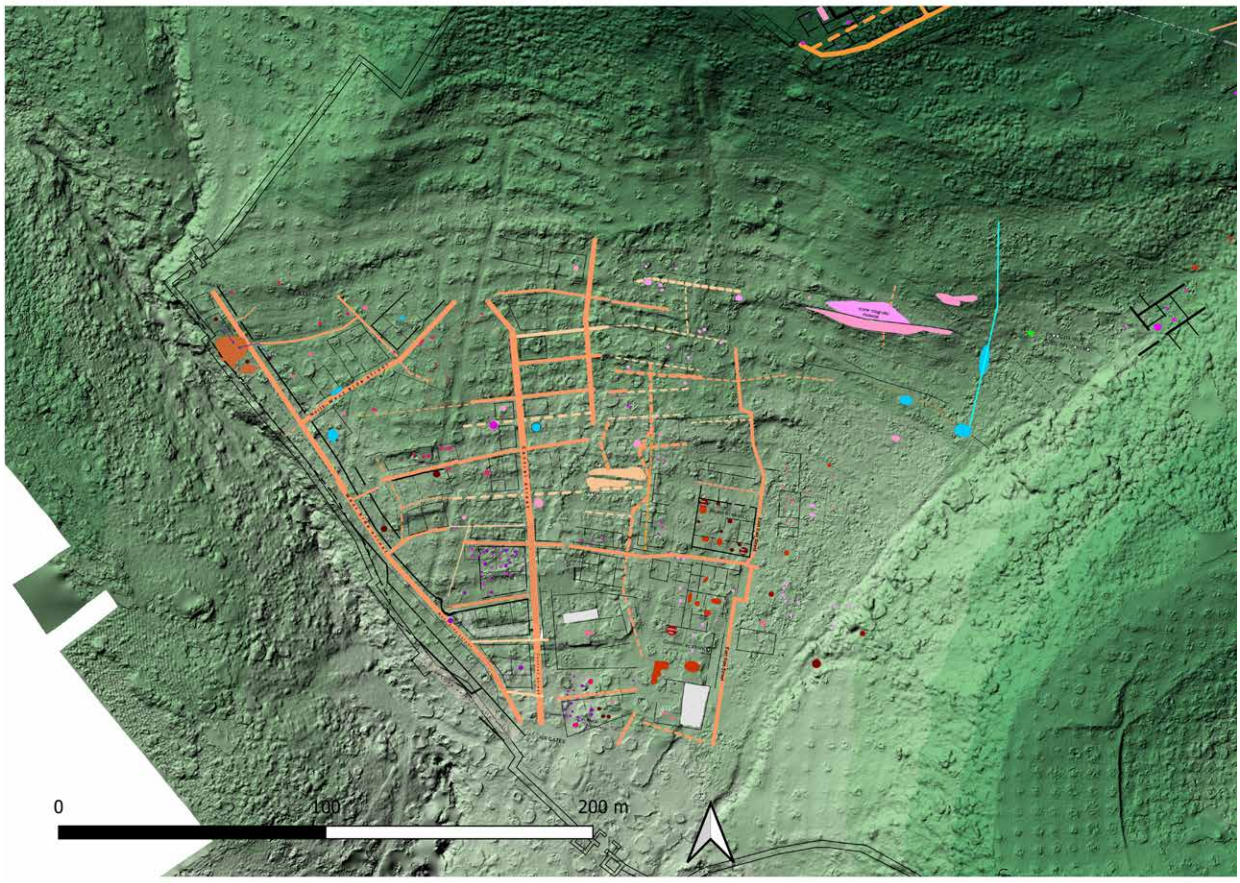

Fig. 8: *Interpretation of the results of the geophysical survey superimposed on the digital elevation model of the Lower Town. Map: Søren Handberg.*

The Lower Town also contains the so-called Peristyle House, which was partly excavated in the years 2003-2005.[19] This house, which contained a well-preserved cult room, might have been the clubhouse of a religious association.[20] Because such rooms were often located in domestic quarters, it is seems unlikely that the entire area was uninhabited, other than the craftspeople who may have resided in their workshops. One possible, albeit speculative, way to assess the extent of habitation in the area is to examine the overall distribution of production debris, as recorded during the intensive survey of the quarter, which shows that production waste is found in roughly half of area of the Lower Town.[21] So, for the purposes of this exercise, I will assume that approximately half of the unexplored area could have been inhabited.

Geophysical studies and a single trial trench excavated in the so-called Central Town revealed a quasi-orthogonal layout of the lower-lying areas, as well as terraces on the lower slopes leading up to the Acropolis hill (Fig. 9). Dietz proposed that the city's commercial *agora* is located in the southeastern corner of the area, where geomagnetic investigations indicate there has been levelling activity. The possible *agora* is located in a 1 m-deep depression in the landscape, and geophysical survey results indicate the presence of two large rectangular structures, possibly *stoas*, flanking the northern side of the area.[22]

The areas discussed above are the intramural areas where habitation can be demonstrated with varying degrees of certainty, but there are also areas where there are reasons to believe there was

19 For a presentation of the evidence, see Dietz 2011b; Jensen et al. 2011.
20 Concerning the idea that the house was a clubhouse of an association, see Dietz 2011c and Vikatou & Handberg 2023.
21 For the survey, see Methenithis 2011.
22 Regarding the possible *agora*, see Smakalova 2011, 57-8; Dietz 2011a.

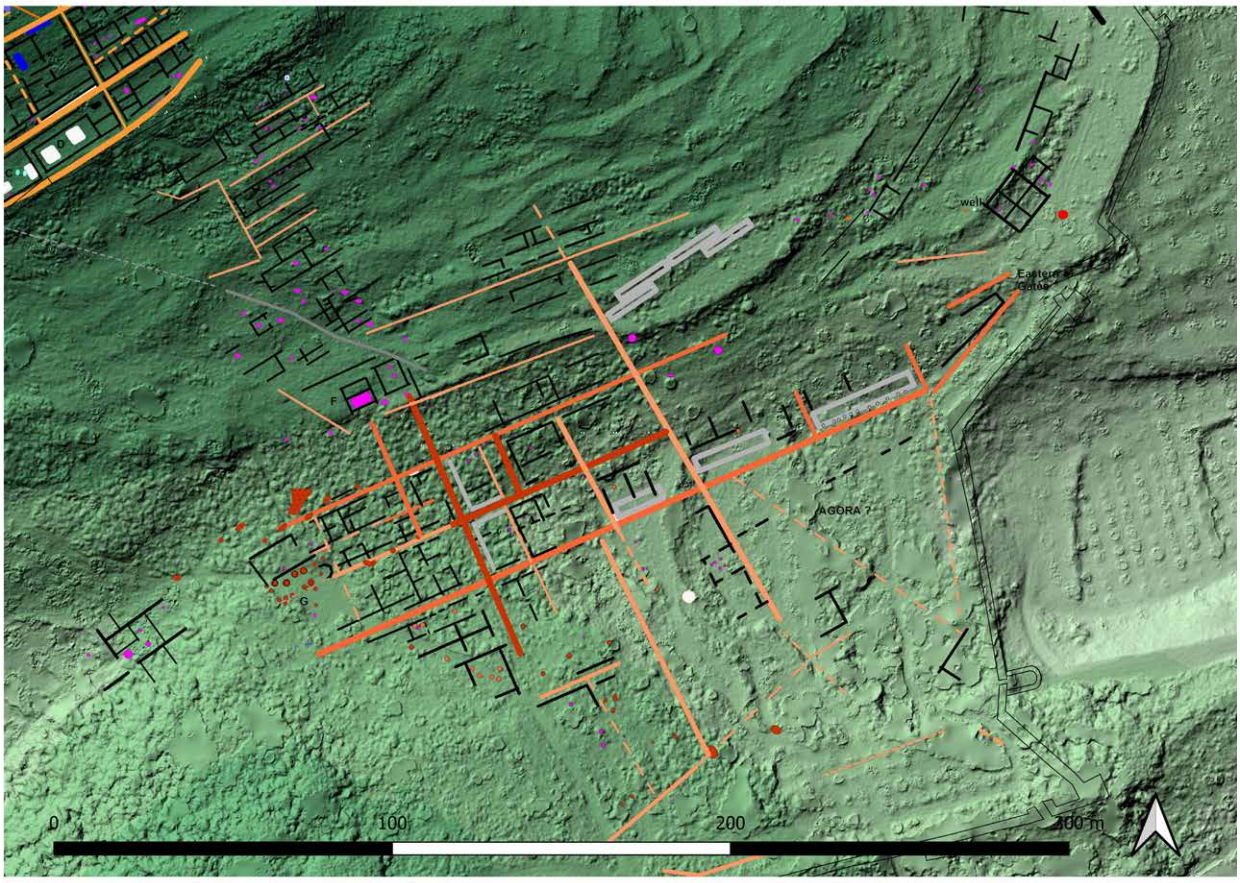

Fig. 9: *Interpretation of the results of the geophysical survey superimposed on the digital elevation model of the Central City. Map: Søren Handberg.*

no habitation and areas where the natural terrain is unsuitable for architectural constructions. The slopes of the intramural area's North Hill and South Hill were especially unsuitable for buildings, and these areas should be removed from any calculation of habitation areas. The digital elevation model can be used to calculate the extent of terrain that was unsuitable for construction. Figure 10 shows areas where the terrain slopes more than 25 degrees, which is presumably too steep for buildings.[23] I also rule out the South Hill and the northern extended fortified area as potential habitation areas, because they appear to have been left as open spaces with no visible structures and none were identified during the geophysical work. Furthermore, the field survey revealed that the southern half of the South Hill was nearly devoid of finds, leading Dietz to hypothesise that the South Hill was used for pasture.[24]

This section has presented the evidence for which areas of the intramural site can reasonably be interpreted as having contained dwellings and which are more likely to have served other purposes (Fig. 11). It should be noted in relation to this that there is currently no evidence of settlement outside the fortified area of the city. Based on this survey, the maximum possible intramural inhabited area can be estimated at 14.62 ha, or 53% of the total intramural area, which is only 3% more than Hansen's original estimate.

Density of habitation

The density of houses in habitation areas is another critical factor in Hansen's model. On the basis of evidence from better documented domestic quarters in ancient Greek cities, Hansen estimated that house densities in mid-sized *polis* (including

23 The analysis was undertaken using the terrain analysis and slope functions in the Quantum GIS software application.
24 For the survey, see Methenithis 2011. Regarding the idea that the South Hill was used for pasture, see Dietz 2011a, 79.

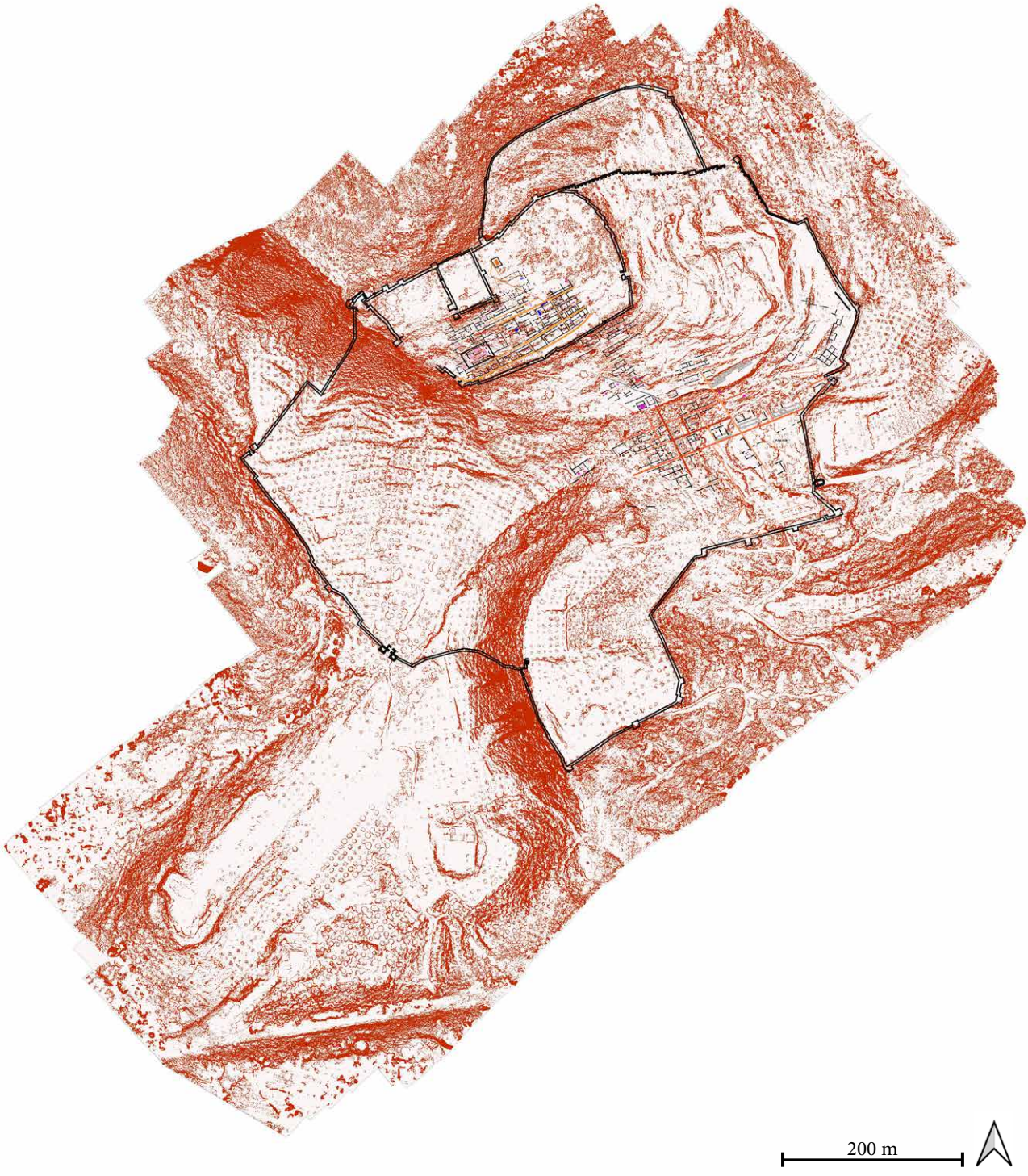

Fig. 10: *Digital elevation model of the archaeological area of ancient Kalydon with slope analysis. The red colour denotes terrain with an inclination greater than 25 degrees. Map: Søren Handberg.*

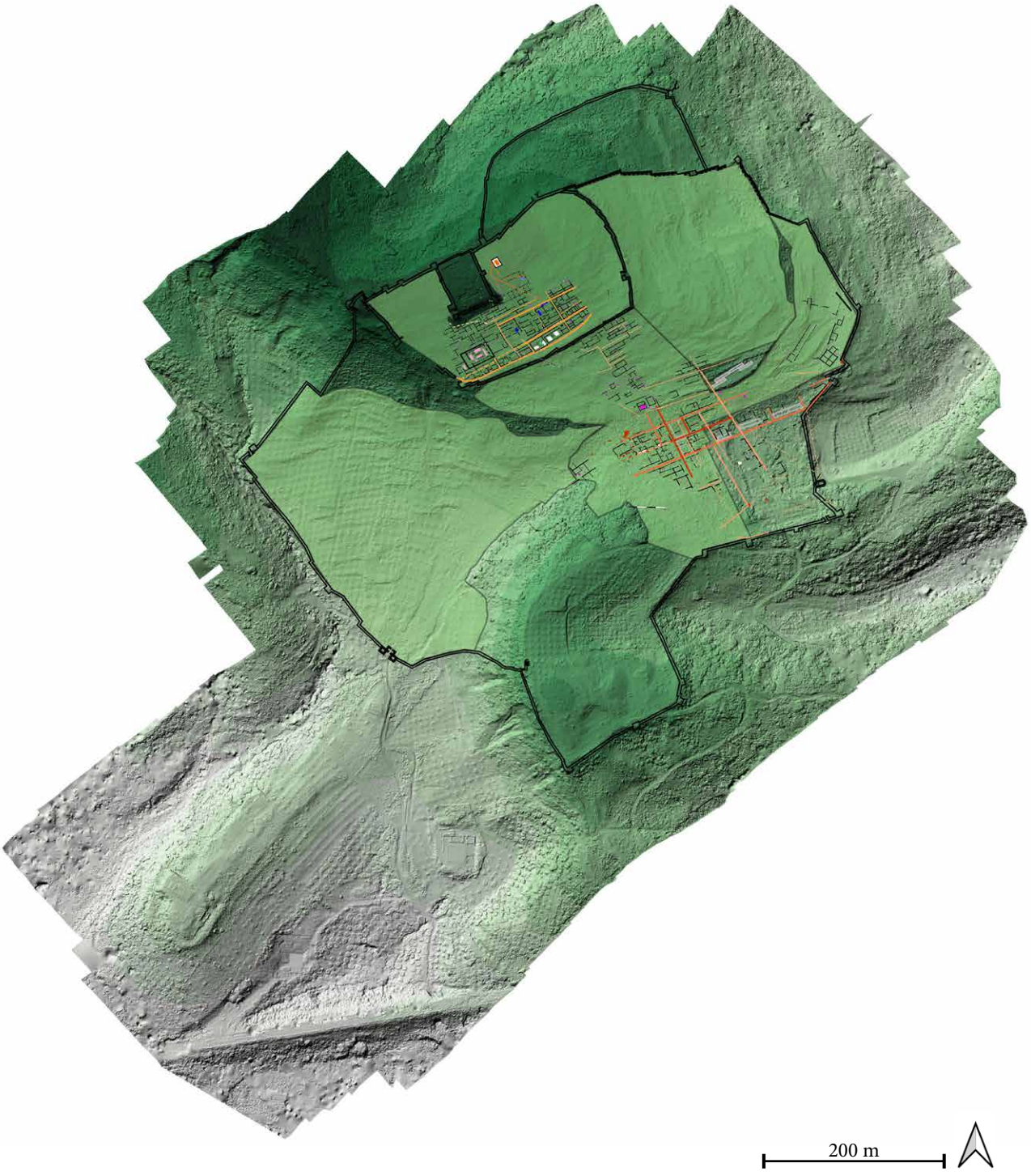

Fig. 11: *Digital elevation model with the areas of the intramural city that were used for habitation marked. Map: Søren Handberg.*

Fig. 12: *Habitation area on the Lower Acropolis Hill. Map: Søren Handberg.*

streets and open areas between the houses) ranged between 30 and 33 houses per ha.[25]

The *Prostas House* on the Lower Acropolis approximately 154 m^2, placing it within the lower range of ancient Greek house sizes of the period. If we include the streets that run along the northern and western sides of the house, the total area is roughly 210 m^2. These dimensions would allow for more than 47 similar *prostas* houses per ha on the Lower Acropolis hill if the houses were constructed immediately adjacent to one another. This is an unlikely scenario, however, due to the terraces and occasionally uneven terrain. A more appropriate measurement would be to use a larger area bordered by streets, as defined by the interpretation of the geophysical survey, which covered 1,853 m^2 (Fig. 12). In this area, we could allow for a maximum of 6 *prostas* houses, each occupying approximately 309 m^2, with a total of slightly more than 32 houses per ha. This figure is consistent with Hansen's overall estimate of 30-33 houses per ha. There are just over 97 houses if this rough estimate is applied to the entire Lower Acropolis area.

According to the results of the geomagnetic survey, housing in the Central Town was apparently more varied (Fig. 9). Terraces built on the lower slopes of the Acropolis hill may have been occupied by rectangular *prostas*-style houses similar to the excavated house on the Lower Acropolis, whereas houses in the area with the quasi-orthogonal street grid in the more level area appear to be laid out in slightly larger quadrangular *insulae*. The area immediately northwest of the presumed *agora* may be the best location to estimate habitation density within the area with a quasi-orthogonal street grid (Fig. 13). According to the interpretations of the geomagnetic results, four *insulae* with four houses, possibly of the *pastas* type, cover 1,508 m^2, resulting in an average of 377 m^2 per house, including the streets. A similar layout with a rectilinear street grid and house *insulae* can be found in the more thoroughly investigated cities of Alikyrna

25 Hansen 2006, 50-1.

Fig. 13: *Habitation area in the Central City. Map: Søren Handberg.*

and New Pleuron, which are only 6 and 17 km west of Kalydon respectively.[26] In general, rectilinear street grids became popular in northwestern Greece during the 4th century BC.[27]

I will use the mean size of the *prostas* houses used for the Lower Acropolis and the slightly larger presumed *pastas* houses to calculate the potential number of houses in the Central Town, which comes to 343 m^2 per house, or slightly more than 29 houses per ha. This would allow for approximately 245 houses in the 8.39 ha of Central Town which we can reasonably assume were used as dwellings. I will also use the same average size for housing in the Lower Town's industrial district, which has just over 93 houses. Using the assumptions about habitation densities in the preceding analyses, the various habitation areas of Kalydon's intramural area could have accommodated a maximum of 435 houses. It is important to note that this is the maximum number of available houses, and given the town's varied topography, the number was most likely lower, even though this is currently difficult to estimate.

Number of household members

Hansen's final criterion for estimating the number of inhabitants in intramural areas is the average number of household members. Hansen believed that the most accurate figure was 5.5-6 household members, including unrelated co-residents, such as slaves. Whilst he acknowledged the uncertainties, he considered these figures to be the most reliable evidence, based primarily on information from classical forensic speeches and preserved Hellenistic

26 For New Plevron, see Kolonas and Stamatis 2016, 83-97. Regarding Alikyrna, see most recently Vikatou 2022, 585-8.
27 For a discussion of some examples from Akanania, see Lang 2013.

and Roman census accounts in Egypt.[28] The number of members of the household was probably influenced by house size. One especially problematic factor concerns the possible presence of second floors in houses. There is at present no evidence of second floors in houses in Kalydon. There are no traces of a second floor in either the Prostas House of the Lower Acropolis or the Peristyle House in the Lower Town. For these reasons, and for the purposes of comparison, I will use Hansen's 2006 average of 6 household members.

According to the estimates and calculations discussed above, 53% of the intramural area (or 14.62 ha) was apparently used for habitation, allowing for a maximum of 435 houses. Using Hansen's figure of 6 members per household gives a maximum population of 2,610 for Kalydon, which is only 135 more than Hansen's original maximum. My analysis is, of course, based on several uncertain assumptions, including the reliability of the geophysical work, chronological issues, and the specific configuration of the houses. However, based on the archaeological explorations of ancient Kalydon over the last two decades, I believe we can at least say that the evidence generally aligns reasonably well with Hansen's model.

Kalydon's demography and its funerary landscape

Having a more informed idea about Kalydon's demography is very useful in terms of understanding other elements of the ancient city, such as the extent of its *necropoleis*. In the investigation of the ancient city, the *necropoleis* have been almost entirely overlooked. During the excavation of the archaeological site in the 1920s and 1930s, a few Hellenistic tombs were discovered on the South Hill and near the so-called Heroon outside the city's main West Gate.[29] A larger underground burial chamber with a *dromos* and covered by an earth mound was also discovered northwest of the sanctuary on the Laphrion Hill at this time.[30] Dietz and his colleagues had already discovered the city's main *necropoleis*, which were located outside the city walls. These areas were further surveyed and defined during the topographical surveys conducted in 2015-2018.[31] Despite this work, we know very little about the city's funerary landscape, which is significant given that the site contains several monumental tombs. Around 90 pre-Roman tombs of various types are known, but the majority have been found disturbed or robbed, or remain unpublished. For the Hellenistic period, approximately 50 tombs have been identified in three distinct *necropoleis*, and their approximate extent as far as we can currently identify them is shown on the map in Figure 14. The East Necropolis is situated immediately outside the East Gate, where some of the graves appear to line a road. Although evidence is limited, the East Necropolis apparently covered most of the relatively flat area outside the walls. The West Necropolis is located across the Kallirhoe stream to the northwest of the sanctuary on the Laphrion Hill. Apart from the large underground burial chamber mentioned above, peribolos tombs and grave *stelai* have been discovered in the flat area below and on the southern spur of Mount Arakynthos. The South Necropolis contains at least one large chamber tomb and several cist tombs on the South Hill and around the Heroon. Seven Hellenistic period tombs were excavated in 1972 in the village of Evinochori on the other side of the modern highway, but their exact location is unknown.[32] Their presence, however, strongly suggests that the South Necropolis extended southeast across the modern highway. As far as the three funerary spaces have been defined, they cover a total area of approximately 19 ha.

It is interesting to compare the overall size of the identified necropoleis to the city's estimated demography to get a sense of how they relate to each other. In an ancient city the size of Kalydon, how many Hellenistic graves should we expect to find? If we assume, like Hansen, the average life expectancy in ancient Greece was 30, then a population of 2,610 people would have resulted in around 26,100 deaths over the roughly 300-year Hellenistic period. Taking into account infant

28 See Hansen 2006, 52-60, for a discussion with references to various attempts to define an ancient Greek household and the duration of a generation. In his 2006 publication, Hansen suggests an average of 6 household members, whereas in his 2008 update on *The Shotgun Method*, he proposes an average of 5.5, see Hansen 2008, 276-9. For references to further discussions about the method of estimating household members, see also Cleymans 2018.

29 Dyggve et al. 1934, 12 fig. 6.

30 Dyggve 1951.

31 Vikatou et al. 2019, 169-77.

32 Papapostolou 1972.

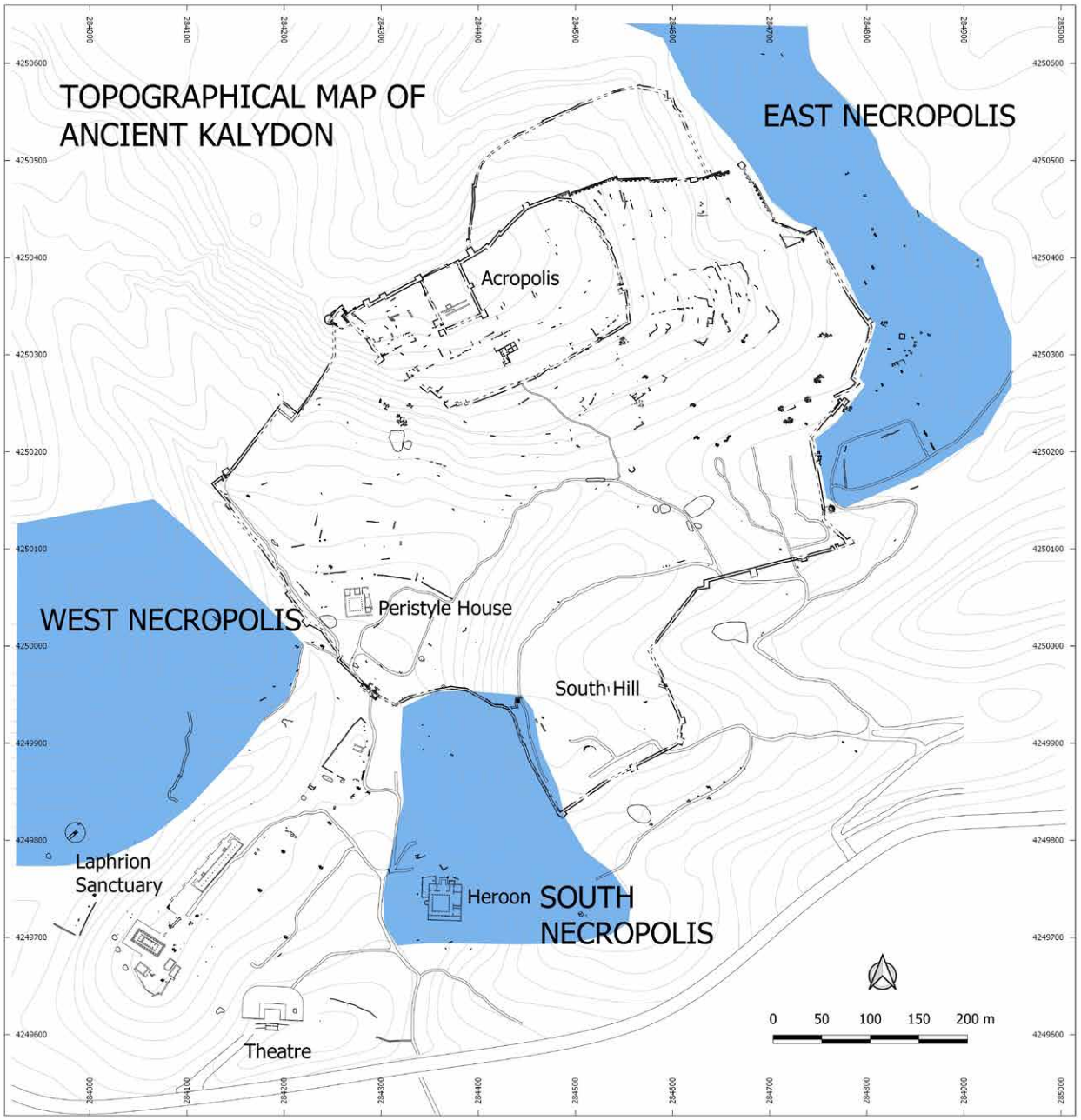

Fig. 14: *Topographical map of ancient Kalydon showing the locations of the city's three* necropoleis *as defined by archaeological evidence. Map: Søren Handberg.*

deaths, different burial practices in different social classes, and the practices of re-use and removal of earlier graves, it remains unknown how many of these individuals would have been given archaeologically visible burials. Destruction of Hellenistic graves in the Hellenistic period is perhaps less likely than the destruction of graves from earlier periods. The densest concentration of Hellenistic tombs in Kalydon is a series of cist and chamber tombs located outside the Eastern Gate (Fig. 15). Here, eight tombs occupy a space of 146 m^2. If we assume that this was the average density of burials in Kalydon in general, the expected 26,100 Hellenistic period burials would have taken up approximately 47.5 ha, which is more than twice the combined size of the necropoleis that have so far been identified.

This disparity can be explained in a number of ways. Firstly, it may be because areas with more densely placed burials still await to be discovered. Burials closer to the city walls and gates may have

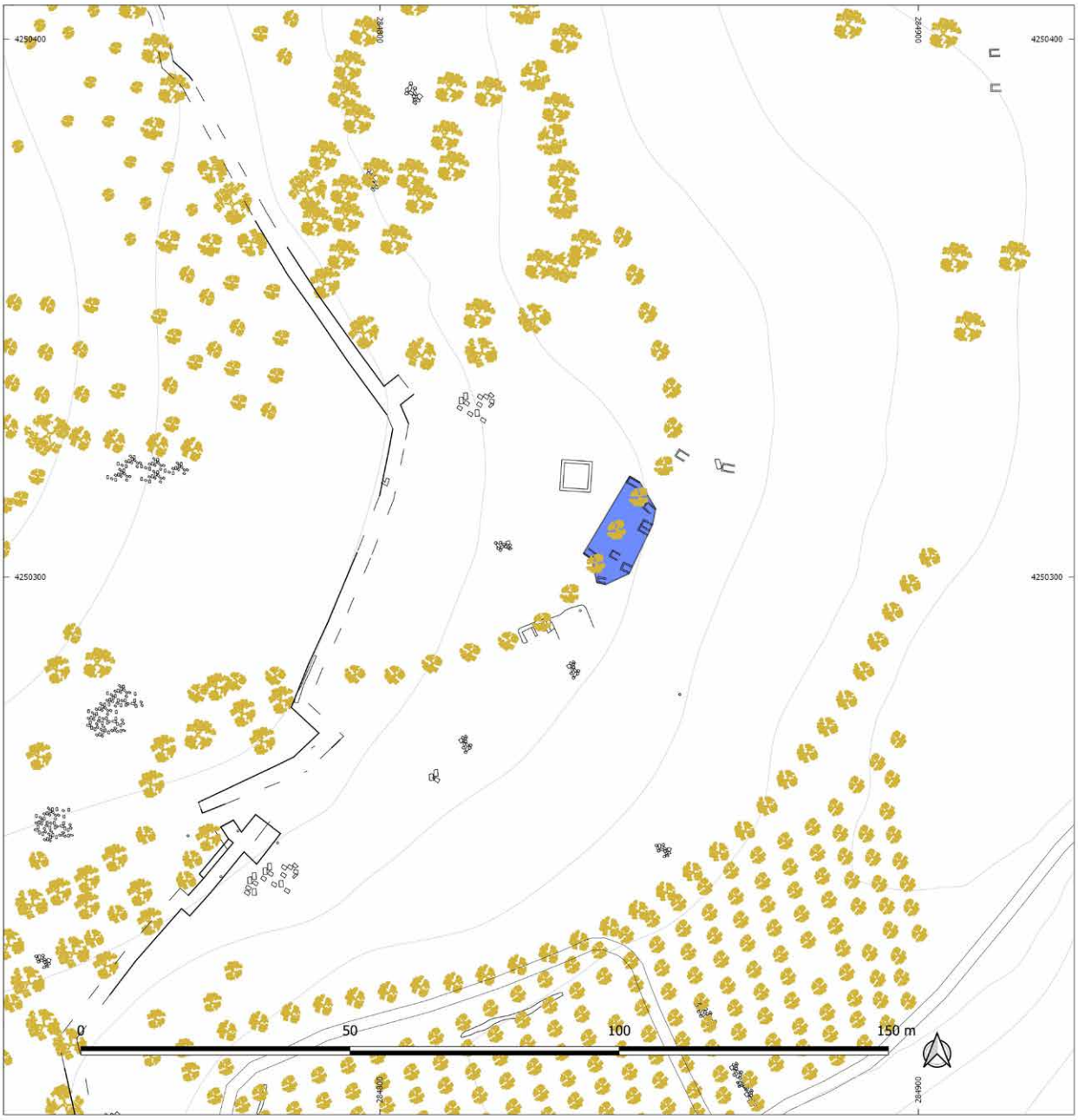

Fig. 15: *Topographical map of the area surrounding the East Gate of Kalydon, with the cluster of eight tombs outside the gate highlighted. Map: Søren Handberg.*

been given more space than burials located further away. Secondly, it is possible that the exact areas of the Kalydonian *necropoleis* are yet to be determined. The recent excavation of an early Hellenistic *peribolos* tomb around 1.5 km west of Kalydon by the Ephorate suggests the latter.[33]

Conclusion

In 2001, Søren Dietz and his colleagues began exploring Kalydon's intramural city, providing the basis for future investigations of the city's urban fabric. Focusing on the city's demography brings together the results of previous fieldwork and enables an evaluation of the

33 Vikatou 2017.

city's topographical layout. In some ways, demographic estimates, like the one I have attempted here, encourage further investigation into the relationship between the city's population and its public institutions, as well as other topographical elements of the city. The fact that the inhabitants of Kalydon built a theatre with a capacity for more than twice the estimated population is significant, suggesting that the theatre may have served multiple functions, such as hosting religious festivals in the city. The analysis also includes the city's funerary landscape, emphasising the lack of information about the *necropoleis* of Kalydon. The estimated population size raises questions about the expected number of Hellenistic graves, indicating a potential lack of correspondence between the identified *necropoleis* and projected burial needs.

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Vroulia Ware Cups: The Typology, Dating and Distribution of an Archaic Pottery Group from Rhodes[1]

by Stine Schierup

The Archaic pottery group today commonly known as 'vroulian' or 'Vroulia ware' was first described in the 1914 publication of the excavations of the site at Vroulia by K.F. Kinch.[2] During the excavations of this small settlement situated in the southernmost part of Rhodes, Kinch had observed a quite abundant group of pottery marked with a spiral underneath the base, of various qualities and in different shapes, including a noticeable group of drinking cups with elaborate decoration. The assemblage made it possible to document a development of the spiral-marked drinking vessels, from a sub-geometric style to thin-walled cups decorated with incised floral ornaments (including various combinations of lotus flowers, buds, palmettos and encircled leaf patterns) and added details in a fine reddish to purple colour.[3] Although Vroulia was an important findspot, at the time of Kinch's excavations, other examples of this group had already been observed at other main sites on Rhodes. During the Danish excavations (1902-1905) of the Athana Lindia sanctuary at Lindos, fragments, mainly of drinking cups, had been documented,[4] and both drinking cups and *amphoras* were recovered from tombs in the Kamiros and Siana regions. Alfred Biliotti, the British Consul in Rhodes (1850s-1870s), and the French artist Auguste Salzmann were instrumental in distributing the Kamiros/Siana material to several western museums as early as the 1860s-1880s.[5] Furthermore, the characteristic vroulian style pottery had been observed in the late 19th century by Sir Flinders Petrie, during his excavations of Tell Dafana and Naukratis in the upper Nile Delta.[6]

Since 1914, the year of Kinch's publication, 'Vroulia ware' has not been the subject of any focused studies, which is why the typology and dating of the group has never been reconsidered in the light of new evidence that has emerged over more than a century.[7] Most importantly, Kinch was not able to include finds

1 This paper presents part of the results of a complete re-examination of the Vroulian pottery which is being prepared (Schierup forthcoming). I have been helped in my research by a great number of colleagues. I would especially like to thank the following curators for making the Vroulian pottery in their collections available for study: Dr Agnes Schwarzmaier, Antikensammlung, Berlin; Dr Katarina Horst and Dr Clemens Lichter, Badisches Landesmuseum, Karlsruhe; Dr Alexandra Villing, the British Museum, London; Dr Anne Coulié, Musee d'Louvre, Paris; and Dr Eriphyle Kaninia at the Ephorate of Antiquities of the Dodecanese, Rhodes. I would also like to thank Professor Martin Bentz of the University of Bonn, Dr Mario Iozzo, former Director of the Archaeological Museum in Florence, as well as Kathryn Jones, Senior Curator of the Royal Collection Trust, for providing me with useful photos and information on the objects in their collections. Furthermore, special thanks go to the General Consul Gösta Enbom Foundation, the Elisabeth Munksgaard Foundation and the National Museum of Denmark, for supporting the project that made the study of this material possible.

2 Kinch 1914, 168-90; Schierup & Kaninia 2017.

3 Kinch 1914, 161-94.

4 Blinkenberg 1931, 285-8, nos. 995-1005.

5 For an overview of the objects that entered the Louvre, see Coulié & Filimonos-Tsopotou 2014, 328-34; for the objects in the British Museum, see Villing 2019; Salmon 2019 and Jeffrey 2019 with further references. Other objects were sold to several western museums at auctions held in Paris and London, see e.g. Furtwängler 1886; Greifenhagen 1936, 379, no. 28, abb. 32,6.

6 Petrie 1888a; 1888b. Drinking cups in vroulian style were only known from Naukratis, whilst the finds in Tell Dafana included a significant number of fragments from black-figured *situlas* with Vroulian-style decorations.

7 The *situlas* as a group were discussed in Cook 1954. The Vroulian pottery from Tell Dafana and Naukratis has been published and discussed by Schlotzhauer and Weber (Schlotzhauer 2012; Weber 2012; Weber 2014; see also Villing & Schlotzhauer 2006). NAA analysis of the group has been published by Villing & Mommsen 2017, 126-34; Vroulia ware is briefly described in Cook & Dupont 1998, 114-8.

a *b*

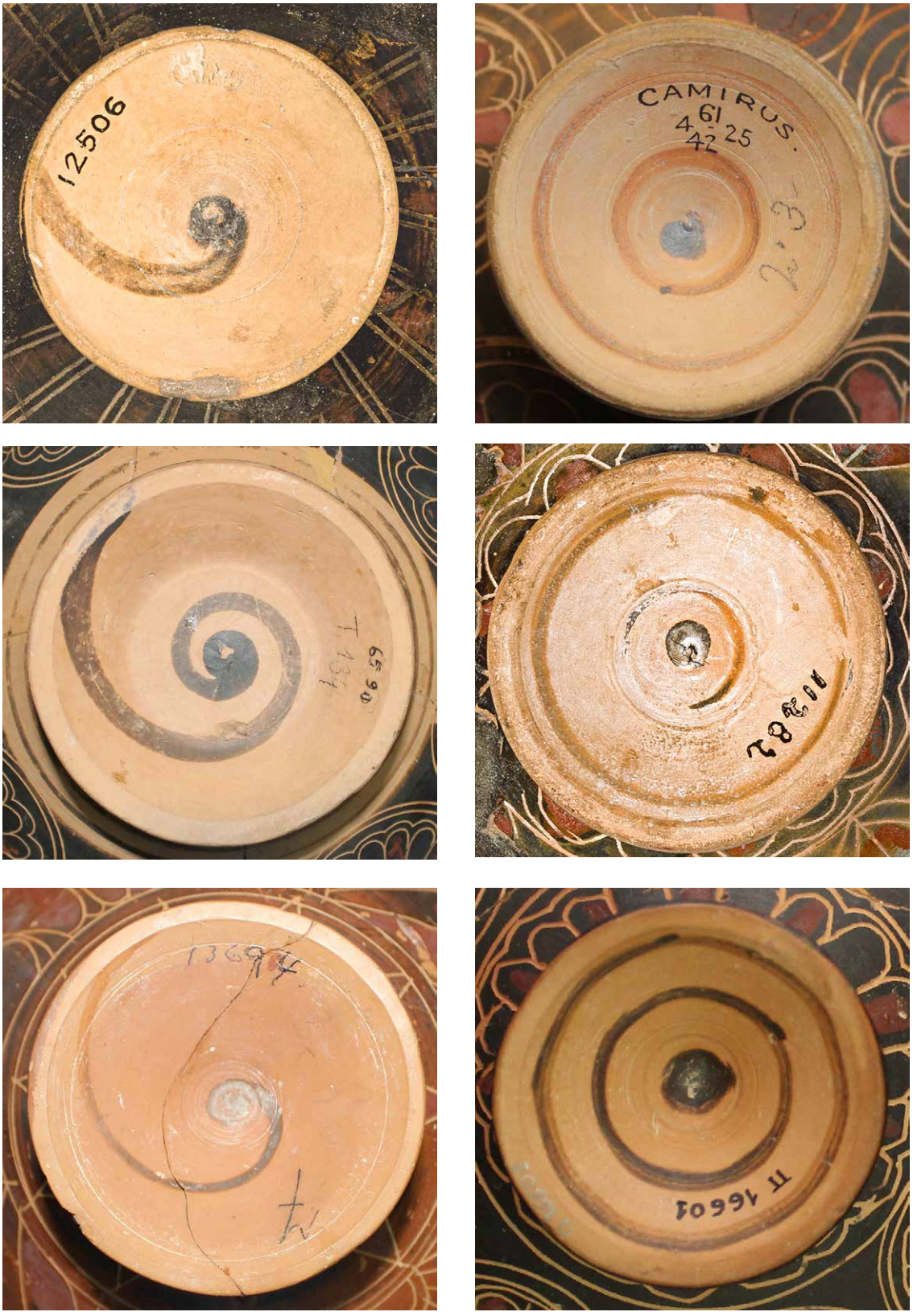

Fig. 1: *Variants of the two main types of marks found under the base of the vessel. a) spiral and b) two concentric circles and a dot. Photos: Stine Schierup. With the courtesy of the National Museum of Denmark, the Ephorate of Antiquities of the Dodecanese and the Trustees of the British Museum.*

made after 1912, when the Italian Archaeological Service carried out extensive excavations on Rhodes, in particular the material revealed from the tombs at Ialysos, which provided new evidence of Vroulian-style pottery.[8] The typology presented by Kinch was therefore only based on a limited number of vessels compared to those that are known today.[9]

The present article is the result of a thorough re-examination of the group, including all known forms of this group: i.e. cups, deep carinated bowls, *amphoras*, *oinochoai*, *situlas* and *stamnoi*.[10] Of these, three forms (deep carinated bowls, *oinochoai* and *stamnoi*) have been added to the assemblage since Kinch's publication of the group. In this article, I will summarise the main results relating to the typology and dating of the drinking cups, the most well-known and abundant category within the assemblage.

Kinch's typology of the Vroulian-style cups in the light of new evidence

The Vroulia ware cup is characterised by having a short everted rim and a narrow, conical-shaped foot that gives the cup an elegant appearance, especially in its most developed phases. The diameter of the rim usually varies between 17-20 cm, with a few examples considerably smaller, with a diameter of around 12 cm. A clear connection in terms of shape can be seen between the Vroulian drinking cups and the widely distributed Ionian cups, and they therefore provide an important comparison for the dating of the Rhodian production.[11] In addition, a group of larger, cup-shaped vessels with a diameter of 30-35 cm or more can be identified, but although they follow the same decoration scheme, they are considerably larger and have a low ring foot. Such vessels may have been used as mixing bowls for wine.

Kinch's typology divides the development of the cup into four main stages, from a proto-Vroulian geometric style, 'heavier' and more thick-walled, to a developed phase, in which the characteristic incised floral ornaments have taken over the whole body of the vessel and the form becomes fine, thin-walled and with a high conical foot. In all phases, one of the defining features of Kinch's typology is the decoration underneath the base. This primarily consists of two types: a) a spiral and b) concentric circles and a dot (Fig. 1), but also one isolated example with a wheel-shaped mark.[12] Kinch concluded that the marks were indicators of different workshops: "ces trois marques représentent probablement trois différents ateliers",[13] and this feature was a defining characteristic of his typology, in which he saw a parallel development within the two different workshops, which was defined by the mark underneath the base of the vessel.

A brief overview of the main features of Kinch's typology and its problems:

- **A1α-γ**: the first proto-Vroulian phase, subdivided by the decoration underneath the base into **A1α** (wheel-shaped), **A1β** (double concentric circles) and **A1γ** (spiral). Cups have a 'reserved' geometric zone between the handles, large and thick shapes compared with later types, and a low foot ring. The reserved zone between the handles is decorated with opposing triangles and groups of vertical strokes, which are the characteristic details that continue into phase **A2** and **B1**. However, in this early phase, other geometric combinations are present as well. On the lower part of the body, one or more reserved area without dark slip can sometimes be seen (Fig. 2a-b[14]). Based on a re-analysis of the assemblage, it can be concluded that this subtype, defined by Kinch as **A1β**, is doubtful, while no examples of the variant with double concentric circles were recorded.
- **A2**: the second proto-Vroulian phase can only be identified from cups with a spiral mark on the bottom of the base. The shape of the cup becomes more elegant with thin walls, and the foot is higher and (slightly) conical. Between the handles, the reserved zone, containing geometric decoration,

8 For an introduction to the Italian activities on the island, see D'Acunto & Filimonos-Tsopotou 2014, 52-62.

9 It is also evident from his descriptions of the material that he was not able to undertake a primary examination of all the vessels available at the time.

10 Schierup forthcoming.

11 The production of the Ionian cups has been linked to both Miletos and Samos (Cook & Dupont 1998, 129). For the typology of the cups, see e.g. Vallet & Villard 1955; Boardman & Hayes 1973, 55-8, pl. 31.

12 Louvre, inv. A292: Kinch 1914, 170-1, fig. 53a-b.

13 Kinch 1914, 164.

14 Rhodes, Archaeological Museum, inv. 11477: *Clara Rhodos* III, 128, fig. 120, pl. IV (Jacopi); *CVA* Italy vol. 10 (Rhodes, Museo Archeologico vol. 2), tav.3.3.

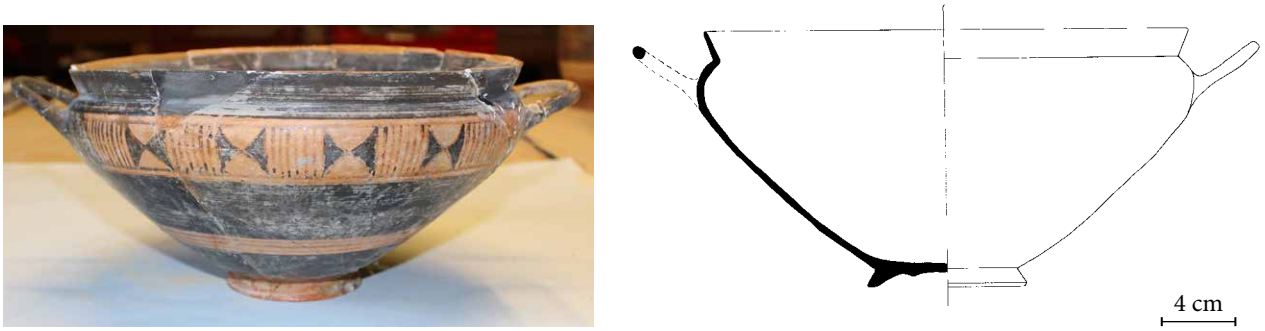

Fig. 2a-b: *Cup in A1 style. Rhodes, Archaeological Museum, inv. 11477. From Koukkiá, Ialysos, tomb 348. Photo and illustration: Stine Schierup. © The Ephorate of Antiquities of the Dodecanese.*

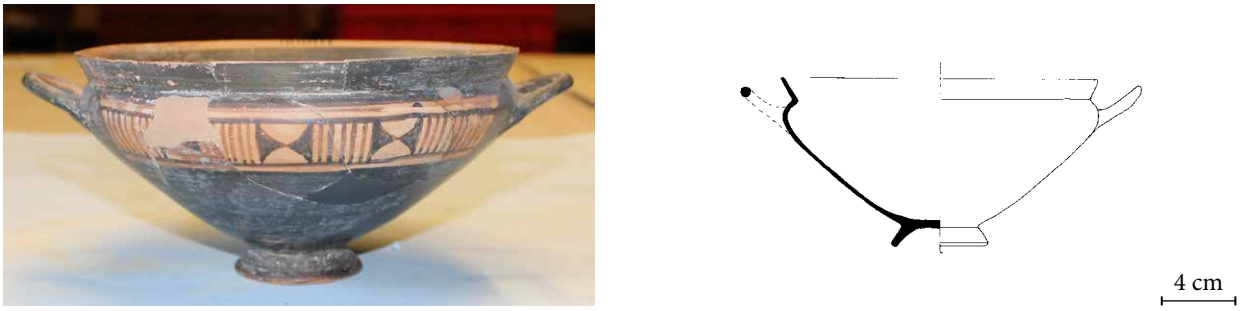

Fig. 3a-b: *Cup in A2 style. Rhodes, Archaeological Museum, inv. 13688. Context: Chechraci, Kamiros, tomb 7. Photo and illustration: Stine Schierup. © The Ephorate of Antiquities of the Dodecanese.*

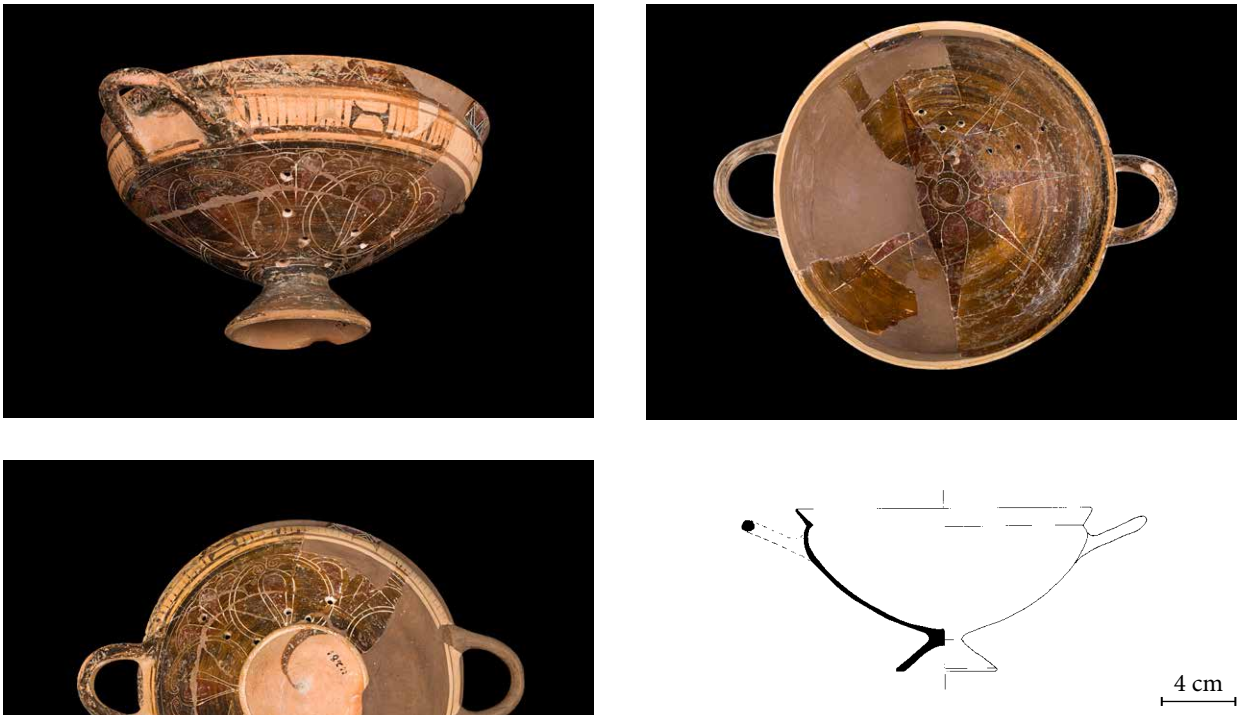

Fig. 4a-d: *Cup in B1β style. Copenhagen, the National Museum, inv. 11281. Vroulia, room I,32. Photos: Arnold Mikkelsen, the National Museum of Denmark. Illustration: Stine Schierup. © The Ephorate of Antiquities of the Dodecanese.*

Fig. 5a-d: *Cup in B1β style. Rhodes, Archaeological Museum, inv. 13694. From Papatislures. Photos and illustration: Stine Schierup. © The Ephorate of Antiquities of the Dodecanese.*

groups of vertical lines and opposing triangles, is still present (Fig. 3a-b[15]). Kinch only identified the type in the variant with the spiral, and no other variants have been added to the assemblage since then.

- **B1α-β**: in this phase incised floral ornaments are introduced, with added details in a reddish to purple colour. The form is fine and similar to type **A2**, but the cup is taller and of a more 'muscular' shape. A defining feature of the decoration is the combination of incised floral ornaments with the 'old-fashioned' reserved geometric zone between the handles. Kinch defined two groups: one with spiral below the base **(B1β)** (Figs 4-6[16]) and one with double concentric circles **(B1α)** (Fig. 8[17]). A group of deep carinated bowls decorated in the same way as the **B1β** cups, and also marked with a spiral (Fig. 7[18]), has been added to the assemblage after Kinch's publication.[19] The **B1α** type has so far only been identified from one example, and the decoration seems to belong to a more developed phase than the majority of the vessels of **B1β** type.
- **B2α-β**: in the final phase, the reserved geometric zone between the handles is no longer present; it is replaced by a cable frieze or similar ornaments. The floral decoration, including different variants

15 Rhodes, Archaeological Museum, inv. 13688: *Clara Rhodos* VI-VII, part 1, 21-3, 28-31 (Jacopi); figs. 16-18 and 19.

16 A) Copenhagen, National Museum of Denmark, inv. 11281: Kinch 1914, 144, 178, pl. 10, 1, no. 13; B) Rhodes, Archaeological Museum, inv. 13694: *Clara Rhodos* vol. VI-VII, 25-6, fig. 21; 26-27 (Jacopi); C) Copenhagen, National Museum of Denmark, inv. 12506: unpublished.

17 Copenhagen, the National Museum of Denmark, inv. 11282: Kinch 1914, 174-5, no. 10, pl. 12. According to the information given in 1927 by Helvig Kinch (in a letter written to Christian Blinkenberg), the vessel was bought by Kinch on the island during the years of the expedition. It was purchased from Elias Tanus Akavis, a wealthy merchant of Syrian origin who, together with the British Vice Consul Alfred Biliotti, worked as an agent for the French *Societé de la Régie des tabacs de l'Empire*. Their activities can be linked to the looting of tombs from the *necropoleis* in the Kamiros region (see Patsiada 2009, 166; Maillis, Skandalidis & Tsalachouris 2002, 260).

18 Rhodes, Archaeological Museum, inv. 6590: *Clara Rhodos* III, 28, fig. 11-12 (Jacopi); *CVA* Italy vol 2 (Rhodes, Museo Archaeologico), tv. 4.1-2.

19 Schierup forthcoming.

Fig. 6a-d: *Cup in B1β style. Copenhagen, the National Museum of Denmark, inv. 12506. The cup was bought by K.F. Kinch in Rhodes in 1913, unpublished. Photos: Arnold Mikkelsen, the National Museum of Denmark. Illustration: Stine Schierup.*

of the lotus and palmetto ornaments, takes up most of the body, both on the outside and inside (Figs 9-10[20]). The vessels are of a more delicate quality than previously, and their forms are elegant and thin-walled. Kinch subdivided this group into: a) **B2α** marked with a spiral and b) **B2β** marked with concentric circles and a dot. However, the existence of type **B2a** cannot be confirmed, as discussed below.

Kinch's typology of the cups was based on the description of around 25 examples of Vroulian-style pottery, from proto-Vroulian to developed style (three of the vessels were not illustrated by Kinch and can no longer be identified[21]).[22] My re-examination of this group is based on around 50 more or less well-preserved examples.[23] The investigation made it clear that the typology presented by Kinch needs to be revised in relation to several aspects, although the general development from a sub-geometric to a developed Vroulian style can still be justified. However, as emphasised in the overview above, there are several subgroups in Kinch's typology which appear to have been based on debatable examples. For example, the proto-geometric type (**A1β**) with the double concentric circles on the bottom of the vessel was based on two undocumented fragments from Lindos. No further examples of the type have been recorded, and no evidence exists which can confirm this group.[24] It must be concluded that the proto-Vroulian

20 A) Louvre, inv. A332: Salzmann 1875, pl. 33-4; Pottier 1897, 15; Kinch 1914, 175, 181, no. 18; Zervos 1920, 62, fig. 119, 131, fig. 298; *CVA* Louvre 1, 4, pl. 3,2; B) Rhodes, Archaeological Museum, inv. 16601: *CVA* Italy vol. 10 (Rhodes, Museo Archaeologico, vol. 2), tav. 3.1-2.

21 Kinch 1914, 171-3, nos. 2-4.

22 Furthermore, Kinch's publication of the Vroulia ware included five *amphoras* and a brief discussion of the *situlas* from Tell Dafana with a few illustrated examples, see Kinch 1914, 168-94; a more thorough discussion of the *situlas* was later published by R.M. Cook in *CVA* British Museum vol. 8, 1954, 29-37.

23 Schierup forthcoming.

24 Kinch 1914, 171-2, no. 2. The type was based on fragments from Lindos that cannot be identified. No further examples are known.

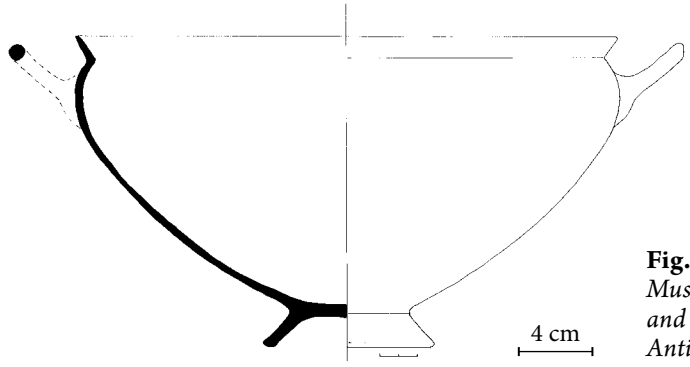

Fig. 7a-c: *Bowl in B1β style. Rhodes, Archaeological Museum, inv. 6590. From Ialysos, tomb 134. Photos and illustration: Stine Schierup. © The Ephorate of Antiquities of the Dodecanese.*

cups (**A1-2)** may be examples in which the mark underneath the base consists of a spiral.[25]

Another problematic group in Kinch's typology is the spiral variant in phase **B2**. It was defined on the basis of a single fragment from Naukratis: the fragment of the foot and lower body of a large cup with a spiral and the characteristic incised Vroulia ware decoration.[26] However, a close inspection of this fragment has made it clear that the handle zone is not preserved, and it is impossible to determine whether or not there was a geometric frieze at all. But the style of the lotus flower means it is most likely that the decoration is of the **B1β** type, and as no further examples have been identified, it must be concluded that the **B2** phase is only represented by vessels of the type with double concentric circles and a dot underneath the base. Furthermore, the size of the Naukratis cup seems to place it in the functional category as a deep carinated bowl and not a drinking cup. To summarise, the re-examination indicates that the vessels with a spiral were produced in phases **A1-A2** and **B1**, whilst the **B2** phase only comprised fine cups marked with concentric circles. Between **B1** and **B2**, a transitional phase seems to exist, with cups marked with concentric circles being produced in **B1** style. This is the group defined by Kinch as **B1α** and represented by a well-preserved cup now kept in Copenhagen[27] (Fig. 8a-d).

Kinch identified the marks underneath the base as potters' marks. However, on the basis of the overall evidence for the Vroulian cups, combined with the observations of the details of the decoration, the contexts and dating (to be discussed below), I propose that they instead represent different chronological phases in the production. This is supported by the fact that the variant of the concentric circles is not present during the early proto-Vroulian phase (**A1-2**), and in a similar way that the spiral variant is not present in the late developed phase (**A2**). If the phenomenon of painting two concentric circles and a dot on the bottoms of the drinking vessels is considered more broadly, it is also

25 With only one exception, the wheel-marked example illustrated by Kinch 1914, 170-1, fig. 53a-b (Louvre inv. A292).
26 London, British Museum, inv. 1888,0601.569: Kinch 1914, 178-80, no. 14, fig. 60a-c.
27 See n. 17 ibid.

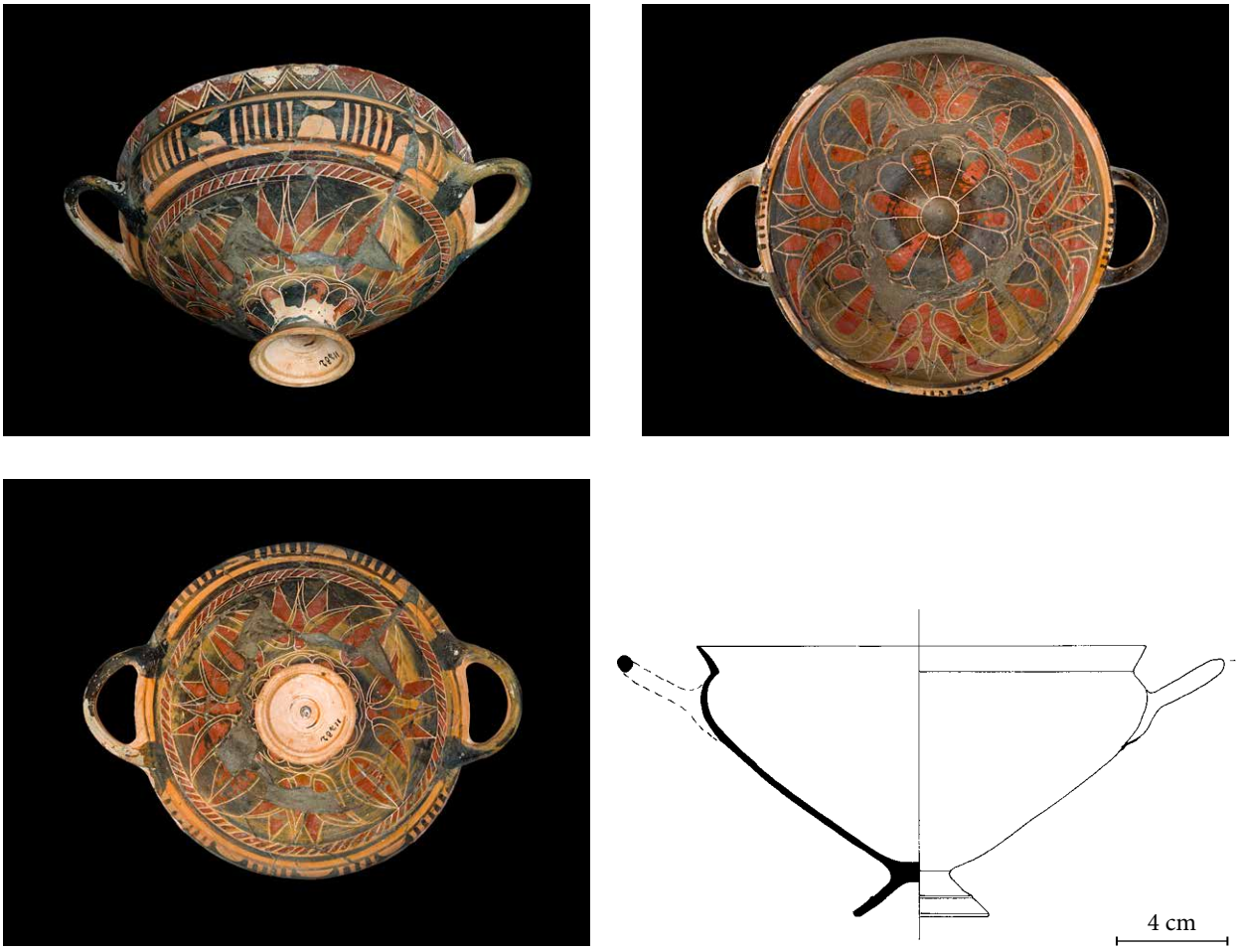

Fig. 8a-d: *Cup in B1a style. Copenhagen, the National Museum of Denmark, inv. 11282. Photos: Arnold Mikkelsen, the National Museum of Denmark. Illustration: Stine Schierup.*

Fig. 9a-c: *Cup in B2 style. The Louvre, A332. Photo: courtesy of RMN Louvre. Illustration: Stine Schierup.*

Fig. 10a-d: *Cup in B2 style. Rhodes, Archaeological Museum, inv. 16601. Photos and illustration: Stine Schierup. © The Ephorate of Antiquities of the Dodecanese.*

Fig. 11: *The base of a silver cup from southern Italy, 4th century BC, with patterns of concentric circles similar to the lines underneath the bases of the late Vroulia ware cups. Metropolitan Museum of Art, inv. 08.258.52. Public Domain, Metropolitan Museum of Art.*

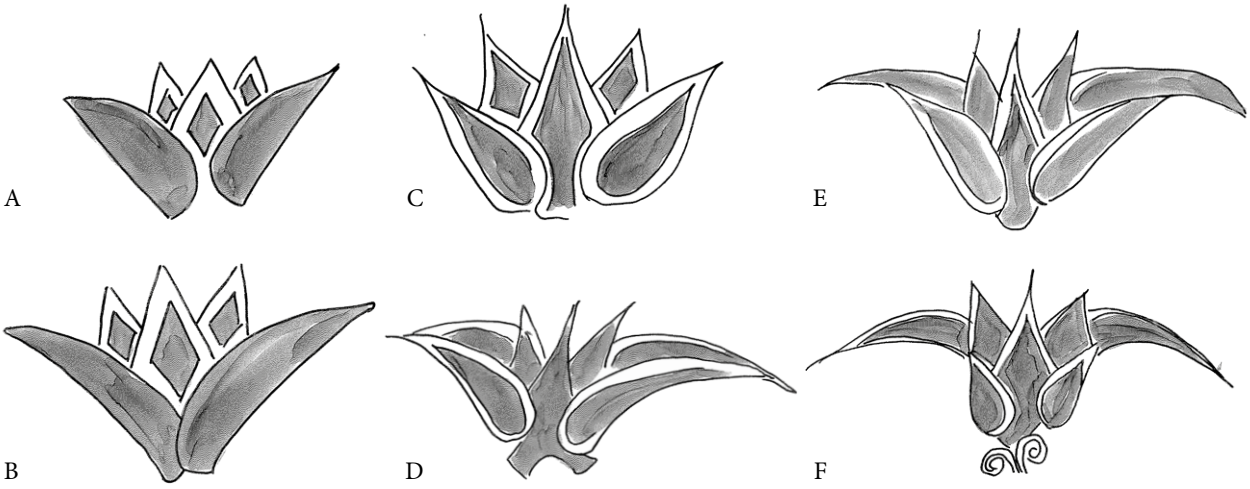

Fig. 12: *Variations of the lotus ornament on Vroulian cups. Illustration: Stine Schierup.*

known from other production areas, such as in the case of Attic and Corinthian drinking cups, on which it is occasionally present from around the middle of the 6th century BC onwards. The Rhodian workshop may have found its inspiration here, or probably more likely, the circles may have been an attempt to replicate the patterns underneath the bases of metal vessels, which clearly also inspired the form and decoration of the cups (Fig. 11).[28]

Technical characteristics of the decoration, ornaments and lotus typology

The floral decoration of the cups seems to have involved a combination of ornaments added in freehand and those applied using compass-like tools. Irregularities in the incised ornaments indicate that the decoration was not added with minute precision, although some preliminary sketches and guiding lines must have been applied in order to obtain the desired result. The best examples of the decoration are usually found on the most delicate forms. The finest examples so far known are four type **B2** vessels, which are nearly identical, both in terms of form and decoration, and were found during the excavation at Kamiros by Biliotti and Salzmann. The four vessels are also of almost identical weight, ranging between only 92 and 97 g (e.g. Fig. 9).[29] The form as well as the decoration of such vessels was clearly inspired by metalwork,[30] and the use of the added reddish-purple colour in the ornaments suggests that they may have been inspired by metal cups made by joining two different types of metal, most probably a combination of silver (black) and copper (purple).[31] Using this technique, the potters could achieve a polychrome effect.

The repertoire of the decoration of the Vroulia ware cups develops gradually as far as the choice of ornaments and their execution is concerned. In the proto-Vroulian phase (**A1-A2**), the only decoration on the vessel is the reserved painted sub-geometric band between the handles (Figs 2-3). This usually consists of a frieze of opposing triangles separated by groups of vertical lines, but other variations

28 Unfortunately, no contemporary examples have been found, but the Hellenistic drinking cup from southern Italy, now in the Metropolitan Museum of Art, clearly emphasises the connection between the lines beneath the bases of both clay and metal cups (Metropolitan Museum of Art, inv. 08.258.52: Robinson 1909, 81, fig. 5).

29 The vessels were divided amongst three different collections: Louvre, inv. A332 (Salzmann 1875 (necrop.), pl. 33-34; Pottier 1897 (album), 15; Kinch 1914, 175, 181, no. 18; Zervos 1920, 62, fig. 119, 131, fig. 298; *CVA* Louvre 1, 4, pl. 3,2.); British Museum, inv. 1861,0425.41-42 (Kinch 1914, 181, nos. 16-17); and the Royal Collection, London, inv. RCIN18595 (the vessel was acquired by the Prince of Wales/King Edward VII on Rhodes in 1862).

30 See e.g. the lotus-palmetto decoration on a presumably contemporary bronze *kline* now in the Getty Museum (inv. 82.AC.94): Baughan & Özgen 2012, esp. 73-8, figs. 4-5.

31 Vickers 1985, 108-12.

Fig. 13. *High-stemmed plate with lotus flowers, from Vroulia. Copenhagen, the National Museum, inv. 11277. Photo: Roberto Fortuna, National Museum of Denmark.*

of geometric ornaments can also be present.[32] In phase **B1,** the reserved geometric frieze between the handles is still found, but is now always of the type with opposing triangles and groups of vertical lines (Figs 4-6). In addition, incised ornaments and red-coloured details are added to the vessel. On all the known **B1** examples, there is a tooth pattern in red on the exterior of the everted rim. Furthermore, incised floral ornaments consisting of lotuses and palmettos – in some cases encircled single leaf patterns – can be seen below the reserved geometric frieze (Fig. 5a). The inside of the vessel is also often decorated with a simple, incised, central flower or a large central star-like pattern (Figs 5b and 7b), which is sometimes encircled by a frieze of lotus and palmetto ornament (Fig. 6b). In addition, the internal decoration seems to develop from a simple to a more elaborate design, in which most of the inside of the cup is taken up with a floral decoration (Fig. 8a-c), a feature that also characterises the final phase (**B2**), often involving

32 Variations can include e.g. friezes of large lozenges (e.g. British Museum, inv. 1865,1214.65: Kinch 1914, 174, fig. 57; *CVA* British Museum 11, 59, no. 196, pl. 85.196) and teeth patterns (e.g. Rhodes Archaeological Museum, inv. 12074: from tomb 3 Macri Langoni, *Clara Rhodos*, IV, 47, fig. 16 [Jacopi]).

more complex designs (Fig. 9b). The tooth pattern below the rim continues into the **B2** phase, but the reserved geometric frieze is replaced by a cable or similar ornament (Figs 9a and 10a). In one, so far unique, example, the tooth pattern and the cable ornament have been omitted, leaving only a palmetto ornament. Unfortunately, only the rim and shoulder of this cup are preserved, but the shape and quality of the fragments seem to indicate that it is of type **B2**.[33]

The incised decoration of lotus flowers and palmettos on a dark ground is a typical characteristic of Vroulia ware. Lotus decoration is frequently found on East Greek pottery – also in a style similar to that present on the Vroulia pottery – but is usually painted directly onto the light-coloured clay (e.g. Fig. 13). The decoration of lotus flowers on a dark ground can be seen inside Chian chalices,[34] as well as on the shoulder of a north Ionian *dinos* that was found at Vroulia (Fig. 14).[35] In technical terms, the *dinos* is closest to the Vroulian cups, with the use of incisions into a dark-slipped surface, although in this case details have been added not only in red but also, unlike on Vroulia ware, with a white colour.

Another feature that is common to both the **B1** and **B2** vases is the encircled palmetto (e.g. Fig. 9a and Fig. 10c). The same type of ornament was introduced in the late phases of the Corinthian production.[36] The characteristic ornament of a single, encircled leaf is present on a cup fragment from Naukratis, a cup from Vroulia (Fig. 4)[37] and on an *oinochoe* from Archangelos.[38] A closely related decoration can also be seen on an *amphora* in Karlsruhe and a *situla* from Tell Dafana.[39] The ornament seems to belong to an early phase of production, and has not so far been documented on type **B2**. Another characteristic ornament is the whirligigs so far only seen on a **B2** cup now in Berlin.[40]

A focused study of the execution of the lotus flowers on the Vroulian-style cups adds to the understanding of the connection between the differently decorated drinking cups and their development from an early to late style. The first variant of the lotus flower, which is characteristic of the **B1** vessels marked with a spiral (Fig. 12a-b), consists of two outer petals, usually flaring, framing three pointing petals, one large flanked by two smaller ones. The outer, *calyx* petals are usually covered, more or less completely, by the red colour, whereas the other three are filled with an incised, rhomboid ornament, which is only partly covered in red. This variant of the lotus flower is only present on the **B1** cups, i.e. the cups marked with a spiral underneath the base (Figs 5-7), but to this group can be added a related, but so far unique, variant of a **B2** drinking cup (Fig. 12c).[41] The details of the flower with the three spike-shaped inner petals are paralleled in contemporary East Aegean representations of the lotus flower, and have some similarities with the representation of the lotus flower in the Middle Wild Goat I and II style.[42] The emphasis on the **B1** cups in separating the outer 'sepal' petals from the inner pointed petals, through variations in the filling of the ornament, is apparently unique to the Vroulian style, but can occasionally be observed elsewhere, as for example on the shoulder decoration of the North Ionian *dinos* mentioned above (Fig. 14).[43]

The later variant of the lotus flower seems much more freely and vividly applied. The flower still has two outer, 'sepal' petals, surrounding three pointed petals, one large and two small ones. But as a new addition, there are two more, elegantly flaring petals behind the *calyx* petals (Fig. 12d-f). Sometimes, a bipartite end is present below the flower (Fig. 12d), and in other cases, incised spirals seem to represent

33 British Museum, inv. BM1965,0930.756: Kinch 1914, 182, fig. 64a-b.

34 Copenhagen, National Museum, inv. 5612: Kinch 1914, 151, pl. 46,1a-c.

35 Copenhagen, National Museum, inv. 11275: Kinch 1914, 18-20, pl. 15; Schierup 2014, 167, no. 13-1; Schierup & Kaninia 2017, 69, appendix no.1.1, fig. 11 (with further references); a fragment of a *dinos* with a similar decoration on the shoulder frieze is known from Naukratis (London, British Museum, inv. 1965,0930.495: Price 1924, 201, fig. 32).

36 Payne 1931, 156, figs. 174, 179, 195. On the Vroulia ware *amphoras* and *situlas*, a lotus-palmetto combination is present that has so far not been identified on the cups. This type also has close parallels amongst contemporary Corinthian and Attic pottery.

37 Copenhagen, National Museum, inv. 11281: Kinch 1914, 144, 178, pl. 10, 1, no. 13; London, British Museum, inv. 1965,0930.755: Kinch 1914, 183, fig. 66; Villing et al. 2013-2015 GN.03 (phase 3); Schlotzhauer 2012 p. 164.

38 Filimonos-Tsopotou & Marketou 2014, 73, fig. 32.

39 Karlsruhe, inv. B2311: Kinch 1914, 187, fig. 69; British Museum, inv. BM 1888,0208.43: Petrie 1888 pl. xxvi, 16; Kinch 1914, 189, fig. 71; *CVA* British Museum 8 Pl. GB 603, 3-4 (Group C29).

40 Berlin, Antikensammlung, inv. 2960: Furtwängler 1886, 143; Kinch 1914, 181, fig. 69a-b; Cook & Dupont 1998, 115, fig. 14.1; *CVA* Berlin [N. Kunisch], tafel 171, 3-4, abb. 16.

41 Berlin, Antikensammlung, inv. 2920: Kinch 1914, 181, fig. 61a-b; Cook & Dupont 1998, 115, fig. 14,1; *CVA* Berlin, tafel 171, 3-4.

42 Cook & Dupont 1998, 46, fig. 8.13a.

43 See n. 35 ibid.

Fig. 14: Dinos *from Vroulia, '*la chapelle*' Copenhagen, the National Museum, inv. 11275. Photo: John Lee, the National Museum of Denmark.*

the stem (Fig. 14d). These variants appear almost exclusively on the variants of the cups with double concentric circles and a dot below the base (**B2**). However, the close connection between **B1** and **B2** is supported by two examples, one from Rhodes[44] and another in the Louvre[45]. These represent each type of mark under the base but with an almost identical combination of the internal decoration, and close stylistic similarities between the execution of the lotus flower representing the type with a bipartite stem (Fig. 12d). This example, together with the general development of the cups in form and decoration between **B1** and **B2,** lend substantial support to the argument that we are not dealing with different workshops, as suggested by Kinch, but development over time instead.

Context and dating

To determine the chronological framework of the different phases of the Vroulian-style cups, it is necessary to examine the somewhat limited

44 See Fig. 10 and n. 20 above.

45 Louvre, inv. CA3041: from the Èmile Guimet collection (information provided by personal correspondence with Dr Anne Coulié, the Louvre).

contextual evidence which documents their use. One of the best sources of this is the site of Vroulia itself, a site that appears to have been in use for only a short period of time and was probably hastily abandoned.[46] During its excavation, it was recorded that numerous everyday vessels had been left behind in the houses, indicating that the inhabitants must have left the place suddenly and without much time to prepare and collect all their belongings. The use of Vroulia ware is best documented in row I, room 32,[47] which included three drinking cups in **A2** style, one cup in **B1β** (Fig. 5a-c), as well as a plain cup with a spiral under the base,[48] fragments of other types of cups described as Corinthian and Attic (no illustration), and also a fragment of a 'lotus bowl' (a variant of the rosette bowls, which succeeded the bird bowls of the Orientalizing Period). This type is assumed to have been produced in north Ionia during the first and second quarter of the 6th century. Similar lotus bowls have also been documented at Naukratis, such as from the Apollo Sanctuary.[49] Together with the cups, *oinochoai* were found (one of which was described by Kinch as of "Kamireen" style, so probably Wild Goat Style), as well as a small *amphoras*, and an unknown number of fragments of larger, undecorated vessels, presumably storage vessels. The context of room I,32 indicates that the Vroulian-style cups of types **A2** and **B1β** were in use at the time when the site was abandoned, and therefore must have been associated with the final phases of the town, during which these types are also well documented from both the tomb contexts and the small sanctuary 'la chapelle'.[50] Other Vroulian ware forms, such as the *situlas, stamnoi, amphoras* and *oinochoai,* are completely absent, as well as the cups with double concentric circles underneath the foot. The evidence therefore indicates that the site must have been abandoned before the introduction of the late **B1** and **B2** cups.

The activities at Vroulia are usually considered to have lasted no longer than around a century. In the main publication, Kinch dated the site from the beginning of the 7th century to around 570/560 BC.[51] Lang moved the foundation of the site to the middle of the 7th century and its duration until the middle of the 6th century BC, while Morris dated it to 625-575 BC.[52] Redating of the production of the **B1β** variant to the second quarter of the 6th century is further supported by contexts known from other sites on the island. A cremation tomb found in the area of Archangelos contained an *oinochoe* with an encircled leaf pattern, comparable to the decoration of the cup found in room I,32 in Vroulia (Fig. 4), a decorated cup with a spiral mark and a late Corinthian quatrefoil *aryballos* dating to the second quarter of the sixth century BC.[53] Finally, the large deep carinated bowl from tomb 4 at Zambico/Ialysos, decorated in **B1** style (Fig. 7a-b), was found in a context that contained several Attic vessels, including a Little Master lip cup from the third quarter of the 6th century BC.[54]

The thick-walled form of the proto-Vroulian **A1** phase is comparable to types I and II at Tocra, for which a date in the late 7th century has been suggested, whereas **A2** appears to have emerged at the beginning of the 6th century BC but might have been produced into the second quarter as well. It was clear from the evidence at Vroulia, that the **A2** cups were in use around the same time as the **B1** type. The dating of **A2** to the first quarter of the 6th century is further supported by the dates of two burial contexts at Ialysos. These consist of tomb 4 at Papatislures, in which pottery of this type was found together with Middle Corinthian (MC) pottery in a tomb that might contain multiple burials,[55] and tomb 204 at Chechraci, where a type **A2** cup was found in a context mostly comprising pottery from the second quarter of the 6th century, but also an **A1** cup presumed to date to the end of the 7th century BC.[56]

46 Schierup & Kaninia 2017, 92-3.
47 Kinch 1914, 124-5, 144.
48 Kinch 1914, 163, pl. 27,3.
49 British Museum inv. 1886,0401.802: Petrie 1886, pl. XXXIII, nos. 293+298; Möller 2000, 256, no. 3; Villing et al. 2013-2025, GG.586. British Museum, inv. 1886,0401.1175: Price 1924, 187, fig. 9; Villing et al. 2013-2025, GG.581.
50 Kinch 1914, 161; Kinch 1914, 144, 178, pl. 10,1; Kinch 1914, 144, pl. 10,2-3 (inv. nos. 11288 and 11289, stored in Cambridge). Inv. 11288 (stored in Aarhus), a total of 11 fragments that seem to have been exposed to secondary firing; Kinch 1914, 173, pl. 9.2.
51 Kinch 1914, 89.
52 Lang 1996, 194; Morris 1994, 174, n. 1.
53 Filimonos-Tsopotou & Marketou 2014, 71, fig.32.
54 *Clara Rhodos* III, 28, fig. 11-12 [Jacopi]; *CVA* Italy vol 2 (Rhodes, Museo Archaeologico), tv. 4.1-2; Gates 1979, cat.no. 99, 129-130.
55 *Clara Rhodos* III, 21-3, 23-31, figs. 16-18 [Jacopi]; Gates 1979, 98-100, no. 65.
56 *Clara Rhodos* IV, 351, fig. 396 [Jacopi]; CVA Italy vol. 9 (Rhodes, Museo Archaeologico vol. 1), tav. 1,1; Gates 1979, 126-7.

There is no contextual evidence to date type **B2**, however. All known examples of this type were found in tombs from the Salzman/Biliotti excavations, and the documentation is limited.[57] However, the form and stylistic development described above, as well as the absence of the type from Vroulia and other contexts with documented use of the **B1** type, seem to suggest that it dates to the third quarter of the 6th century BC. The continuation of the production of vessels in Vroulian style into the second half of the 6th century is further documented by another Vroulian vessel type, the *situla*, which was found in a few rooms of the warehouses of an Egyptian temple in Tell Dafana, dating to the 26th dynasty (664-525 BC).[58]

Production and distribution

Due to its limited distribution and unique decoration, Vroulia ware was from the beginning considered a specialised Rhodian product. This assumption is today firmly supported by archaeometric analyses, even if the exact location of the workshop is yet to be identified.[59] Looking more broadly at the Archaic pottery production on Rhodes, the results of the archaeometric analyses during the last decades have significantly altered our understanding of the production of fine wares on Rhodes during the Archaic Period. Previously, Rhodes was considered an important producer and developer of fine ware pottery during the 7th and 6th century BC, mainly because the island was the place where many of the important East Greek wares first appeared in large numbers. For example, the first significant quantities of Wild Goat Style pottery were found in and around the urban Archaic centre of Kamiros, and then quickly became known in scholarly literature as 'Rhodian' or, less commonly, 'Camiran' pottery. In the same way, the term 'Fikellura' was a reference to one of the rich *necropoleis* also excavated in the area around Kamiros.[60] For both types of fine ware, the simple fact that Rhodes was the place where they were first discovered in significant quantities led to the types being interpreted as Rhodian products. However, as new evidence has appeared and production hypotheses have been proven or disproven by the use of archaeometry, it has become evident that Rhodes imported these groups of pottery from other production areas, such as Miletus.[61] Another group that is no longer attributed to Rhodes consists of the sub-geometric 'bird bowls'. These vessels were previously considered a Rhodian product *par excellence*, but are now associated with the workshops on Teos.[62] In addition, recent results published by Mommsen and Villing have concluded that the fine Dorian plates with high stems, found in considerable numbers on Rhodes, were produced in Koan workshops.[63] Even if East Greek pottery production still presents a complex picture, with far more questions than answers, in the Archaic Period, it is safe to state that Rhodes was not the place of production for some of the most widely distributed fine wares in the East Doric region.

Based on this evidence, Vroulia ware must be considered a rare creative impulse from the Archaic pottery workshops on Rhodes. The fabric seems to be generally quite homogeneous, is fired to a reddish yellow to pale brown colour, and is fine, with only a few inclusions. In areas where the surface of the clay has been left exposed, such as under the base, an irregular, whitish layer is usually clearly visible. This whitish surface is also well known from the Rhodian amphora production in the Hellenistic and Roman Periods, and is a typical feature of the Rhodian so-called 'aspropilos' or white clays, which are present in deposits all over the island.[64] Deposits of this typical Rhodian clay have been found at Kattavia close to Vroulia, as well as on Tsambika hill, just to the north of Archangelos on the east coast, and both sites have been suggested as possible production centres.[65] However, until further primary evidence emerges for the pottery workshops of Archaic Rhodes, it is doubtful whether anything

57 Villing 2019; Salmon 2019.
58 Leclere 2007; Leclere & Spencer 2014; specifically, on the situlas, see Weber 2014, 121-2.
59 Villing & Mommsen 2017, 126-34; Schlotzhauer & Villing 2006, 56 (NAUK 11); Dupont and Thomas 2006, 79-80, fig. 6, sample DEF I; Coulié 2015, 1313-39. The production of the *situlas* – whose connection to the rest of the Vroulian-style pottery has been questioned – can now also be associated with Rhodes and the rest of the group. See further below concerning distribution patterns.
60 The excavations around Kamiros were initiated in the 1860s by Alfred Biliotti and Auguste Salzmann. On the history of the excavations, see e.g. Coulié 2014; Salmon 2019; Villing 2019, all with further references.
61 Cook & Dupont 1998, 32.
62 Coldstream 1968, 277-9; 298-301; Akurgal *et al.* 2002, 63-72.
63 Villing & Mommsen 2017, 109-17.
64 Betina & Skaltsa 2018, 54-6
65 Coulié 2015, 1334-9; Salmon 2020, 210.

	Rhodes	Kamiros	Siana	Ialysos	Lindos	Vroulia	Archangelos	Tell Dafana	Naukratis	Mersin	Tell Sukas	Berezan
Table Ware												
Cup A1		1		3								
Cup A2		3		1	2	4			5			
Cup B1	6	3			5	5	1		6	1	1	
Cup B2	2	4										
Oinochoe							1					
Amphora	4	1	1						1			
Bowl				2					1			
Storage vessels												
Stamnos				3				1				1
Situla				2				22				

*The chart is based on what has to this date been published of Vroulia Ware. It only includes examples that can be connected to a specific shape or type. The group 'Rhodes' refers to examples found on the island where exact information on their provenance is unknown. In cases where the documentation comes from unjoining fragments the numbers are based on an estimation.

Fig. 16: *The distribution of Vroulia ware. Chart: Stine Schierup.*

can be said about the exact location of the Vroulia ware workshop on the island.

The range of forms in Vroulia ware style can be divided into two functional categories: tableware (cups, amphoras, *oinochoai* as well as deep carinated bowls, and possibly mixing vessels/*kraters*); and storage vessels (*situlai* with black figural decoration and *stamnoi*). The distribution patterns of all vessel forms reveals that the drinking cups are by far the most common and widely distributed vessel form on the island (Fig. 16).[66] The form has been recorded at all of its main urban centres in the Archaic Period, that is Lindos, Ialysos and Kamiros. The drinking cup form has also been documented at Archangelos, Siana and of course Vroulia itself. The majority of the known vessels are from tombs, but as recorded by Kinch, fragments were also often found in non-funerary contexts, both at Lindos and Vroulia, and this must undoubtedly also have been the case in other parts of the island, although there are currently no published examples of this type of evidence. A total of six examples of *amphoras* are known from Rhodes, which are all associated with the activities of Biliotti and Salzman, and thus with Siana and the Kamiros region.[67] The two types of storage vessels have been recorded in the tombs of Ialysos, and the same applies to the known contexts of deep carinated bowls (such as Fig. 7).

Outside Rhodes, the main distribution of Vroulia ware is centered on the upper Nile Delta and the sites of Tell Dafana and Naukratis.[68] Only a few isolated finds are known from elsewhere, such as fragments of drinking cups from Mersin[69] and Tell Sukas,[70] and a fragment of a *stamnos* from Berezan.[71] In Egypt, an

66 Some examples included in this study are fragments, and it is in some cases difficult to determine whether these are from the same or two separate vessels.

67 1) Berlin, Antikensammlung, inv. 1648: Kinch 1914, 186, pl. 46,6; 2) Karlsruhe, Badisches Landesmuseum, B2345: Kinch 1914, 186, fig. 68; 3) Berlin, Antikensammlung, inv. 2977: Furtwängler 1886, 143; Kinch 1914, 187; *CVA* Berlin 4 (N. Kunisch), tafel 172.1-2; 4) Karlsruhe, Badisches Landesmuseum, inv. B2346; 5) Bonn, Antikensammlung, 459: Greifenhagen 1936, 379, no. 28, abb. 32; 6) Karlsruhe, Badisches Landesmuseum, inv. W34: Kinch 1914, 187, fig. 69.

68 Price 1914, 188-9, figs. 14-17.

69 Garstang 1953, 258.3-4, fig. 161.

70 Copenhagen, National Museum, Inv. TS4693: Ploug 1973, 73, no. 326.

71 Posamentir & Solovyov 2007, 202-3, fig. 7.2.

interesting difference can be observed in the vessel types recovered from the two main sites, Naukratis and Tell Dafana. In Naukratis, the finds (almost exclusively cups) can be defined as tableware, also including a possible shoulder fragment of an amphora that was found during the excavations of the sanctuary of Apollo at Naukratis.[72] From Tell Dafana, there are storage vessels of Vroulian type, including a large assemblage of *situlai* with figural decoration, as well as one fragment of a *stamnos*. This is the only group within the Vroulia ware products that appears to have been produced for trade, and elements of the vessels – form and figural decoration – seem to have been aimed at an Egyptian market.[73] In other words, the finds from Naukratis (where a Rhodian population is presumed to have been present) are functionally categorised as tableware, whereas the finds from Tell Dafana are storage vessels.

The *emporion* Naukratis dates back to at least to the final third of the 7th century BC. This was during the reign of Psammetichos I (664-610 BC), but it was reorganised during the reign of Amasis (570-526 BC). The site is described by Herodotus (2.178-179) and appears to have united inhabitants from around 12 Dorian, Ionian and Aiolian *poleis*. As stated by Herodotus, these included Rhodes. A wide variety of pottery types and styles have been unearthed in Naukratis, and several examples point towards production aimed at an Egyptian market.[74] Within this group we should probably include the *situlas* in Vroulia ware style, which are so far only known from Tell Dafana and Ialysos on Rhodes. Both the form and the scenes with figures include features that seem to have been targeted towards an Egyptian audience.[75] The fragments of cups found in Naukratis, however, seem to tell a different story. Together with the examples recorded from Mersin and Tell Sukas, they must instead be considered utensils that accompanied travelling Rhodians. Like other pottery groups from Naukratis, such as the Hera cups (found on Samos and in Naukratis),[76] and the Carian cups (found in Caria and in Naukratis),[77] their distribution was almost exclusively limited to Naukratis and their place of production, Rhodes.

Conclusion

Vroulia ware involves a very varied range of style, forms and quality: from delicate, thin-walled and richly decorated drinking cups, to large storage vessels decorated with floral ornaments, applied using similar techniques, but in a much rougher and more haphazard manner. The re-examination of Kinch's typology of the cups presented here has to some extent confirmed the development of the cups from a proto-Vroulian, sub-geometric style to a developed style with the characteristic incised floral ornaments, as defined by Kinch. However, Kinch's subgrouping of the vessels according to the mark found beneath the bases of the vessels, and the theory of that they are products of different workshops, is not supported by the new evidence that has been added to Vroulia ware since Kinch's publication in 1914. Instead, it is argued here that the marks reflect a stylistic development, which separates the early (**B1**) from the late phase of production (**B2**). This is supported by a thorough study of the details of the floral ornaments on the vessels as well as the morphology. Regarding the dating of the group, the currently still limited evidence seems to support the theory that the Vroulian-style cups developed in four main phases: an early and late proto-Vroulian phase (**A1-2**) produced in the late 7th and early 6th century BC, and an early and late phase of the developed Vroulian style (**B1-2**) produced in the second and third quarter of the 6th century BC.

72 London, British Museum, 1886,0401.1050: unpublished.

73 *Situlas* in Vroulian style were not recorded on Rhodes before the 1920s, see *Clara Rhodos* vol. III, 1929, 192, figs. 187-189 and 205, fig. 198. Earlier phases of the *situla* shape were, however, recorded during the excavations at Vroulia, see Kinch 1914, 125-6, fig. 42. Petrie acknowledged the connection between the Rhodian cups and the *situlas* found in Tell Dafana but assumed that they had been produced in Egypt (Petrie 1888b, 59-62); Cook 1954, 31: "With the Vroulian group the situlae of Group C have an evident connexion, but I do not think they come from the same workshops. First, the fabric seems to me to be different; secondly, the b.f. [black figure] decoration of the situlae is unlikely what we know of Rhodian b.f.; thirdly, Vroulian was not uncommon at Naukratis but no situla has been found there. These arguments are not conclusive; but I consider it more likely that the makers of the situlae of Group C borrowed from Vroulian than that the Vroulian workshops turned over to the making of situlas."

74 See, for instance Villing 2013.

75 Weber 2006.

76 Avramidou 2016.

77 Williams & Villing 2016.

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Picturesque eclecticism: Holger Rasmussen's drawings from Lindos

by Peter Pentz

In April 1969, Søren Dietz graduated from the University of Copenhagen with a master's degree in Prehistoric Archaeology. As early as during his time as an archaeology student, Søren was trained as an excavator and scholar of Danish archaeology. The young Søren therefore acquired his field experience from important archaeological sites in Denmark, such as the Iron Age site of Dankirke near Ribe. Søren' s career path did not continue within Danish archaeology, however.

Immediately after his graduation, Søren Dietz was appointed as curator at the National Museum of Denmark, but not in the department of Prehistory, as might have been expected when Søren was based in this department during his student placement. Instead, his career as 'a Mediterranean archaeologist` began in the department of Classical and Near Eastern Antiquities. Here, among other tasks, the young and enthusiastic Søren worked on the 'left-over' material from the Danish archaeological expedition to Rhodes, which took place in the years 1902-1909 and 1913-1914, under the direction of the philologist Karl Frederik Kinch (1853-1921) and archaeologist Christian Sørensen Blinkenberg (1863-1948).[1]

Fig. 1: *Søren Dietz admiring the beauty of the island of Rhodes from its highest peak, the mountain Attavyros, in 1973 (?). Photo in the Department of Classical and Near Eastern Antiquities, the National Museum of Denmark.*

As early as 1974, in *Acta Archaeologica*, Søren published two Bronze Age pattern-painted duck vases found by the members of the Danish team, one from around Vati and another at Lakkion.[2] Søren's volume on the archaic remains, published in 1984 in the series of publications of the Lindos excavations, was a major achievement.[3] The archaic period had a revered status, almost similar to that of the so-called Classical period in Greece. Nevertheless, Søren had approached the archaeology of Greece with an unprejudiced eye and his plans extended further. As a result, the relatively unnoticed medieval and later remains – including the Byzantine church of Ag. Yoannis and the late medieval Hospitaller's castle in the Lindos acropolis – were published in 1992 on his initiative.[4]

Søren's early visits to Rhodes (Fig. 1) occurred at a time when tourist flights had made Rhodes more accessible, resulting in a huge increase in tourism. Together with his colleague at the National Museum, Steffen Trolle, Søren published *Arkæologens Rhodos* (1974),[5] thereby promoting knowledge and increased interest in the archaeological study of Rhodes to

1 Amsinck 1903; Rasmussen & Lund 2014; Schierup 2019.
2 Dietz 1974.
3 Dietz 1984.
4 Pentz 1992
5 Dietz & Trolle 1974.

Fig. 2: *One of the depictions of Helvig Amsinck (Helvig Kinch). Drawing in the Department of Classical and Near Eastern Antiquities, the National Museum of Denmark.*

a broader audience. In this excellent overview the authors obviously dealt with the archaic, classical and Hellenistic heritage of Rhodes, but they also included some descriptions of medieval and early modern Lindos and the picturesque, so-called 'Captain's Houses'.

Lindos

Medieval Lindos was the only town outside the city of Rhodes itself which had a port of any significance, and the only one capable of manning a ship for the Hospitaller's fleet.[6] Even in the early 20th century, when members of the Carlsberg expedition excavated in the Lindos acropolis, sailing was by far the most convenient way of travelling from the city of Rhodes to Lindos.

Little is known about medieval Lindos, however. While the Hospitaller's castle itself is a significant example of the island's medieval heritage, no secular buildings from the Middle Ages are known in the town, although it must have had a major role on the island before the arrival of the knights. The houses that now stand on steep slopes of the impressive acropolis are apparently all post-medieval in date, in striking contrast to the situation in the capital of Rhodes, where there are numerous medieval palaces and dwellings. Likewise, except for the House of the Commander itself, there are no medieval fortifications in Lindos. This is, however, easily explained by the military system of the island under Hospitaller sovereignty. The knights and the inhabitants of the island mutually benefitted from an arrangement, in which the population participated in the defending force and in reward was protected by watchtowers and castles along the coasts of Rhodes, the latter of which, in the event of a hostile attack, constituted a shelter for the Greeks.[7] But the absence of medieval houses could also have had a tragic background. Severe earthquakes struck Rhodes in 1481, and again in 1503 and 1513, and had a massively destructive effect on the built structures on the island.[8]

Whereas some attention was paid to the Byzantine churches of Lindos by the members of the expedition – especially because of the use of classical *spolia* in their masonry and floors (with the famous temple chronicle of Lindos retrieved from the building complex of Aghios Stephanos),[9] the vernacular houses of Lindos remained very much outside the scope of expedition. However, the secular houses with their picturesque mix of architectural styles attracted the interest of the artist Helvig Amsinck,[10] who had studied at the Art Academy's Art School for Women in Copenhagen before she joined the expedition (Fig. 2), and especially the architect Holger Rasmussen.

Holger Rasmussen and the 'Captain's Houses' of Papas Konstantinos and Phaedra Moschorides (Plates I–IX)

Holger Rasmussen was born in 1871 in the town of Slagelse in Zealand. He initially worked as a carpenter, but his ambitions extended further and after having graduated from technical school, he studied architec-

6 Luttrell & von Falkenhausen 1985.
7 Luttrell & von Falkenhausen 1985, 318; see also Apostolou 1985, 51.
8 Luttrell 1999; Stiros et al. 2006.
9 Blinkenberg 1941. For the excavation of Aghios Stephanos, see Pentz 1992.
10 Helvig Amsinck married Karl Frederik Kinch, the leading member of the Danish expedition to Rhodes, and was subsequently known as Helvig Kinch, see Rasmussen 2019.

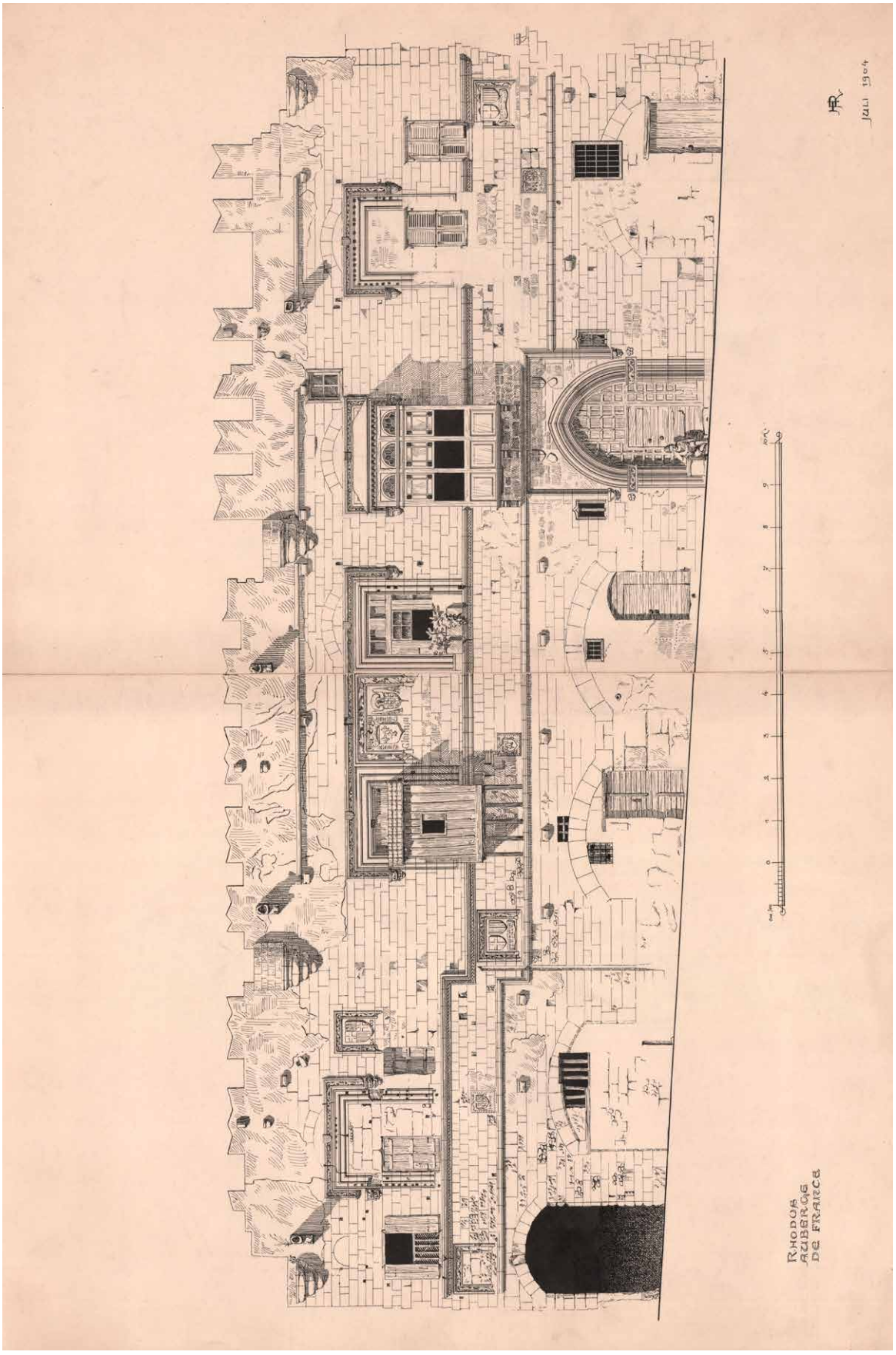

Fig. 3: *Holger Rasmussen's survey of the auberge of the 'Tongue of France. The Royal Danish Library, Architecture collection.*

Fig. 4: *Title page showing the entrance to the Hospitaller's castle in Lindos from the periodical* Architekten*, edited for some years by Holger Rasmussen.*

ture at the Royal Danish Academy in Copenhagen. A grant enabled him to travel to Italy, Greece, and Turkey in 1903-1904, a formative experience for the still young architect. He participated in the Carlsberg Expedition to Rhodes until 1907.

The Turkish authorities, represented by the local pasha, granted Holger Rasmussen permission to survey the medieval houses and fortifications of Rhodes. A police officer was also placed at his disposal, which according to Rasmussen, was intended to ensure that his work did not involve espionage.[11] Rasmussen's recordings and precise surveys of the medieval monuments constitute a valuable and important supplement to those undertaken in the following years by Albert Gabriel,[12] such as his detailed survey of l'Auberge de France in the city of Rhodes (Fig. 3). This study is not only an important documentation of the complex before its restoration in 1913-1952, but also provides a supplement to Gabriel's survey of 1911, including details that are different to this.[13]

The attractions of the houses of Lindos to an architect were obvious. The beautiful doorways, *pyliones*, usually featuring delicate carvings, invite an attentive visitor into a courtyard which, like in Turkish houses, is surrounded by various buildings, most often characterised by the extensive use of wooden balconies and shutters.

The dwellings, which are traditionally called 'Captain's Houses', *kapetanospita*, are a fascinating combination of very different components, Greek, Byzantine, Latin/medieval, Ottoman and Arabic, in one complex. Some of the elements are shared with a number of urban houses in the city of Rhodes, and houses of rural Rhodes also exhibit some of the same features – such as the divided *sala*, plates and mirrors, as well as the *soufas*.[14]

At least 30 original houses of this syncretic type are still preserved in Lindos.[15] Some feature inscriptions that indicate the date when the buildings were erected. These inscriptions may not, of course, date the whole building complex, which can incorporate older parts, and there is always the possibility that an ambitious restorer of a house ordered the inscription, including the date of the rebuilding of the house. However, if these inscriptions are to be trusted, the oldest of the Captain's Houses of Lindos dates to 1599,[16] also indicating that this house apparently survived a severe earthquake 11 years later.[17]

Although interesting, the appearance of the houses, when observed from the outside, is often not especially impressive, although the wall exteriors sporadically feature decorations. The complex is entered through an arched opening in the wall, covered by an unpretentious lintel. This door opening is the junction between inside and outside, the house and the alley, thus distinctly separating the private and the public sphere. The modesty of the external appearance of the houses

11 Rasmussen 1905, 569.
12 Gabriel 1921/1923.
13 Compare Rasmussen's survey to that of Gabriel (Pinon 2017, 247). See also Maglio 2014, 860.
14 Moutsopoulou 1990.
15 Moutsopoulou 1999, 78.
16 Kähler 1971, 29.
17 For 'historic' earthquakes on Rhodes, see Luttrell 1999 and Stiros 1999.

Fig. 5a: *A group of gentlemen, including architect Holger Rasmussen, at the main entrance of the headquarters of the Grand Lodge of the Danish Order of Freemasons. The Royal Danish Library.*

Fig. 5b: *The headquarters of the Grand Lodge of the Danish Order of Freemasons, Blegdamsvej, Copenhagen. Photo: Ib Rasmussen 2007.*

strongly contrasts with most of the houses in the city of Rhodes, which often have more ostentatious facades facing the streets. In the case of the Lindos houses, lavish decorations are reserved for their inhabitants and guests inside the building. This restrained character may be reminiscent of traditional Islamic urban housing.

Having entered one of the Captains' Houses, the visitor is met with beautiful pebble, so-called *hohlaki* floors, with stunning scenes and images. Some houses only have these on their front steps, whilst others have *hohlaki* floors throughout the house, as well as in the courtyards.

The material used to build the houses is the local calcareous stone, and in the case of the facades, the stones were neatly cut into ashlars. When the edifices terminated in balconies, these had pebble floors, whilst the roofs were thatched. Rich decorations stand out in relief in the relatively soft limestone around lintels, windows, doors and other openings, and are usually more lavish on the walls which are visible from the courtyard. The decorative elements show birds, crosses and flowers, motifs which may be derived from traditional Greek folk art. An association with Arab decorations can also

Fig. 6: *Bench designed by Holger Rasmussen for the headquarters of the Grand Lodge of the Danish Order of Freemasons, Blegdamsvej, Copenhagen.*

be discerned, however.[18] The linings of the openings often include bands that clearly imitate those that are present in the Latin architecture of Rhodes, especially the twisted band.

The spatial arrangement of the complexes attests to their Mediterranean origin. Having passed through the doorway from the street, the small, cobbled courtyard is reached through a barrel-vaulted entrance. This courtyard is the central element of the whole complex, around which the individual structures are arranged. The courtyard functioned as a space for outdoor activities, associated with both work and leisure, and was undisturbed by the busy urban life beyond the complex.

At the far end of the courtyard, opposite the entrance, is the main room of the complex, the so-called *sala.* The spacious *sala* primarily functioned as a kind of reception hall and banquet room. The remaining units of the complexes – stables, storage facilities, kitchen, bakery and toilets – are arranged at the other sides of the courtyard, in either two or three wings.

The 'captain's room' was constructed above the barrel vault of the entrance, or more rarely, above a vault built across the street, as in the case of the house of Papas Konstantinos. The captain's room is the private room of the master of the house. Nowhere near as spacious as the *sala*, this almost tower-like structure was accessed from the courtyard via a stone staircase. From the windows and balconies of the captain's room, the owner of the house could view his own courtyard, most of the town and perhaps even the harbour.

In many respects, the mansions resemble traditional Turkish Ottoman houses, especially in terms of the arrangement around a courtyard, like those found in northern Syria, for example. However, the bay windows or oriel windows, which are so often present in the houses of the city of Rhodes and bring to the mind the Arab *mashrabiya*, do not seem to be a part of the architecture of the Captain's Houses.

The always present *sala* is divided into two by a stone-built arch supporting the beams of the roof. These beams, as well as the arch itself, are often decorated. Like the other floors and the courtyard, the floor of the *sala* consists of pebbles arranged in decorative, often figurative patterns. However, not all houses have these floors throughout the whole complex, with some of them only featuring such pebbles on their front steps. This 'mosaic' flooring, called *hohlaki*, is made by inserting different-coloured stones – mainly white, black and red – into the ground.

The interior of the *sala* is partly occupied by a wooden bench at the far end of the room, the so-called *soufas*, which is accessed via a central staircase. At one end of this wooden platform is the 'bridal couch'. On this bench, the dowry of the daughter of the house was displayed: embroidered cushions, blankets, linen, sheets and items of down. At the other end of the *soufas* there could be a wall seat. The space under the *soufas* functioned as storage area for olive oil, wine, olives and other foodstuffs. On the balustrade of the *soufas*, carpets and embroideries were displayed. Other wooden furniture in the *sala*, such as cupboards, wall benches, chests and wardrobes,

18 Moutsopoulou 1990, 202.

contained textiles and other items. The wall behind the *soufas* was also used for displaying mainly glass, ceramic plates and dishes. A mirror and perhaps a few icons also hung there. The seafaring merchants of Lindos traded intensively, and Iznik ware would often have decorated the walls of the *sala*, brought home by sailors for their daughters' dowries. Another platform in the first half of the *sala*, closest to the door leading to the courtyard, was reserved for the aged parents of the house owner.

After Holger Rasmussen returned to Copenhagen in 1907, he was employed by the municipality and never had the opportunity to return to Rhodes. In Copenhagen, he was involved in town planning and the building of public institutions, and on a smaller scale, he also designed furniture and objects relating to the applied arts. However, his endeavours in Greece and especially on Rhodes were never overlooked (Fig. 4). In 1923, he was commissioned to design a building for the Danish Order of Freemasons, in Copenhagen's Østerbro district, perhaps his most well-known building in Copenhagen. Built in 1924-1928 and whilst his interest in other important architectural projects continued unabated, this building, the largest of its kind in Europe, except for the Freemason' s Hall in London, is considered Rasmussen's architectural masterpiece, and clearly reflects his admiration for ancient Greek architecture (Fig. 5 a-b). The architecture of the 'Captain's houses' of Lindos could probably not be transferred to a Danish context. However, although Rasmussen's designs for the interior of the headquarters of the Grand Lodge, such as the bench with a classical leaf frieze (Fig. 6), were characteristic of the neoclassical style, this 'Roman' household furniture is also slightly reminiscent of the low benches of the *soufas* of Lindos.

Holger Rasmussen did not return to Rhodes, but the Carlsberg Expedition to Rhodes was still active in 1912, when the Dodecanese Islands were occupied by the Italians and the Italian authorities became responsible for the archaeological heritage of Rhodes. The relationship between the Danes and Italians was not the best, especially because Italian soldiers had apparently destroyed fragments retrieved during the expedition' s excavations, which were stored in a small museum in Lindos. Although crisis was averted when a scapegoat was appointed, namely the Turkish gendarmery, there was no longer a suitable environment for further investigations by the Carlsberg Expedition.[19] During the 30 years of Italian occupation, from 1912 until the 1940s, archaeology was characterised by a great ideological tensions, with emphasis placed on the importance of Greek-Roman culture and the image of Italy as a civilizing power.[20] However, the Italian archaeological authorities were not entirely blind to the qualities of the post-classical heritage and architecture of Rhodes, including the Captain's Houses of Lindos and their decorations. This is attested by Amedeo Mauri' s paper on the vernacular architecture of Rhodes and Hermes Balducci's works, with the latter including the ceramics of the salas of the Captain's Houses in Lindos.[21] Many of the houses which the Danish architects encountered when they arrived in Lindos in the early years of the 20th century can still be seen, and the vast numbers of visitors to Lindos are able to gaze at them with the same astonishment as the members of the archaeological expedition did more than a century ago.

19 Troilo 2012, 56-7.
20 Pellizzari 2023; Orlandi 2022, 138; Brennan 2020; Troilo 2012.
21 Orlandi 2013; Mauri 1924; 1924a; Balducci 1931; 1932; 1933.

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Plates I–IV: The 'Captain's House' of Papas Konstantinos.

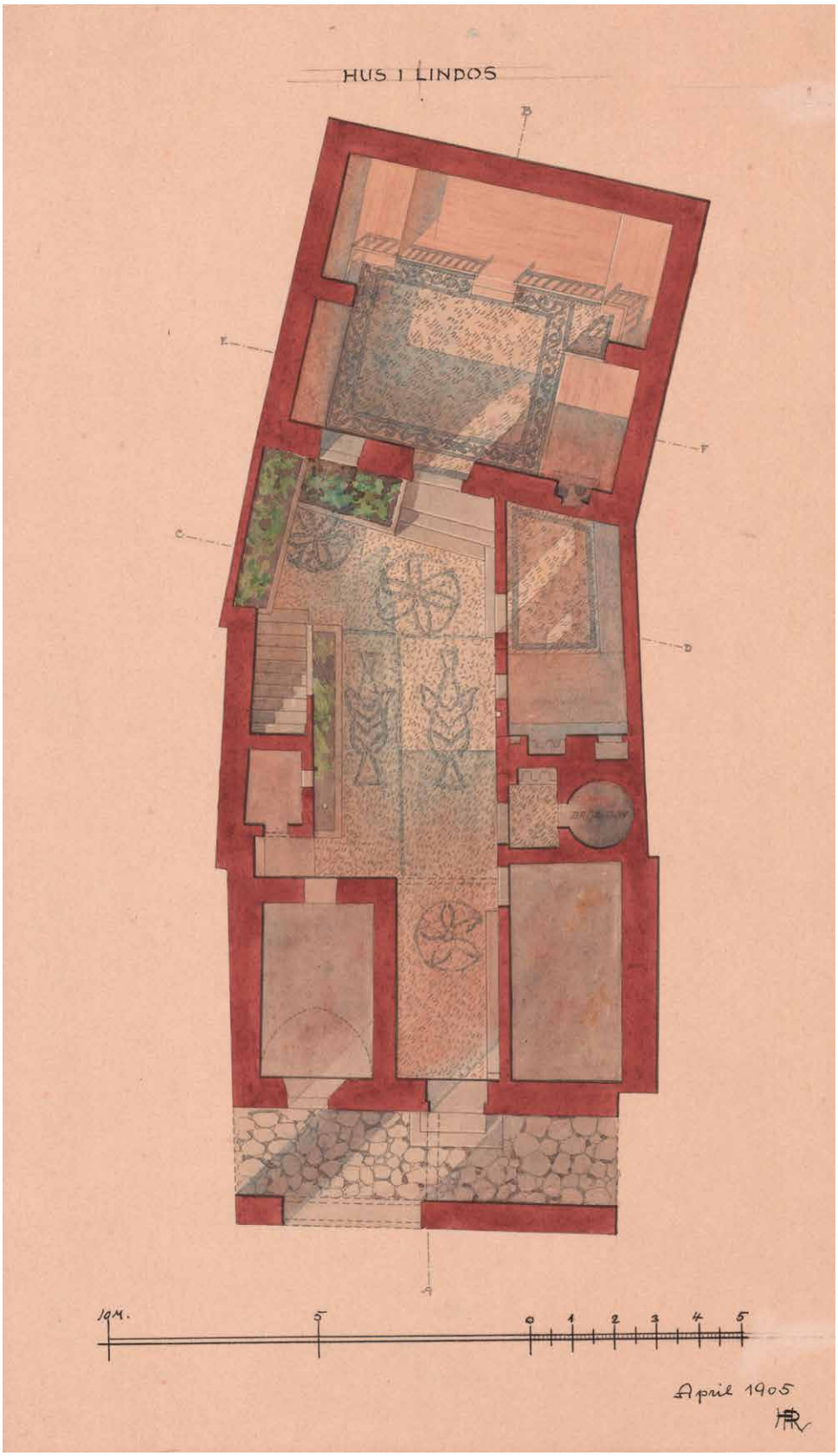

Plate I

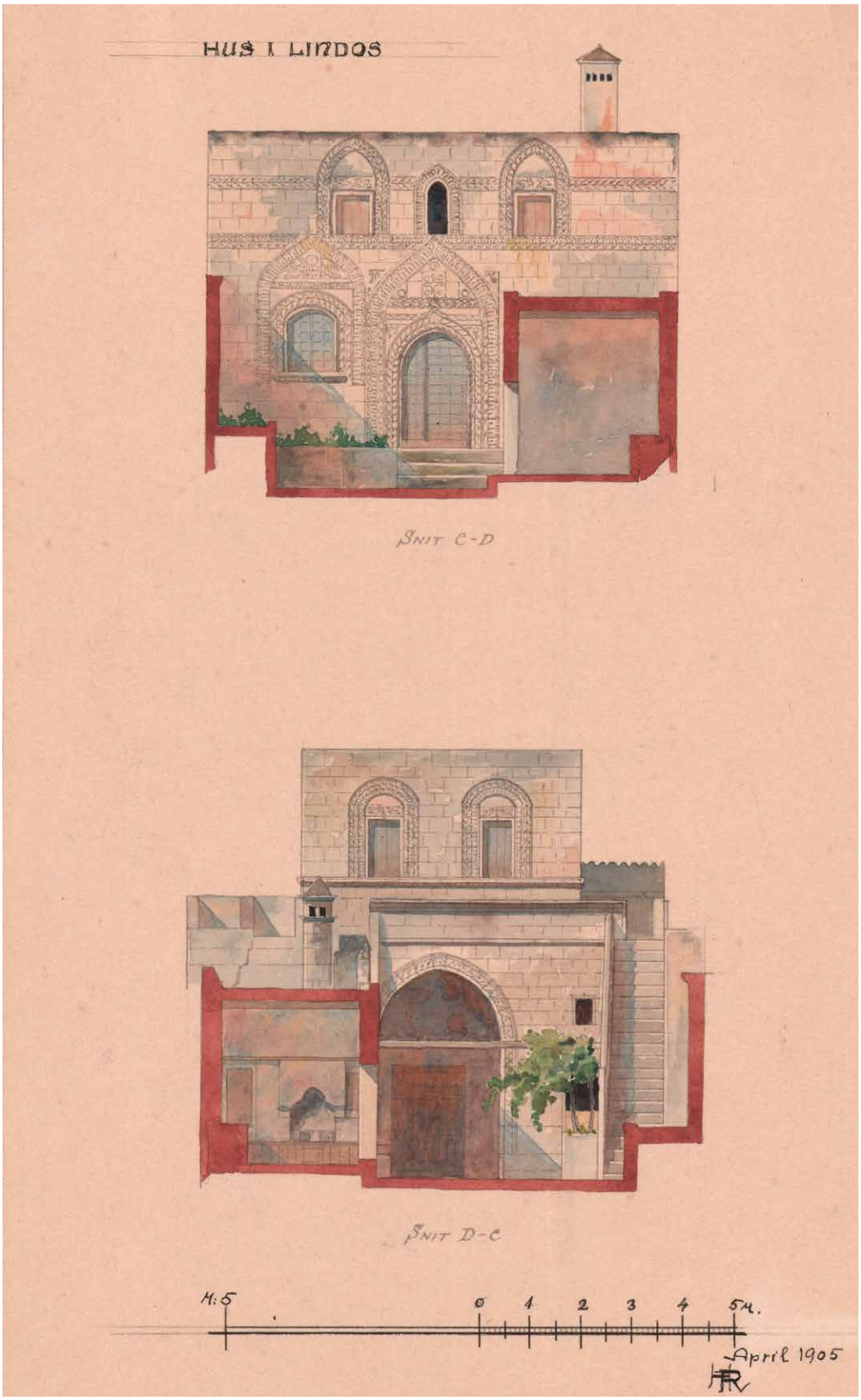

Plate II

Plate III

Plate IV

Plates V–IX: The House of Phaedra Moschorides as surveyed by Holger Rasmussen in April 1905.

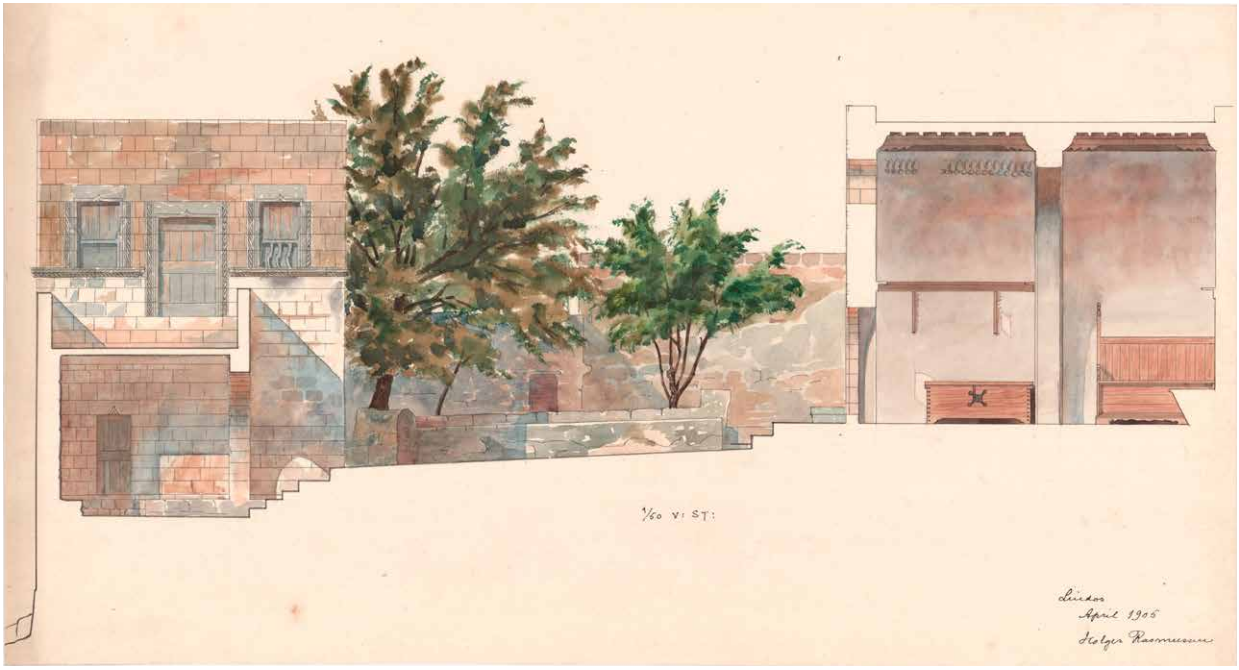

Plate V

Plate VI

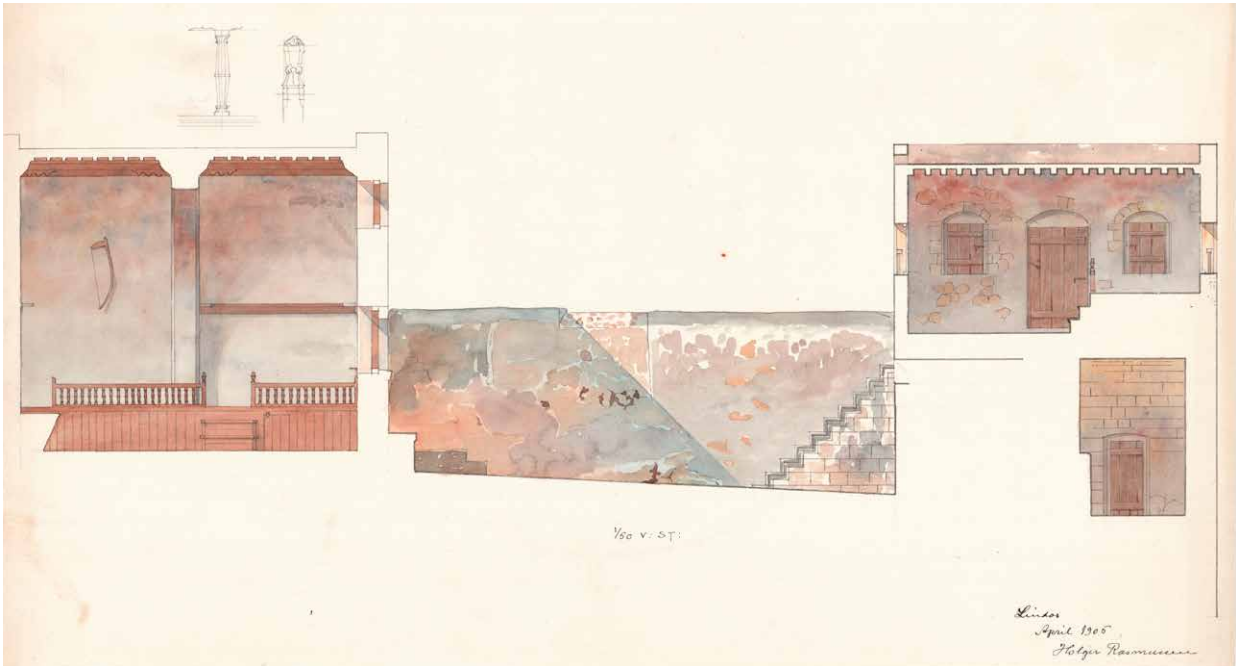

Plate VII

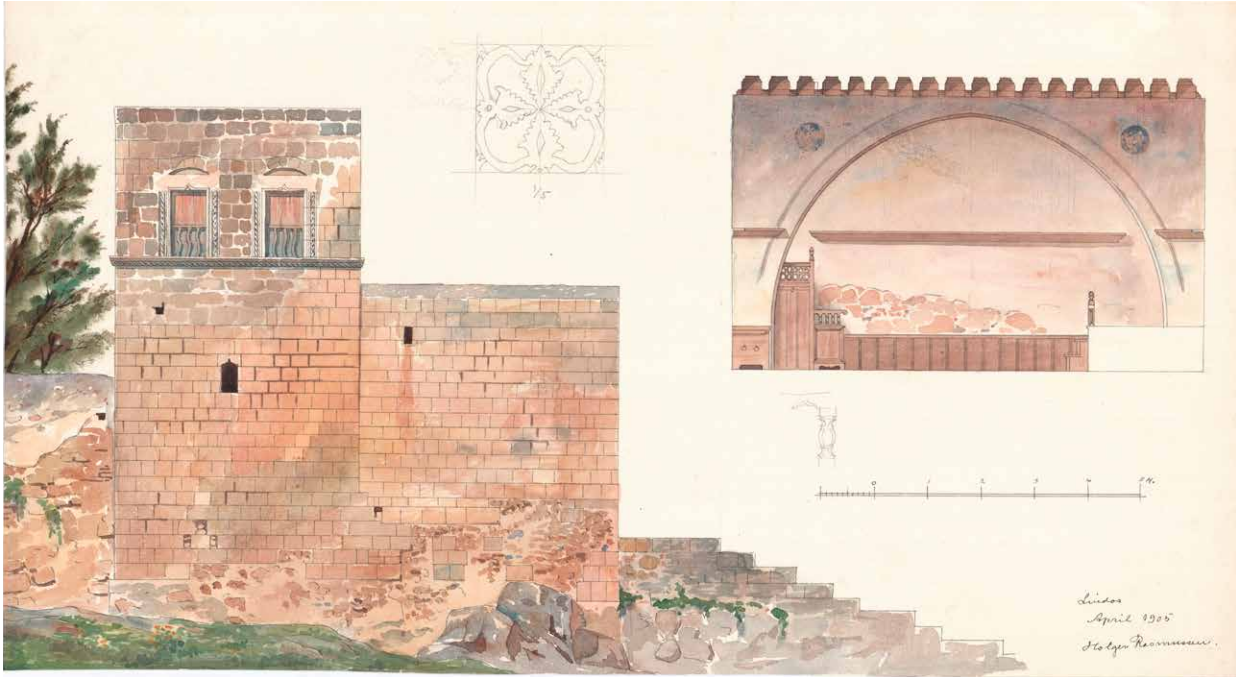

Plate VIII

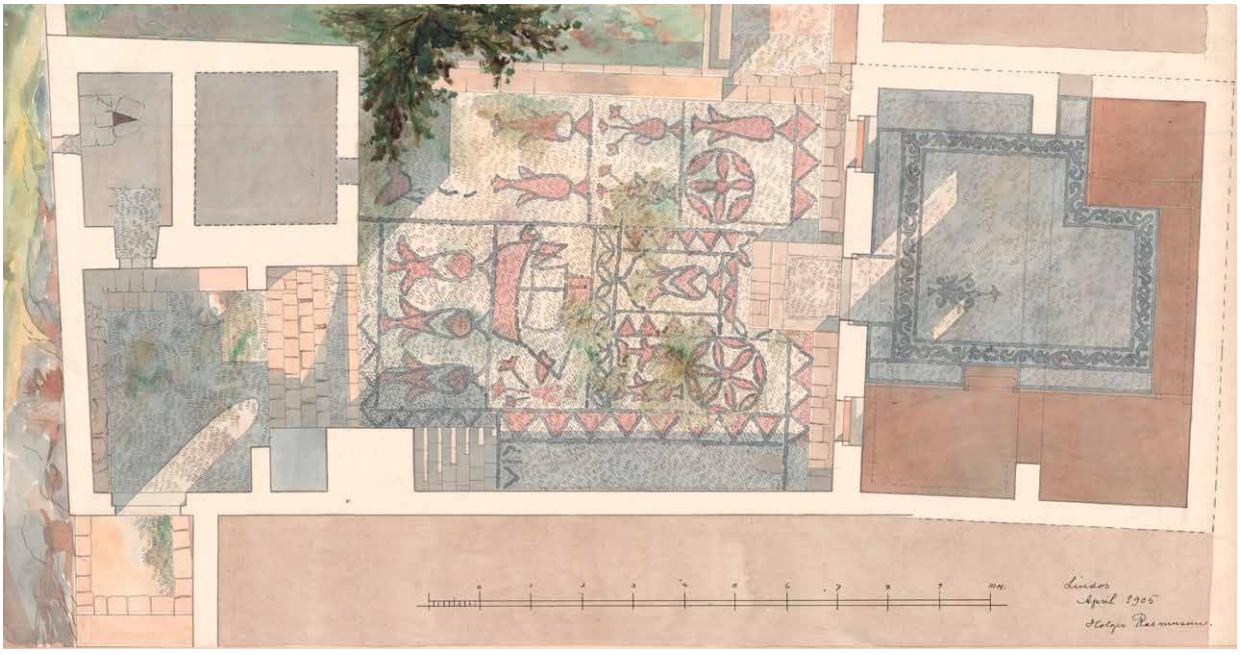

Plate IX

The Dawn of the Danish Involvement in the Archaeology of Carthage

by John Lund

Legend has it that the Phoenicians founded Carthage in 814 BC. Situated on the northern coast of present-day Tunisia, the settlement grew into an important metropolis in the ancient Mediterranean, a rival of Rome, which fought three so-called Punic wars against it. The end came in 146 BC, when a Roman army completely destroyed the city, which lay deserted for more than a century afterwards. Re-founded by the Romans, Carthage became important again as the capital of the Roman Province Africa *Proconsularis*.

Between 1975 and 1984, Søren Dietz (Fig. 1) directed a series of excavations in Carthage on behalf of the Danish National Museum.[1] With these, he followed the example of Christian Tuxen Falbe (1791-1849),[2] who carried out excavations in Carthage as early as the 1820s and again in 1838. His most celebrated accomplishment was to produce the first accurate map of the area of the ancient city, which became the basis for much later research into its topography.[3]

Falbe was not, however, the first Dane to investigate the topography of ancient Carthage, and the aim of this contribution is to focus on the activities of his less well-known predecessor, Andreas Christian Gierlew (1774-1845).[4]

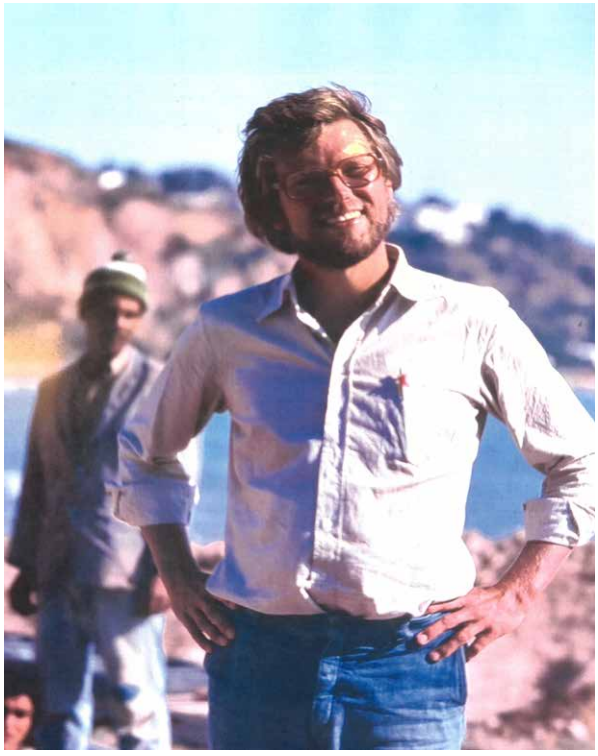

Fig. 1: *Søren Dietz during the excavations in Carthage in 1975.*

An awakening interest in the antiquity of Tunisia

By the beginning of the 19th century, Tunisia was still largely a blank area on the archaeological map. The Englishman Thomas Shaw (1694-1751) passed through the interior of the country in the 1720s and published an account of his journey in 1738: *Travels or Observations Relating to Several Parts of Barbary and the Levant*, and a few other early travellers had followed in his footsteps, but after the turn of the 18th century,

1 Dietz & Trolle (eds) 1979; Dietz 1985; Lund 1991; Dietz 1992, 2000; Lund 2020.
2 Cf. Liventhal 1984-1986; Lund 1986, 1992, 2000b, 2015 [2016]; Lund & Haslund 2021; Carlsen & Lund 2024.
3 Halbertsma 2003, 110; Freed 2011, 39; Ennabli 2020, 43; Halbertsma 2021, 47-8; Bingham & MacDonald 2024, 47-51 and *passim*.
4 For a summary of the incipient Danish interest in the archaeology of Carthage, see Carlsen & Lund 2024, 7-10.

Fig. 2: *Miniature portrait of Carl Christian Holck, probably painted by Friederich Carl Gröger in 1808.*

Fig. 3: *Miniature portrait of Henriette Holck, presumably painted by Friederich Carl Gröger in 1808.*

interest in the antiquities of Tunisia increased amongst European, including Danish, scholars.[5]

To counter the threat posed by corsairs from the so-called Barbary states (Morocco, Algiers, Tunisia and Libya) to international shipping in and beyond the Mediterranean, Denmark established a consulate in Tunis in 1753, after having concluded a peace treaty between Denmark-Norway and Tunisia.[6]

Carl Christian Holck (1758-1816) (Fig. 2),[7] who served as consul between 1801 and 1810, was apparently the first Dane to register an interest in the antiquities of Tunisia. He was accompanied by his wife (Fig. 3), and in order to to avoid the heat of the capital during the hot summer months, Holck moved to La Marsa some 17 kilometres from the capital with his family, and his diary informs us that they had a picnic at the cisterns of Carthage on the 9 September 1804, returning on the 30 September accompanied by Felice Caronni (1747-1815), an Italian priest, who had been captured by corsairs on route from Palermo to Naples and was to spend three months in Tunisia.[8] He stayed with the Holck family at La Marsa for three weeks (Fig. 5).[9] Holck described Caronni in his diary as a "wise and learned man", who was fun to be with. The Italian was also an amateur antiquarian and numismatist, who later published an account of his captivity, which included a map of Carthage and observations about its topography (Fig. 4).[10] It was perhaps because of Caronni's influence that Holck brought home "a complete Carthage stone" from their

5 Debergh 2000; Halbertsma 2015; Baïr 2017.

6 Wandel 1919; Arthur Andersen 2014, 11-77. For the treaty with Tunisia in 1751, see Andersen 2000 and Chenoufi 2005, 17-22. The treaty with Constantinople in 1756 is discussed by Andersen 1992. Regarding Danish shipping in the Mediterranean in the 18th and early 19th century, see Andersen & Pourchasse 2011.

7 Holck 1962; Lund 2005; 2015 [2016], 44-50.

8 Debergh 2000, 460-1 and *passim*.

9 Caronni 1805, 81: *Io mi divertii colà molto utilmente per tre settimane quando a piedi quando a cavallo con quell'ospite garbatissimo*.

10 Caronni 1805; 1806; Klaarer (ed.) 2022, 339-56.

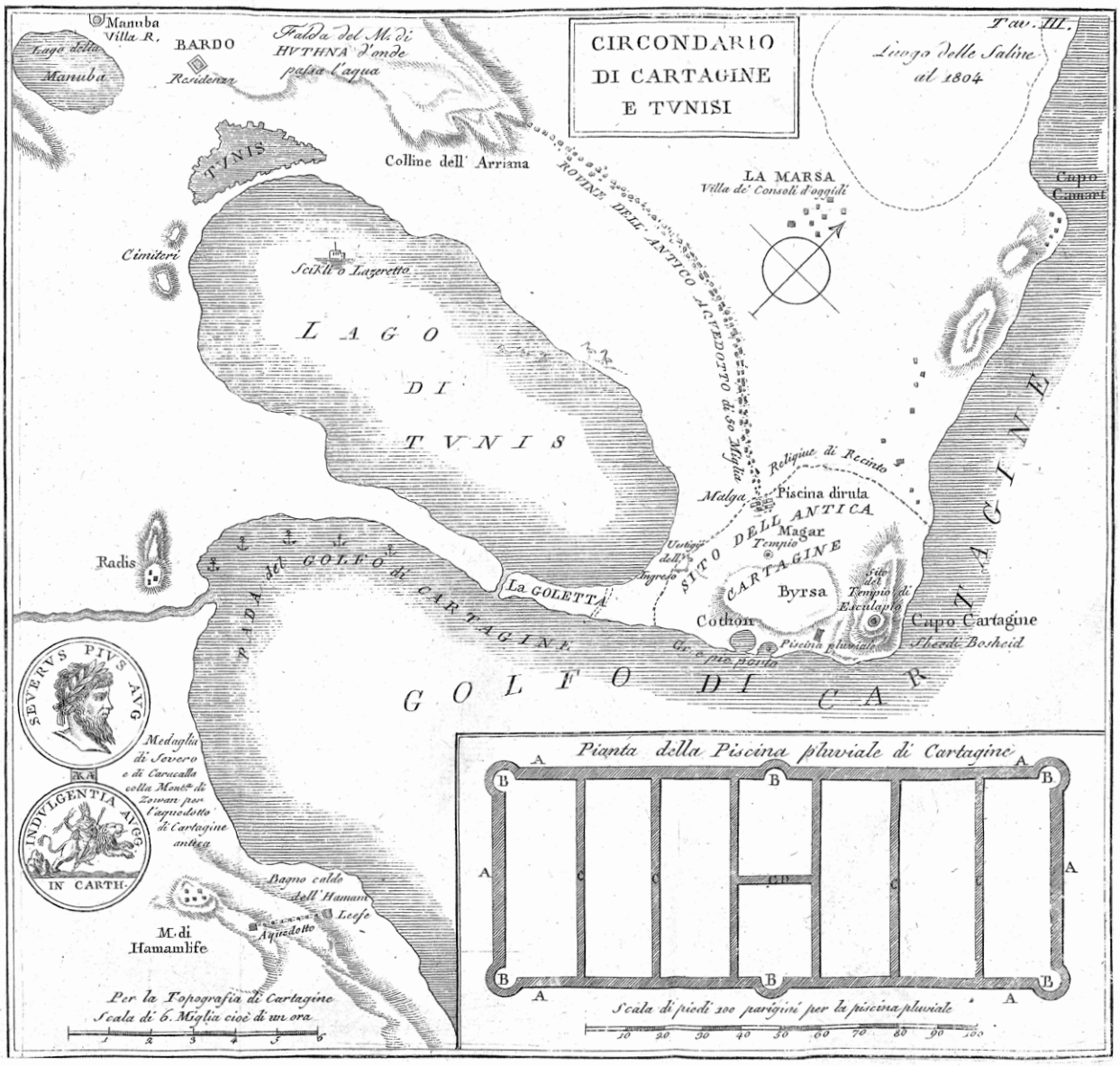

Fig. 4: *Caronni's plan of Carthage, after Caronni 1805-1806.*

visit: "a mosaic and a base of a temple".[11] The mosaic is probably the one which is now kept in the Danish National Museum (Fig. 6),[12] but the whereabouts of a "brooch … with a carneol and a horse carved out in the same found at Carthage", which Holck acquired on 15 December 1805, is unknown, and the same applies to an "ancient base" he obtained when he went with his family to Carthage on 3 April 1806. Holck also acquired several rings, gemstones and "medallions" during his stay,[13] and found fragments of one or more marble statues in Utica in 1807, which he donated to the predecessor of the Danish National Museum.[14]

Holck only had these few words to say about ancient Carthage: "You see only … some ruins, a few cellars and a few cisterns; but you can still get a sense of what kind of power Carthage must have possessed, sitting there

11 Holck 1962, 100.
12 Lund 2005, 64-6 fig. 1; Freed 2011, 90-1 note 91.
13 Holck 1962, 85, 95, 101, 106, 109, 114, 116, 118
14 See Lund 2005.

Fig. 5: *Holck's country house at La Marsa, watercolour by Clark Charles Tulin, c. 1806.*

beside the ruins of the superb aqueduct which exists for an extent of ten [Danish] miles [ca. 75 kilometres], which once conveyed spring water into Carthage … Spread out everywhere through the whole kingdom, you see the ancient relics of Tunisia, or rather the ruins, inasmuch as there are very few remarkable remnants – and these continue to erode every day".[15]

Andreas Christian Gierlew

Holck's successor, Andreas Christian Gierlew (Fig. 7),[16] had a reputation for being something of a "conversateur",[17] whose circle of friends included some of the prominent personalities of the time, such as the physicist and chemist Hans Christian Ørsted (1777-1851), the poet Jens Baggesen (1764-1826), and the national bard Adam Oelsenchläger (1779-1850).[18]

After having studied theology at the University of Copenhagen from 1791 to 1799, Gierlew did not pursue a career in the church, but instead embarked on a four year-long journey to Germany, France, Switzerland and Italy.[19] He published an account of the journey after his return,[20] which – along with his excellent political connections – resulted in him being employed by the then Danish Ministry of Foreign Affairs.[21]

Gierlew was appointed secretary and Chargé d'Affaires to the Danish Consulate in Tunis in April 1810, but before departing from Copenhagen, he married Wilhelmine Josepha,[22] who died from an illness in Tunis on 5 June 1812. Devastated and

15 Lund 2015, 72.
16 Lund 1995a; 2000a; Debergh 2000, 462-464 and *passim*; Lund 2015 {2016], 50-1; Halbertsma 2021, 47; Rude 2024.
17 Dreyer 2014, 172.
18 Gierlew had a crush on Oelenschläger's sister, Sophie Ørsted (1782-1818), see Wamberg 2001.
19 He travelled from Paris to northern Italy in the company of his friend, the Danish poet Jens Baggesen, see Clausen 1900; Langdal Møller 1924, 102-3 and *passim*.
20 Gierlew 1807.
21 Rasmus Nyerup wrote to Laurits Engelstoft on the 21 July 1804: "I was told that Gierlef … wished to become a diplomat and that he had exclaimed that this would not be too difficult for him to achieve due to the protections he had", https://arkivet.thorvaldsensmuseum.dk/dokumenter/ea10039?highlight=Gierlew.
22 Andreasen 1943, 35.

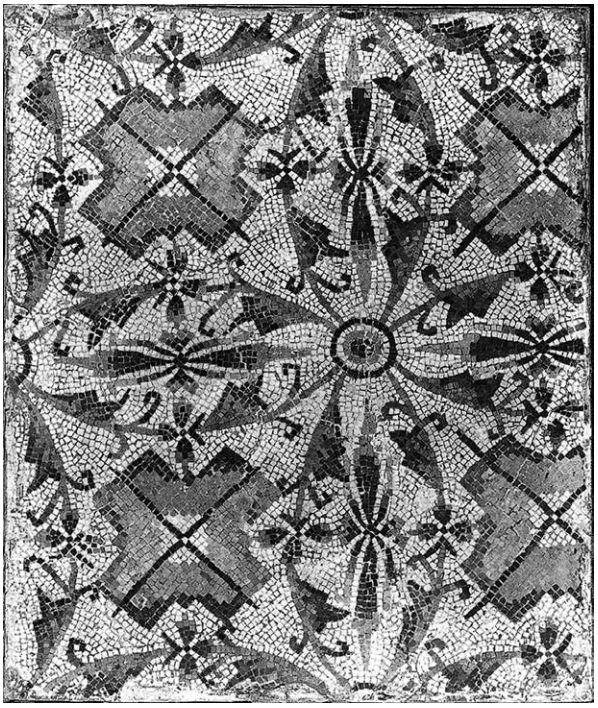

Fig. 6: *Fragment of mosaic "found near Tunis" in the Danish National Museum, i.n. Abb 107.*

Fig. 7: *A.C. Gierlew, portrait by Christian Horneman. https://www.mutualart.com/Artwork/Portrait-of-Andreas-Christian-Gierlew/38C7E213050318EE5192F5F95B24E85C.*

left alone with their small daughter, three years later, he married Elisabeth Robinson, the daughter of the British Vice Consul. We can follow Gierlew's stay in Tunisia in his dispatches to 'the Royal Management of African Consulates', his diary and letters to friends and family.[23] Of particular interest in the present context are his letters to Friederich (or Frederik) Münter (Fig. 8).

Frederik Münter

Münter was born in Germany in 1761, but his father moved to Copenhagen in 1764 to take up a position as a vicar at the German Church of St. Petri.[24] His extraordinarily gifted son Friederich completed his studies in philology and theology at the University of Copenhagen within three years and studied between 1781 and 1783 at Göttingen, where he became interested in in classical antiquity. He was awarded a Doctorate of Philosophy at the University of Fulda in 1784, and spent the next three years on a 'Bildungsreise', which took him to Vienna, Venice, Bologna, Rome, Naples and Nola, as well as Palermo and Catania. Münter visited all accessible archaeological sites and museums *en route* and expanded his already large scholarly network to include personalities like the Italian Cardinal Stefano Borgia, who possessed one of the most important collections of antiquities in Italy at the time.

On his return to Denmark, Münter became extraordinary Professor of Theology, and held an ordinary professorship from 1790 until 1808, when he was appointed the Bishop of Zealand. He was a renowned scholar in the fields of theology, philology, archaeology and several other disciplines. Inspired by the museums he had seen in Italy, he established a large private collection, the so-called Museum Münterianum, which was accessible to the public at the Bishop's Residence in Copenhagen,

23 Gierlew's diary (NKS 380 b kvart) and his letters to Münter (NKS 1698 folio) are kept in the Royal Danish Library. The present author has translated them to English.

24 Rasmussen 1926; Andreasen 1937; Lund 2014, 23-4; Fischer-Hansen 2015, 87-8 and *passim*.

Fig. 8: *Friederich Münter, a copy by C.A. Jensen of a portrait painted around 1820 by Christian Horneman, the Museum of National History at Frederiksborg Castle, in the public domain.*

which was apparently the very first museum with public access in Denmark.[25] It eventually comprised around 10,000 coins, around a third of which were Greek and Roman, and 600 mainly Egyptian, Greek and Roman antiquities, as well as Danish antiquities and some *etnographica*. Münter had received many of the finds as gifts from his learned friends throughout Europe, and he had also presented antiquities to others. His special interest was epigraphy, and the collection included several inscriptions: from a tile with Assyrian cuneiform writing to Etruscan, Roman and Kufic inscriptions of various kinds, and even a rune stone. When he died in 1830, he left behind a huge amount of correspondence with scholars from all over Europe.[26]

Münter was a keen collector of coins and gems, who followed a piece of advice given by O.G. Tychsen, professor at the University of Rostock, in a letter dated 6 November 1803: "Vorzüglich empfehle ich Ihnen aber durch die Dänischen Consuls in Tanger, Fes, Marokko, und in Algier und Tunis alte Gold-, Silber- und Kupfermünzen bey den Goldschmieden und Juden sammeln zu lassen".[27] It is not known whether Münter contacted the Danish consuls in Morocco and Algeria, but he actively encouraged Gierlew to investigate Carthage with the aim of identifying remains from the Punic period.

Gierlew investigates Carthage

In a letter to Münter written between 10 August and 11 September 1812, Gierlew criticised Caronni's comments on the topography of Carthage, noting that the Italian "was a connoisseur of coins, but ruins are not coins, and it seems that his genius was more adapted to looking at a coin than performing a critical overview of the still existing ruins of the city … they all seem to me to date from the time of Rome and later. Hardly anything is preserved of the Carthage of Hannibal. The Romans did everything efficiently, and hardly any stone on stone is left here … Even the immense aqueduct is – I believe – a Roman work … and the cisterns surely as well – I am not yet sure if these were connected with the aqueduct."

On the 14 May 1814, Gierlew wrote to Münter that he had "just returned to my beautiful country house at La Marsa, which is only slightly less the two kilometres from the proud enemy of Rome. I shall spend eight days here in this so fertile and beautiful, so historically remarkable area." He added that he was convinced that "none of the various authors who have spoken about the ruins of Carthage, have taken the trouble to really examine them – or if they have studied them, have not been skilled in reading this kind of scripture, which demands an overall knowledge, autopsy, and insight. I persist in my claim that the many different still preserved buildings, of which a plan might be drawn, date from the time of the Romans – it is in any case precisely [the same kind of] walls I am used to see in the ruins of Rome. I have this very evening with complete certainty, as far as the impatience of my lively stallion allowed for, found, and recognised a large part of the walls of the city, which rise clearly from the surrounding lower ground. An excavation was going on at the very moment, and I saw that beautiful ashlars had been excavated, like the ones the old people here still

25 Münter 1829; Petersen 2012; Fischer-Hansen 2015, 94-6; Fischer-Hansen 2017.
26 Andreasen 1938.
27 Andreasen 1934, 298.

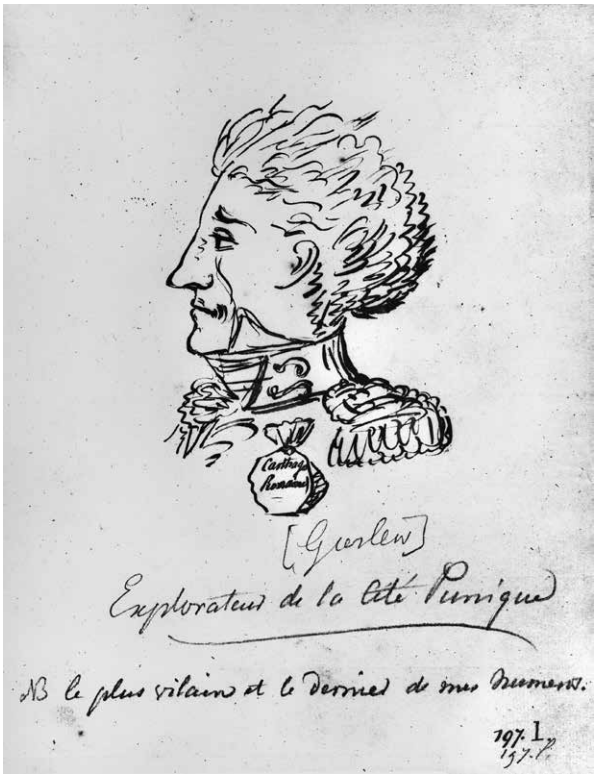

Fig. 9: *Caricature of Andreas Christian Gierlew by Jean Emile Humbert.*

build their houses with. The harbour could clearly be seen in the swampy, lower ground, to the southeast of Byrsa, towards Goletta … Your highness will allow me now to smile at your expense, when you claim in your last letter that it should be possible at last to find Punic inscriptions on marble and in particular tiles. Firstly, no one has until now found the slightest trace of these and secondly, I doubt very much that such could be found without an excavation … and perhaps not even then. All that has been found reveal the age of Rome … One of my friends has told me that he believes to have unearthed a few burial grounds on the seashore. I shall investigate them, but might they not be Roman?"

Gierlew never managed to find any Punic inscriptions in Carthage. This was achieved by an amateur antiquarian and resident Dutch engineer at the court of the Bey, Jean-Emile Humbert.[28] Humbert unearthed four near complete Punic *stelae* between the Roman theatre and the village La Malga in 1817, which were the first actual evidence of Punic Carthage.[29] He drew a caricature of Gierlew wearing a medal describing him as "Explorateur de Carthage Punique" with the added enigmatic sentence: "le plus villain et dernier de mes numeros" (Fig. 9). The words probably reflect the growing rivalry among the resident antiquarians in Tunis, who were ruthlessly competing for fresh – in particular Punic – antiquities. In his letters to Münter, Gierlew refers to the Dutch antiquarian as a practical and greedy coin collector but does not otherwise express any animosity towards him.[30]

Gierlew and Camillo Borgia

In the autumn of 1815, an Italian count called Camillo Borgia came to Tunisia as a political refugee.[31] He was a nephew of the renowned Cardinal Stefano Borgia, whose museum in Viterbo had been frequented by Münter and other Danish scholars.[32] Gierlew placed him under the protection of the Consulate, as he informed Münter in a letter written between the 25 November and the 4 December: "My antiquarian studies received a new exhilarating impetus through the unsuspected arrival here of Count Camillo Borgia this August from Toulon … He arrived here as Danish Privy Councillor to His Royal Majesty, and because I knew him personally from Rome … I did not hesitate to extend to him the protection of the Consulate, under which he lives as well as his absence from a beloved wife and two children and the special prosecution at the courts of Rome permit him to do. He has, through me, made several highly interesting journeys to the interior of the realm, discovered, measured and drawn a great many hitherto unknown ruins, found many new in part Punic inscriptions, verified others in the extremely careless Shaw, drawn a new and accurate map of his journeys which will richly illuminate this so famous part of the world, hitherto so little described and imperfectly known – on his return we study his discoveries together, seek with the help of the books we can get hold of, or are owned by me, to clarify what is obscure, correct what is at fault, determine everything exactly. He is sending you all the Punic inscriptions, even of medallions, and you [may look forward to] a

28 Debergh 2000; Halbertsma 2003, 71-88; 2015, 121-5; 2015 [2016]; 2021, 42-5, 47-8.
29 Halbertsma 2015 [2016], 67-8, fig. 5.
30 Gierlew's friendly and easy-going nature is also attested by David Glasgow Farragut, later First Admiral in the American Navy, who resided in Tunis for nine months in 1817, see Farragut 1891, 63-70 and passim,
31 Debergh 2000, 463-4 and *passim*; Halbertsma 2015, 119-21.
32 Andreasen 1935, 294-302; Lund 2000a, 77.

Fig. 10: *Mosaic from Carthage in the Museum Münterianum. Photo: John Lund.*

Fig. 11: *Roman* intarsia *frieze from Carthage in the Museum Münterianum. Photo: John Lund.*

rich harvest – even with regard to Carthage, where we have evolved new and more correct determinations and shed light on many things. He will soon write to you personally, and we continually talk about you. You realise his surprise at finding me here, and in a Consul something – a fragment – of a Classical scholar and Antiquarian. We are together daily, and I respect and love him in all regards".[33]

Borgia and Gierlew did not succeed in identifying any tombs in Carthage, but their explorations led them to believe that the centre of the Punic city, Byrsa, was located at Sidi Bou Said, although, as Gierlew wrote to Münter, the houses of the village would make it difficult to undertake excavations there. They also mistakenly located the port of the Punic city to the north of Sidi Bou Said, as is apparent from a map of Carthage, drawn by Borgia and published by Ruurd Halbertsma in 2016.[34] The Italian returned to Naples with all his notes and drawings when his sentence was revoked in 1817, and in a letter dated 1 April, he informed Münter about the discoveries he had made during his three excursions, which he planned to publish.[35] But Borgia died on the 17 May of an illness that he had contracted in Utica, and his records remain largely unpublished until this day.

Gierlew presented two Carthaginian antiquities to Münter, which are still part of the Museum Münterianum in the Bishops Residence in Copenhagen. Münter described these as follows in a small guide to his collection:[36] "Two pieces of a mosaic floor with small, differently coloured stones, from a location in the ruins of Carthage that was presumably a gathering place in antiquity (Fig. 10); an oblong marble plaque into which a beautiful drawing has been engraved representing a marine deity, sitting on a triton and accompanied by *genii*, swimming or riding sea creatures (Fig. 11), brought back from Tunis by Counsellor of State and Knight, Mr. Gierlew."[37]

33 In a letter dated the 10 April 1816, Münter informed K.A. Böttiger of Gierlew's account of Borgia's discoveries, Andreasen 1934, 82.
34 Halbertsma 2015 [2016], 65, fig. 4.
35 Andreasen 1934, 113-4.
36 Münter 1829, 6.
37 Münter 1822, 27-9; Fischer-Hansen 2017, 25, fig. 16 with the information that Münter received the relief around 1816.

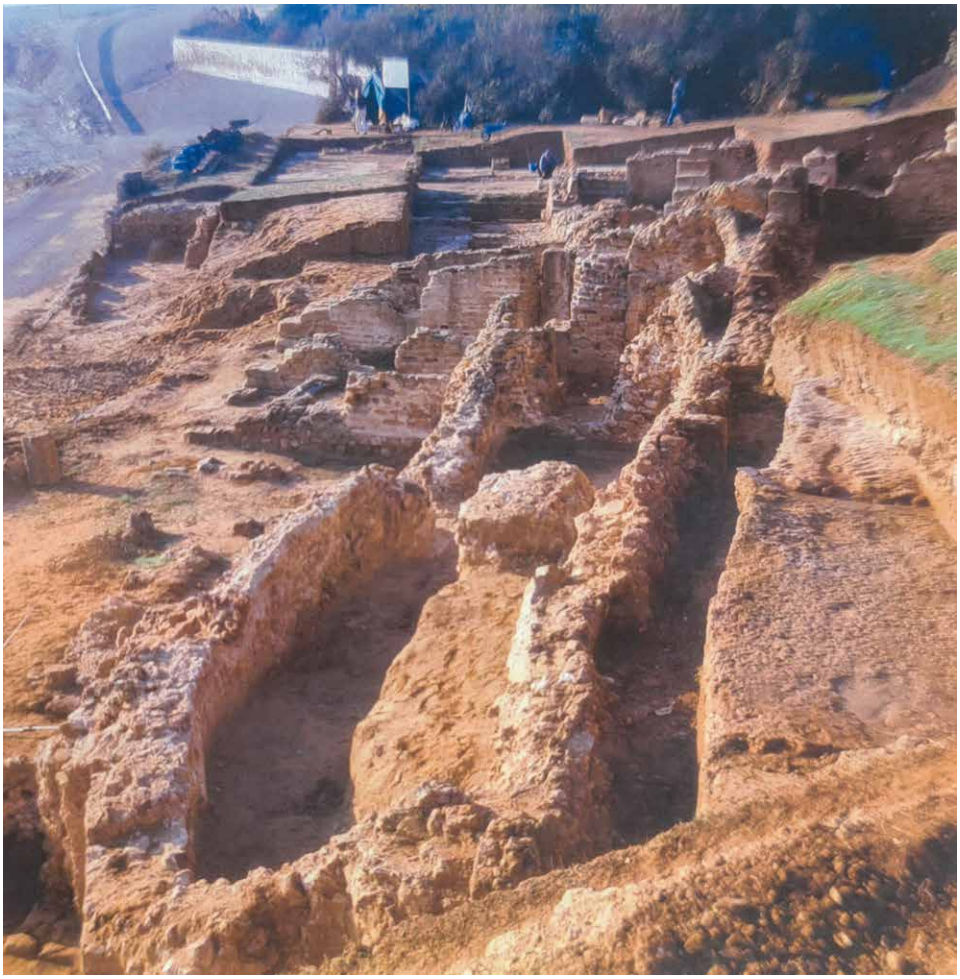

Fig. 12: *Site 90, Carthage, at the end of the 1977 excavation season.*

Falbe arrives on the scene

Gierlew, who returned to Denmark in October 1820,[38] was succeeded by Christian Tuxen Falbe as Danish Consul General on the 9 August 1821. Like his predecessor, Falbe had little concern for archaeology before arriving in Tunis, but it was once again Bishop Münter who excited his interest in antiquities and coins. He also brought Falbe to the attention of the Danish Prince Christian Frederik (1786-1848), who wrote to him in February 1824: "It has pleased me to hear that you are engaged in finding antiquities and collecting coins. In this respect one can do no better than follow the advice of our learned bishop, and the ruins of ancient Carthage are extensive and rich hunting grounds. A study of these is an extremely meritorious task. Objects from any epoch of Antiquity are always of value in a collection and in the hand of the knowledgeable scholar. I advise you to take the opportunity to collect [objects] and then to ship them home by means of the first royal vessel appearing in the Mediterranean. In time, I hope, you will also oblige me by sending something for my collection of vases, ancient lamps and Greek and Punic coins." This was the beginning of Falbe's lifelong association with the prince, who became the Danish King Christian VIII in 1839.[39]

There is no reason to dwell here on Falbe's subsequent investigations in and beyond Carthage, which have been amply described elsewhere.[40] He is justly renowned for drawing the first accurate map of the area of the ancient city, but it should not be forgotten that the accompanying volume contains de-

38 Borup 1947, 219.
39 Lund 2000b.
40 Lund 1986; 1992; 2015 [2016] with references.

scriptions of 117 sites marked on the map.[41] These are clearly based on his own personal observations, which make the publication a forerunner of archaeological landscape surveys of later periods.

I shall also merely refer in passing to the remarkable expedition through the interior of Tunisia, which he undertook when Falbe returned to Carthage in 1837-1838 as a representative of the Society for the Investigation of ancient Carthage,[42] which also conducted several excavations in the city,[43] including Site no. 90, which Søren Dietz re-investigated using contemporary methods a century and a half later (Fig. 12).

Conclusion

To conclude, the documents in the Danish archives show conclusively that Bishop Friederich Münter instigated the Danish interest in ancient Carthage. Without his impetus to Gierlew's and Falbe's studies of ancient Carthage, it is highly unlikely that the Danish National Museum would have responded positively to the UNESCO campaign "Pour sauver Carthage". Those who went before us cast long shadows indeed.[44]

One might, however, ask how Falbe got the idea of producing a precise map of the Carthage area? Based on what is known, Bishop Münter did not suggest this idea to him. I believe that the inspiration came from Gierlew, who in 1824 wrote to the German archaeologist Karl August Böttiger in Weimar: "I should very much have liked to follow your excellent and honourable request to give an account of the true position of Phoenician and Roman Carthage, if I did not fear that this could be neither clear nor interesting without a precise topographical map or plan of the site itself".[45] Gierlew noted that Caronni's plan (Fig. 4) was full of mistakes and regretted that the map drawn by Borgia remained unpublished, and continued: "I despair without a good map to make myself understood in anything, I have often laughed out loud, seeing how people construct maps without having seen everything themselves, only on the basis of books, which are either inaccurate themselves – or misunderstood …, and that the old classical areas are constructed, so to speak, *a priori* in this way, especially those that I know so well myself; it seems ridiculous."

Falbe was on leave in Copenhagen in the years 1828-1830, and it is more than likely that he met Gierlew at this time. If so, it seems possible that the latter expressed a similar sentiment to him, which gave Falbe the idea of drawing a map of Carthage. It seems unlikely to have been just a coincidence that Falbe began work on his map immediately after his return to Tunisia. Moreover, the reasons given by Falbe for undertaking this task echo the words of Gierlew.[46]

41 Falbe 1833.
42 Lund & Haslund Hansen 2021.
43 Lund 1986.
44 See also Carlsen & Lund 2024.
45 Böttiger 1825, 438-42.
46 Falbe 1833.

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Town and Country in Africa Proconsularis: Segermes in Context

by Jesper Carlsen

Between 1987 and 1989 five campaigns of archaeological fieldwork were carried out in the Segermes valley within the frameworks of the multi-disciplinary Danish-Tunisian project *Africa Proconsularis*. Segermes is located c. 75 km south of the modern city of Tunis and 30 km from the coastline (Fig. 1). It was in memory and honour of the Danish consul general, C.T. Falbe (1791-1849), who drew the first map of Carthage and was the first Dane to visit Segermes, that the project was given the somewhat imprecise title *Africa Proconsularis*.[1] The institutions involved in the project were the National Museum in Copenhagen, the two departments of History at the then Odense University and the University of Copenhagen and the l'Institut National d'Archéologie et d'Art at Tunis.

The overall aim of the project was to analyse the economic relations between a small Roman town and its hinterland in the western part of the Roman Empire. The theoretical point of departure was the problem of which Weberian *idealtypus* such a town could correspond to: a consumer or a producer city.[2] This article will introduce the Segermes project's archaeological fieldworks and its organization, before presenting the results of the fieldwork and the continued importance of these works more than 20 years after its years of publication.

The Segermes Survey: organization and results

The Segermes valley is named after the Roman town Segermes, the modern Henchir Harrat, which was founded as a *municipium* in the late 2nd century AD. The town is known from more than 30 inscriptions and a few late Christian sources, that mention the names of Catholic and Donatist bishops representing the town at a church council at Carthage held in AD 411.[3] Segermes has only been archaeologically investigated to a limited extent, but the known architectural remains indicate that it was a quite small provincial town (Fig. 2) with preserved typical public buildings: two baths, two Christian basilicas and a paved forum with a monumental building, often identified with the *capitolium* mentioned in a Tetrarchic inscription.[4]

The archaeological fieldwork included an interdisciplinary field survey including intensive fieldwalking across a 26 km^2 area, divided into 11 sample areas, in which the teams found more than 100,000 sherds and sampled about 10 % of these. The architectural team studied and measured visible remains within and outside the surveyed zones, and surface finds were collected at 193 recorded sites inside an area of about 250 km^2 (Fig. 3). Thirdly, small trial trenches or sondages were laid out at 11 rural sites, in order

1 Lund 1995 and 2000.

2 Regarding the theoretical background of the project, see Ørsted et al. 1992, 71-3.

3 See Ladjïmi Sebaï 1992-1993 and Ladjïmi Sebaï 1995 with publications of the inscriptions. Regarding the Christian sources, see Bejaoui 1995.

4 *CIL* VIII 906 = VIII 11167 = VIII 23062 = Ladjimi Sebaï 1995, 717-721 no. 1 = EDCS-17700400. Lepelley 1979-1981, II 304-5, and Waldherr 1989, 78-82; Bejaoui 1995, 761. Concerning earlier archaeological investigations in the area, see Carlsen 2000a.

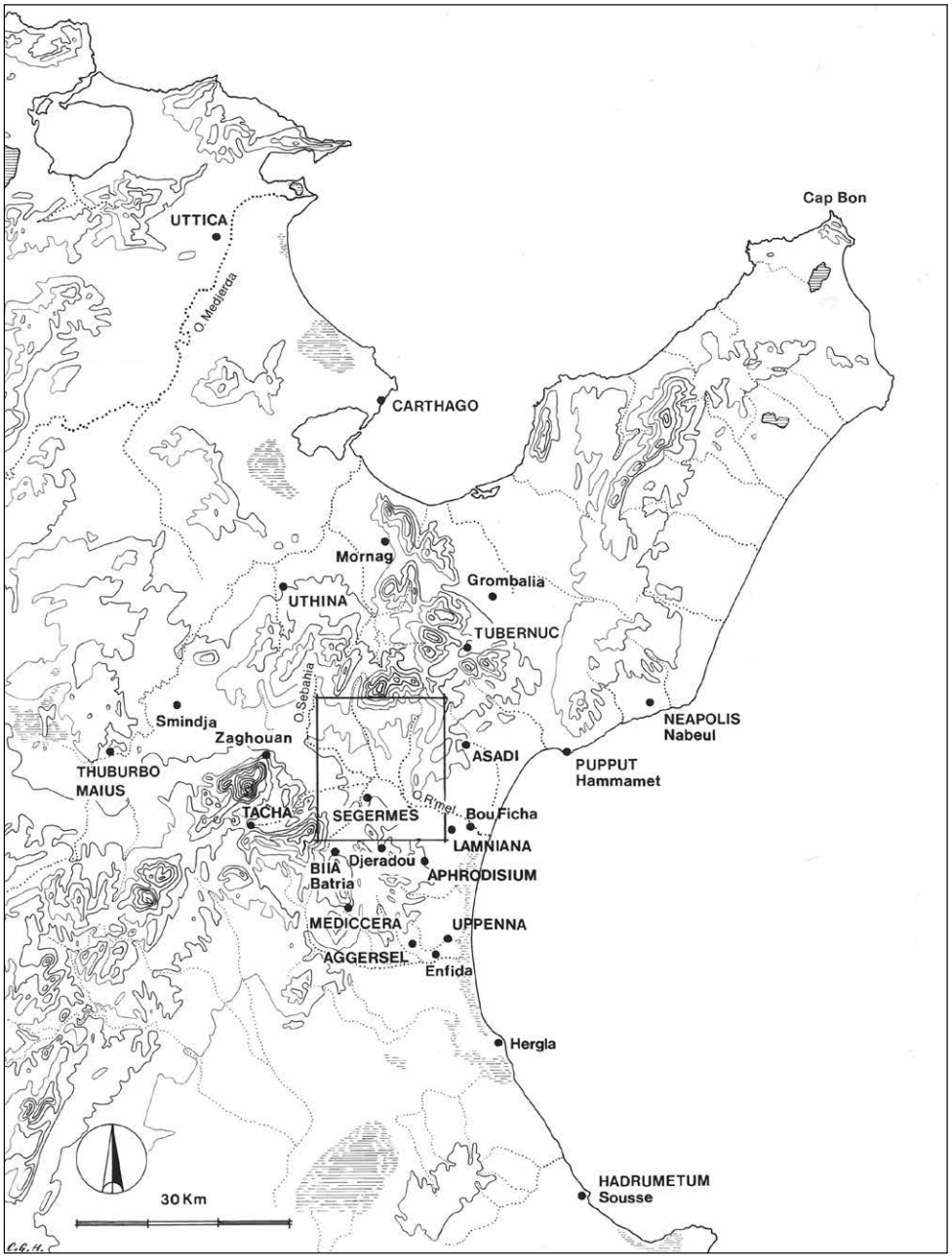

Fig. 1: *Segermes and its surroundings (Catherine Gerner Hansen), Ørsted et al. 2000, 30.*

to evaluate the chronological reliability of the surface collections. Finally, there were also small excavations in the town of Segermes itself, which were mainly undertaken by Tunisian colleagues.[5]

It is important to underline that this large-scale project with almost 50 participants in the field surveys' campaigns was not only a collaboration between Tunisian and Danish scholars, but was also co-directed by an archaeologist, Søren Dietz, and an historian, the late Peter Ørsted. It was – at that time – unique in its multidisciplinary approach with participation from archaeologists, architects, geologists, environmental scientists, and historians. The different academic backgrounds and especially the cooperation between historians and archaeologists specializing in different periods was at that time fundamentally new in a Danish context, and caused considerable practical and theoretical problems associated with approach within the project. Much more importantly, it broadened the perspective of the work, which is also reflected in the publications.

5 The announced fourth volume about these excavations has not yet appeared. A preliminary report can be found in Ørsted et al. 1992, 84-90.

Fig. 2: *The so-called* Capitolium *at Segermes (Photo: Jesper Carlsen 1991).*

Dietz and Ørsted wrote a few overviews and preliminary reports about the project and its results in Danish, English and French.[6] The real impact of this pioneering archaeological fieldwork in Roman North Africa is found in the final publication in three volumes entitled *Africa Proconsularis: Regional Studies in the Segermes Valley of Northern Tunisia*, published in 1995 and 2000. The first two volumes, edited by Dietz and the two Tunisian co-directors, Laila Ladjimï Sebaï and the late Habib Ben Hassen, comprises the archaeological material, while the third volume, with Ørsted and Jesper Carlsen as editors together with Ladjïmi Sebaï and Ben Hassen, discusses the historical implications of the results of the fieldwork and also contains additional archaeological material, including that associated with the late and neo-Punic periods.

In the second volume, Dietz published an important summary of the results of the fieldwork, in kind of general conclusion.[7] As noted above, a total of 193 sites were recorded in the Segermes valley. This number is the absolute minimum, as several of the sites mentioned in the first edition of the *Atlas archéologique de la Tunisie* published in 1893 were no longer visible. The typology established for 43 of the recorded habitations sites were organized in three main types based, primarily based on plans, combined with building techniques and architectural elements. Referring to Cathrine Gerner Hansen's analysis of the architectural structures,[8] Dietz distinguished between four types of rural sites classified as farms, isolated small villas, isolated large villas, and major complexes called *agglomerations rurales*, which in some cases can be identified with villages or *vici* in Latin (Fig. 4). Besides 11 *agglomerations rurales*, 21 small and large isolated villas were identified. According to Dietz, a large villa comprised an area of more than 500 m^2; these were often furnished with a bath house and mosaics, reflecting the wealth of the owner or its inhabitants. The five small farms covered less than 500 m^2 in size, while 33 sites cannot be identified in terms of size and structures.[9] The pottery analysis confirmed that these sites were not all occupied at the same time. Fine wares from the stratigraphic sondages at the 11 sites show that some of these settlements can be dated to as late as to 5th and 6th centuries AD, while others were occupied from as early as the 2nd and 3rd centuries AD.

The fieldwork shows that there was an increasing rural activity in the Segermes valley during the late Antique period. which is usually considered as a time of crisis and decline. After AD 350, almost 20 new rural sites were founded, and the valley was thus more densely populated than ever before. This increasing tendency continued until the early Vandal period or early 6th century, but subsequently declined in effect in the later 6th and 7th centuries, and traces of inhabited sites disappear around AD 700.[10] However, the settlement pattern shows important differences between the northern part and the plains around the *municipium* of Segermes. Two *vici* with many cisterns and counterweights for olive presses in the hilly landscape of the northern part of the valley were established in the Late Punic period. The finds of other counterweights, querns and mill stones at isolated villas and farms in the part of the Segermes valley north of Oued R'mel indicate that they were production units with olive as the most important cash crop, but also that this region was not specialized in olive-growing to such an extent as, for instance around Cillium and Thelepte in central Tunisia, where there are many large sites with several presses.[11] The impressive villa and mausoleum at Ksar Soudane (Fig. 5) near St. Marie du Zit has tentatively been

6 Ørsted et al. 1992; Ørsted 1993, 1998, 2004a, 2004b; Dietz 1995b. The first preliminary publication was Carlsen & Tvarnø 1990. A bibliographical overview of publications on the Segermes valley can be found in Carlsen 2000a, 54-7.
7 Dietz 1995a.
8 Hansen 1995.
9 Dietz 1995a, 789-95.
10 Dietz 1995a, 773-86.
11 Hitchner 1988; Hitchner 1989.

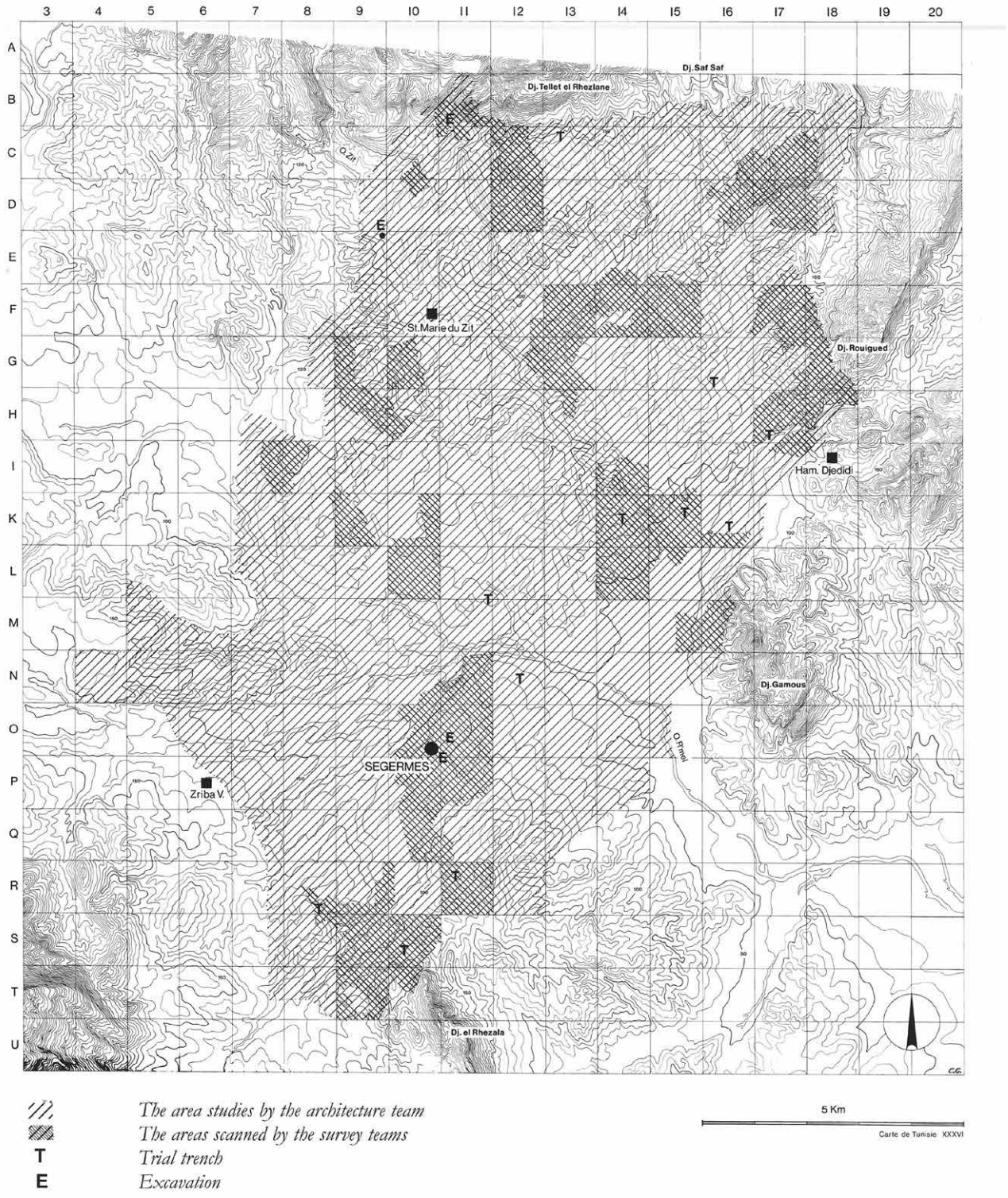

Fig. 3: *Surveyed areas in the Segermes valley (Catherine Gerner Hansen), Ørsted et al. 2000, 104.*

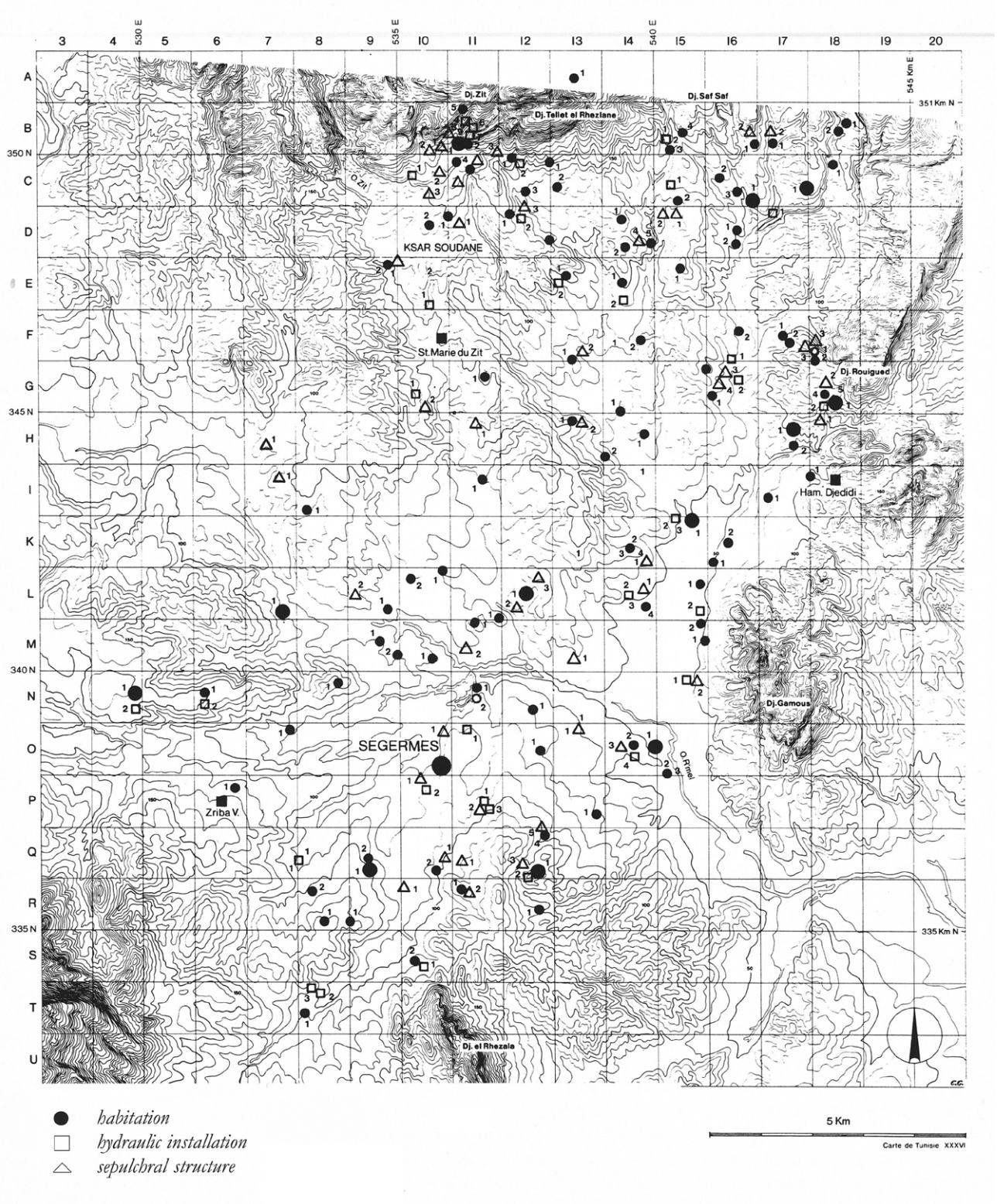

Fig. 4: *Sites recorded by the architectural team (Catherine Gerner Hansen), Ørsted et al. 2000, 106.*

Fig. 5: *Ksar Soudane (Photo: Jesper Carlsen 1991).*

identified as an imperial *fundus* or *saltus* while the isolated villas and farms in the region were occupied by tenants. The territory of Segermes seems to have been covered around 100 km^2 on the alluvial plain around the town. The production of the isolated villas and farms in this area, with a relatively modest olive press capacity, seems to have involved an integrated mixture of olives, grain – barley and to a lesser extent, wheat – and livestock, particularly sheep and goats.[12]

The Scholarly Impact of Africa Proconsularis I–III

The reviews in leading international journals of the final publications were all favourable. D. Mattingly in his review in *Journal of Roman Studies* characterized the project as "one of the most impressive achievements of modern field survey archaeology."[13] R. Bruce Hitchner's opinion was much along the same lines, when he wrote in *Journal of Roman Archaeology* that "the results were impressive" and "*Africa Proconsularis* breaks new ground." He concluded that "The Segermes survey was a valuable undertaking. The rigorous attention given to collection of surface finds and the detailed architectural recording of sites has yielded a body of information that sheds much light on settlement history. Perhaps more importantly, the survey information was gathered, organized, and presented in a manner that allows other researchers to read and interpret it independently."[14] D. Stone, however, in *Classical Review* was not satisfied with the catalogue of sites and the lack of integration between the sections in the first two volumes. However, in his review of the third volume in *Journal of Roman*

12 Carlsen 1998; Carlsen 2000b.

13 D.J. Mattingly, *JRS* 87 (1997), 296-98. Quotation on p. 296.

14 R. Bruce Hitchner, 'A Tale of Two African Surveys', *Journal of Roman Archaeology* 10 1997, 567-71 (together with Peyras 1991). Quotations from p. 568 and p. 571. Other reviews of the first two volumes: P. Leveau, *American Journal of Archaeology* 101 1997, 616-17; J. Debergh, *Latomus* 56 1997, 944-46; P. van Dommeln, *Bulletin Antieke Beschaving* 73 1998, 182-4; K.E. Meyer, *Gymnasium* 105 1998, 228-30: "Die Arbeit ist somit eine hervorragende Grundlage für künftige archäologische Untersuchungen in dieser Region" and finally D.L. Stone, *CR* 49 1999, 222-4.

Archaeology, Stone was more positive and concluded that "I would argue that the Danish-Tunisian project has turned Segermes from one of the least understood to one of the best-known towns of Roman N Africa. Lacking the sort of large-scale excavations of public buildings and domestic housing of sites such as Thuburbo or Dougga, it may not stand out, but at how many sites have we learnt more about the history of the countryside?"[15] J.P. Moore published the most critical review under the heading 'Straight from the Bottle: Rural Life in Roman Africa' in the *American Journal of Archaeology*. She first pointed out correctly that the title of the three volumes is misleading, as they did not examine the whole Roman province, but only a small part of it. Furthermore, almost half of the third volume, subtitled 'Historical Conclusions', is devoted to publication of the archaeological material. She also pointed out that some groups of pottery remain unpublished and remarked that "it is disappointing that better planning did not go into providing for the analysis of the pottery, one of the most important measures of economic activity." She also called for an improved edition, cross-references between the chapters and a concordance between the numbers used by the field survey and the architectural team, but the conclusion was clear: "it is investigations like those of the Segermes project that allow us to access the more common standards of living that existed in the Roman world."[16]

This evaluation was perhaps true at the time it was written, but times have changed. Multi-disciplinary projects are now common, and intensive fieldwalking is used in most surveys of the countryside in the Roman Empire. Furthermore, the Segermes projects was only a more recent part of an old and almost continuously tradition of surveys in Tunisia extending back to *Atlas archéologique de la Tunisie*. In more recent decades, the Tunisian government has launched a project to record all historical monuments and archaeological sites in the multi-volume *Carte Nationale des Monuments Historiques et Sites Archéologiques*. This is supplemented by three other important extensive field surveys that were carried out by J. Peyras in the north-eastern Tell or High Steppe, S. Aounallah on the peninsula of Cap Bon, while a French-Tunisian team has recorded the sites along the Tunisian coast from the Libyan frontier to Tabarka.[17]

During the same period, Tunisia has witnessed what has been called "a boom in field survey archaeology" with five large-scale projects of intensive fieldwalking, of which the Segermes project was the second.[18] The other four surveys using modern techniques and teamwork are the Kasserine survey, the survey in the area around Dougga, the research on the island of Jerba and, on a smaller scale, the rural and urban survey of Leptiminus.[19] The first of these five projects is the so-called Kasserine survey, directed by R. Bruce Hitchner in the vicinity of the Roman towns Cillium, modern Kasserine, and Thelepte which began in 1982. Rural settlements were recorded in six sectors and more than 200 sites have been identified in this region, in which the agricultural production seems to have been based on olive oil. The typology proposed by Hitchner includes the so-called "agrovilles", villas of monumental nature, *agglomerations rurales* and small farms with one or two presses with most activity between the 3rd and late 5th/early 6th centuries.[20]

The Kasserine survey is still only published in preliminary reports, while the other four projects have been almost fully published. The Leptiminus survey, directed by D. Stone and D. Mattingly, included both an intensive survey of the city before excavations began and a survey of the suburbs of Leptiminus, but not the rural countryside that was the principal object for the investigations of the other projects. It was, however, possible to identify a rural zone in the surveyed area around Leptiminus, in which 14 sites were recorded, including six farms, two possible villas and one village.[21]

The Italian-Tunisian project around Thugga and Téboursouk, directed by M. de Vos Raaijmakers, provided much new information of the settlement pattern in the territory of these important Numidian-Roman towns. At Lella Drebblia, it located the

15 D.L. Stone, 'Writing Local History in Roman Africa: The Segermes Survey and Cap Bon', *Journal of Roman Archaeology* 16 2003, 585-90 (together with Aounallah 2001). Quotation from p. 588. See also J. Debergh, *Latomus* 61 2002, 1032-3.

16 J.P. Moore, *American Journal of Archaeology* 106 2002, 313-5. Both quotations on p. 315.

17 Peyras 1991; Aounallah 2001; Slim et al. 2004.

18 Stone et al. 2011, 11; Stone 2004, 132.

19 See Mattingly & Hitchner 1995, 189-96; Stone 2004; Leone & Mattingly 2004, 136-42; Fentress & Holod 2009, 18-19; Leone 2019, 279-81, and Stone 2022, 13-4, for overviews of surveys in North Africa, including the UNESCO Libyan Valleys Survey and Ph. Leveau's pioneering survey around Cherchel in Algeria. On the Vandal period: Merrills 2004, 8-16; for the Segermes survey especially 12-3.

20 Hitchner 1988; 1989; 1990; 1994. R. Bruce Hitchner is now preparing the final publication.

21 Stone et al. 2011, 191-9.

sixth copy of the so-called 'great inscriptions', which shed light on the organization of the production and the administration of the imperial estates in the Bagradas Valley in the 2nd and 3rd centuries AD. Furthermore, after the intensive field survey was finished, important excavations began on the imperial estate at Aïn-Wassel, where another of these inscriptions was found more than a hundred years ago.[22]

These four projects are all restricted to the prehistoric, Punic, and especially Roman periods, while the American-Tunisian project on the island of Jerba has no chronological limitations as indicated by the title of the first volume of the publication: *An Island Through Time*.[23] Despite local variations, the direction of the development in the countryside seems clear. All the intensive field surveys, except that at Leptiminus, show a rural landscape with a distinct growth in settlement density and population between c. AD 350 and 550, and a drastic decline in the following decades. This has, of course, been noticed by scholars studying North Africa in Late Antiquity, but also in more recent syntheses of Roman North Africa by J.-M. Lassère and Cl. Briand-Ponsart together with Ch. Hugoniot.[24]

In more specialized studies, when the rural landscape in Roman North Africa is discussed, Segermes is now almost always mentioned together with the surveys of Kasserine and Dougga, on the island of Jerba, and sometimes also in Leptiminus.[25] In her ground-breaking monograph *Peasant and Empire in Christian North Africa*, L. Dossey argued that a "late antique consumer revolution became possible because the political and social constraints on peasant consumption had begun to break down."[26] The evidence encompasses a wide range of material and integrates the epigraphic and literary sources with archaeological evidence, which relies to a great extant on the results from the Segermes survey with many references not only to Dietz's summary but also to Hansen's and others chapters in the final publications.

It has often been noted that the preservation of rural sites in Roman North Africa "is unparalleled for its quality and extent in the western Mediterranean."[27] It is therefore a paradox that the knowledge of rural architecture in many areas is rudimentary. The catalogue with plans of the 193 sites recorded by the architectural team in the Segermes valley is a goldmine of information, which can be used by other projects and new excavations of farms in Tunisia.[28] The first comprehensive analysis of villas in the provinces of Roman North Africa only appeared in 2009, and it includes a catalogue with 70 numbers of villas, seven of which are located in the Segermes valley.[29]

In recent decades, the Vandals in North Africa and the transition from Byzantine North Africa to Arab North Africa have been focused upon in international scholarship. The latter was the topic of two conferences in Washington and Rome with subsequent publications. The results of the Segermes project and the other field surveys play a significant role in Ph. von Rummel's contribution to the Dumbarton-Oaks conference, entitled 'The Transformation of Ancient Land- and Cityscapes in Early Medieval North Africa,' as the materials "are still limited when compared to the survey data available for European countries."[30] It is, however, these results that enables von Rummel to provide an overview of the development of rural settlement from the 4th century onwards. The countryside does not play the same important role in the short introduction by J.P. Conant to the Rome-conference the following year, although he briefly mentions Jerba and Segermes in the text and the note also includes references to the surveys around Kasserine and Dougga.[31]

That Conant is familiar with the results of the Segermes project is, however, evident from his monograph on

22 De Vos Raaijmakers & Attoui 2013; De Vos Raaijmakers & Maurina 2019. *CIL* VIII 26416 = EDCS-25601523 (Aïn Wassel); AE 2001, 2083 = AE 2018, 1933 = EDCS-24800764 (Lella Drebblia) published by Gonzáles Bordas & France 2017 with commentary and translation. Kehoe 1988 analyses and translates the first five inscriptions with references to older literature, but see now Chérif & Gonzáles Bordas 2020, regarding the find at Henchir Hnich in the same region of the first copy of the *lex Hadriana de agris rudibus*.

23 Drine et al. 2009.

24 Briand-Ponsart & Hugoniot 2005, 181-2; Lassère 2015, 454.

25 Fentress et al. 2004, 151-2, with figs. 11.5 and 11.6; Leone & Mattingly 2004, 138-46; Leone 2007, 132-3; Scheding 2019, 38 n. 14, and Leone 2019, 279-282, to quote but a few examples.

26 Dossey 2010, 96.

27 Mattingly & Hitchner 1995, 189.

28 Hansen 1995. See e.g., De Vos Raaijmakers & Maurina 2019, 57-8.

29 Rind 2009, 107-10.

30 Rummel 2016, 107, with reference to Leone & Mattingly 2004, 136-137; Pentz 2004, which grew out of the Segermes project, was one of the first contributions on this period.

31 Conant 2019, 14 n. 30.

Roman identity in the North African provinces during the Vandal kingdom, where he refers to them three times in discussions and analysis of the economy and rural settlement in the 6th and 7th centuries.[32] The Kasserine survey and the Segermes project also appear in the chapter on the economy of the Vandal Africa in *The Vandals* by A.H. Merrills and R. Miles. More thorough is the discussion of the Segermes Valley in R. Bockmann's pioneering study of Vandal Carthage and Central North Africa, in which he discusses town and country in the north-eastern Africa Proconsularis in chapter four. This includes the Segermes valley, and Bockmann concludes that "although a survey cannot provide detailed data on the development of specific sites, the Segermes valley project illustrates the economical basis used by the landowning elite of Proconsularis and neighbouring regions."[33]

Most recently the Segermes project appears in two companions. In *A Companion to Ancient Agriculture*, D. Kehoe, who scholarship had focused primarily on Roman law and economy, summarizes the results of the survey, which "provides an additional valuable perspective on the process that led to the formation of large estates" in Roman North Africa[34] In A *Companion to North Africa in Antiquity*, the Segermes survey appears in the three articles on 'Archaeology', 'Architecture and Art' and 'Rural Settlement, Land Use, and Economy', which illustrates its importance to our understanding of the countryside in Roman North Africa.[35]

Even though the third and final volume of the Segermes project was published around 25 years ago, the results of the fieldwork continue to play an increasingly important role in research into the rural landscapes in Roman North Africa in Late Antiquity. The contributions to the project by historians are not usually focused upon in recent scholarship, but the archaeological elements. In many cases, however, it is Dietz's conclusions in the first volume that are summarized and discussed in new analyses of the development in the rural settlement in the Vandal and Byzantine periods. Paradoxically, a scholar who trained as a prehistoric archaeologist has become one of the most cited scholars of late antique North Africa.

32 Conant 2012, 51, 99, and 334.
33 Bockmann 2013, 176.
34 Kehoe 2021, 505.
35 Stone 2022; Mugnai 2022, and de Vos Raaijmakers 2022.

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Light's 'Doubt': The Truth of Photography

by Peter Brandes

The objective truth of a photograph is an illusion. The very fact that a photograph is two-dimensional, even though the motif is, for example, a three-dimensional sculpture or a temple, tells us that what we see appear on the photographic paper or on a screen, as well as reproduced in a book, is a reflection of reality.

For more than almost 200 years now, photography has occupied an important place in our relationship with the depiction of reality, as we think it is and ought to look, when a lens gathers rays of light in order to let them pass into a dark space, a camera. The rays leave traces on a light-sensitive material, which was once a glass plate, later celluloid and today electronic information. With AI as the basis of possible image disinformation, our understanding of a photograph's truthfulness has been perverted to such an extent that an objective truth can no longer exist at all. Our reality via a photograph is now in the hands of sorcerers, political manipulators or jokers who wish to disinform us.

I have divided my artistic practice into many forms of expression; this seemed natural to me, driven by curiosity and an idea that life is so complex and multi-faceted, that one observation or one form of expression as an initial attempt to depict reality is not enough. A range, or let me call it a trawl net, a folder in which to collect statements. I work with sculpture, painting, graphic art, stained glass, ceramics and photography. I have been preoccupied with this latter medium since I was 12 years old. I used my mother's kitchen as my first darkroom. It still had the blackout curtains from the Second World War. Photography's magical form of expression, which is a chance to grasp reality, caused me from the beginning to fall in love with this medium, which once developed as film appeared as black points that then, after copying and development, appeared white on the photographic paper. The Danish word for development, literally to 'call forth', is a beautiful one – to call the world forth! My work with light and darkness, liquids and paper, was so deeply rooted in my thoughts around school-leaving age, that I was uncertain whether my calling was to become a photographer or a visual artist. A dominant element as a photographer was that I had – on the basis of an almost paranoid way of thinking about taking pictures of people in particular – the idea that I was photographing dying people. It is true that we age and our cells for the most part decompose towards the end. Photographing a person became for me, in that sense, an almost necrophiliac act, which obstructed the continuation of my work as a photographer.

But after a break of two years from film and developing, an intense desire to continue taking pictures arose, and I had the idea to photograph ancient sculptures and buildings, such as theatres and temples. These historical manifestations were dead, not living persons in decay. With my own invented and utilised technique of using long exposure times, up to a minute without a tripod, I captured in the negatives shaken exposures with an aura of light around the object, so that the buildings and sculptures magically appeared to come to life.

In France, my second homeland, I have lived in a historical house in Paris for more than 45 years. Since 1978, my wife and I have owned Asger Jorn's last home and studio, and I am probably more attached to French culture and its museums than to any other country with a rich cultural heritage in Europe. An exception to this would have to be Greece, which I travelled to for a number of years, every spring for a month-long sojourn on the island of Naxos, from where we make trips to several parts of Greece.

Fig. 1: *Fragments of sculpture, the Archaeological Museum of Olympia.*

Fig. 2: *Sphinx, the Archaeological Museum of Kerameikos, Athens*

In Paris, I made the acquaintance of Christian Zervos (1889-1970), a legendary figure of Greek origin whose relationship with French culture could be traced all the way back to the end of the 1920s. He was the founder and editor of a revolutionary journal called Cahiers d'Art, and of a great number of publications by the same publisher about Cycladic art, Sardinian prehistoric art and early Mesopotamian art, to mention just a few of the important and magnificent works that Zervos published. He became Picasso's publisher through an early registration of his oeuvre, which eventually consisted of 33 volumes.

Zervos' works about prehistoric art stood out from everything that had been published about ancient art. What was the secret of these books? The works about prehistoric art became popular and were widely disseminated amongst the leading artists of the time. These included Braque, Brancusi, Giacometti, Mirò, Julio Gonzalez, and especially Picasso. The secret was Zervos' choice of photographers, who were sent to photograph the prehistoric works in museums, in situ or in private collections. These photographers were told to photograph without regard for angles, lighting, details, sharpness, indeed all the received ideas we have about realistic photographs. The general rules were normally that a sculpture should be photographed frontally, from the side and from the back. Like a Stella Nova portrait or a mugshot for the police archives. Two of his chosen, well-known photographers were Man Ray and Brassaï. Suddenly, in his sought-after publications, sculptures and buildings were experienced as *aesthetic* records rather than *historical* records, as relative as these images will always seem. The Louvre's archaeologists of course sniggered at these records. 'No good,' as the princess said to her suitors in Hans Christian Andersen's fairy tale about Clumsy Hans. But the mud in Clumsy Hans' trouser pocket contributed to changing the art history of the interwar period. And the aforementioned artists were inspired to become soldiers of the avant-garde on the world stage, especially with the help of Zervos' publications.

In more recent times, Asger Jorn's legendary photographer Gerard Francesci, who worked for André Malraux and on his groundbreaking publications about ancient art, published by Skira and Gallimard, became the photographer who took all the photographs for Jorn's work about Scandinavian folk

Fig. 3: *Artemis, the Sanctuary of Apollo at Klaros, Asia Minor.*

Fig. 4: *Kore, the Archaeological Museum, İzmir, Asia Minor.*

art. He was an excellent representative of the school I would call artwork rather than documentation.

So it was a cultivated Greek, Zervos, who initiated the wave of photographs that reinterpreted prehistory, which in parallel with the avant-garde in world art were a crucial source of inspiration. Zervos' lifework and his own art collection of both contemporary and historical works can today be seen in the historic town of Vézelay in France, where there is a museum dedicated to him.

I will now sum up my reflections. I have often entered into discussions with archaeologists about the value of a photograph and which form the documentation of a prehistoric object should emphasise: the artwork or the prehistoric work. I regard it as a great contemporary schism that our treasures and riches, found both outside of and during archaeological digs, are not ranked according to artistic qualities rather than their historical ones. An increasing and perhaps obvious tendency is that any object which has been found and dug up is only of value if its provenance is clearly documented and recorded. Don't misunderstand this as meaning that I am anti-historical and not a great reader of books about archaeological finds, analyses and recordings. But I haven't encountered the vital dialogue which ought to exist between artwork and historical object. Far too many undocumented works are hidden away in museum study collections where, like orphaned children, they are consigned to languish in shame. Lost traces of a past, which, despite everything, they will always be a part of. The connection between belief in the authenticity of a reproduced, photographed artwork, let us say a kouros, a motif which I have attempted to capture in *my* way innumerable times, is not accepted as the basis for interpretation by many archaeologists and art historians, because my image is not sharp. Can you divide the world up into sharp and not sharp, into recording contra experience, into centimetres using a tape measure that doesn't measure the pulse of the experiences? When I photograph, I use the changing light of the day and distances, and even the slightest centimetre of difference in relation to the object changes the expression. I step to the right or the left, bend down or stand up, use background light and reflections, and even if thorough attention is paid to all these parameters, the proudest photographer would never

Fig. 5: *Zeus and Ganymedes, the Archaeological Museum of Olympia.*

Fig. 6: *Kouros from Melos, the National Museum, Athens.*

be able to guarantee a photograph's accurate reproduction of what has been photographed. Some people will probably say to me, that in my photographs and the idea behind them, there is if nothing else a considerable distance to the photographed object. Isn't an 'as close as possible' reproduction more correct than an imaginative approximation? Ole Rømer speaks about the hesitation of light, its 'doubt', in Danish. I would doubt the photograph's oath of truth to reality. Even with one hand on the Bible, truth is lacking in the testimony of the photograph. My knowledge of Søren Dietz and our experiences together leads me to believe that this excellent man of science is, now and again, a doubting Thomas.

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Mediterranean Horizons

Archaeological Studies in Honour of **Søren Dietz**

The Mediterranean has always been a crossroads of cultures, ideas, and histories. From the Stone Age to the first millennium BC, this vibrant region shaped—and was shaped by—the movements of people, the exchange of goods, and the rise of complex societies. Mediterranean Horizons celebrates the career of Søren Dietz, a pioneering archaeologist and founder of The Danish Institute in Athens whose work has illuminated these connections across time and space.

This honorary volume brings together researchers and friends to explore themes close to Søren's heart: the Aegean's ancient past, the Bronze Age networks linking Scandinavia to the Mediterranean, and the rich tapestry of life in Greece and Tunisia. The book begins in the Stone Age, where climate shifts and the quest for rare materials drove early communities to innovate and adapt. It then turns to the Bronze Age, a time of bold trade routes, shared crafts, and cultural exchanges—from Baltic amber reaching Mycenaean Greece to Minoan treasures found in warrior graves.

Later sections focus on mainland Greece, where Søren's excavations revealed the daily lives of Iron Age villagers, the grandeur of ancient theaters, and the secrets of fortified cities. The journey ends in Tunisia, where his work in Carthage and the Africa Proconsularis project uncovered layers of history beneath the North African soil.

More than just a collection of research, this book is a tribute to curiosity and collaboration. It reflects Søren's belief that archaeology is not just about uncovering objects, but about understanding the people and societies who made and used them. With vivid stories and novel insights, Mediterranean Horizons invites readers to explore the past—and to see how its echoes still resonate today.

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