The Urban Mind
Cultural and Environmental Dynamics

Edited by
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5. Social and Environmental Dynamics in Bronze and Iron Age Greece

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ABSTRACT
The authors present an overview of cultural and social resilience during more than two thousand years of fluctuating environmental circumstances in the Greek Bronze and Iron Ages. Central for discussions are four case studies focusing on discontinuities during periods of heightened societal stress combined with suggested climatic or environmental instability.

Topics under discussion are how past environmental changes and cultural responses interact. Attempts to reconstruct human sustainability in the light of shifting environmental circumstances should aim to establish a firm sequence of events. Other important factors are discrepancies and inadequacies of environmental and archaeological datasets in the Aegean, and intra-regional variation where small-scale environmental changes have affected even neighbouring valley systems in different ways. Human decision-making and agency have been continually underestimated and under-explored, and the actual outcome of events after episodes or processes of environmental change lies in how they were perceived and dealt with by the people affected. All four case studies contain discussions on societal complexity, whether waxing or waning, and overexploitation with resulting degradation of lands is a factor for three of the four case studies. A significant change around 2200 and 1100 BCE is the disappearance on a supra-regional scale of common features in material culture, and the shift to regionalism and small-scale life, while a reverse development can be seen around 1600 BCE and 700 BCE.
Introduction

This chapter outlines perspectives on landscapes and people in the making, and the persistence of urban minds during the Greek Bronze and Iron Ages. An overview of cultural and social resilience during more than two thousand years of fluctuating environmental circumstances adds value to discussions of the discontinuities over time and the work of urban minds during periods of heightened societal and environmental stress. In order to discuss long-term developments in parallel with more short-term events in a limited space, four case studies from different intervals during 3000–600 BCE are singled out. Common to all is that they include periods of marked societal change combined with suggested climatic or environmental instability. The case studies cover two centuries each.

1. The Early Bronze Age: 2300–2100 BCE – the end of the time of economic and societal growth characterizing much of the period in the Aegean.
2. The Late Bronze Age: 1700–1500 BCE – the rise of the Mycenaean culture on the Greek mainland.
3. The Late Bronze Age: 1200–1000 BCE – the demise of the Mycenaean culture on the Greek mainland.
4. The Iron Age: 800–600 BCE – the rise of the city-states (poleis) and the era of colonisation in the Mediterranean.

Liveable landscapes

Most of the landscapes of Greece are topographically diverse even within short distances. Distinct regions are naturally formed and demarcated by mountain ridges and the sea. It follows that environmental prerequisites may vary distin-

1 The four authors possess specialist knowledge of their respective research responsibilities, including relevant academic research as well as archaeological field work and knowledge of the Greek landscapes of today.
ctly over quite short distances, creating micro-regions and micro-climates. Many regions and their environments are also naturally defined by streams transecting and compartmentalising valley floors. This diversity of the Greek landscape is important for understanding life during the Bronze and Iron Ages as well as the archaeological and historical archives through which we approach it. It is likely that a village in its topographical setting constituted a large extent of the lived-in world for most people and constituted the limits for day-to-day movements in the landscape (Plate 1). Elevations and water lines were natural and visually distinct geographical delimiters. As such they were meaningful components in the construction of local and regional identities and urban minds. Archaeological and historical records display a mix of shifting and overlapping identities as traditions developed on local, regional and supra-regional scales of their times. The presence of a regional and a supra-regional backdrop for life, however, makes clear that life on a local level was complemented by social interactions that could take place over great distances, through the movements of locals beyond their home regions, the welcoming of travellers, and probably a complex web of social networks for the movement of goods and ideas.

The natural and cultural compartmentalisation of the Greek landscape was thus an important source for a variation in the development of socio-environmental interactions over time. Natural prerequisites such as elevation, slope, soil, access to water and other environmental forcing factors in combination with topographical definition of regions, as well as variation in the strength of local and regional identities, resulted in different, although sometimes closely linked,
cultural-historical trajectories. The four case studies presented below were selected from the archaeological and historical records of the Greek mainland, with emphasis on the north-eastern Peloponnese and the approximate region of the modern districts of the Argolid and Corinthia (Fig. 1). Together with the neighbouring districts of Attica and Boeotia to the north, the north-eastern Peloponnese constitutes the best studied area during the Bronze and Iron Ages (c. 3000–600 BCE). It is also the area that has attracted most attention in the form of archaeological survey projects (non-invasive walk-throughs of landscapes registering ancient surface finds). Carried out over small or large regions, these surveys give overviews of human presence, most often from a wide diachronic perspective and with emphasis on site distribution and regional development.3 There is thus a large body of data available for studies of settlement patterns, economy and societal development within a limited geographical area-conditions not easily found elsewhere on the Greek mainland.

The size of topographically distinct regions in the area varies. In all, the prefectures of Argolid and Corinthia cover an area of some 4,500 km² (Argolid 2,154 km² and Corinthia 2,290 km² which combined constitute 3.4 % of Greece) with a large percentage being mountainous regions. The largest area of flat land is the coastal Argive Plain with an extent of approximately 250 km². The plain, which draws water from an extensive area of small inland valley systems and mountainous regions covering some 1,200 km², was a cultural and social focal point throughout the Bronze and Iron Ages. Inland valleys tend to be considerably smaller, ranging from 25 to 80 km² (e.g. the Berbati, Nemea, Xerokampos and Phlious valleys).4

Prehistoric life

Small regions tended to have one central settlement, often established in the Early Bronze Age and settled throughout much of the Bronze Age with fluctuating levels of activity. Not surprisingly, however, on the Argive Plain there was room for more than one of these central locations, and at least two major settlements seem to have been in place at most times throughout prehistory. In all regions hierarchies of settlements developed over time, with a mix of major settlement(s), small villages and many isolated farmsteads. These were visually, socially and economically interconnected, although the intensity and exact forms of exchange varied over time and often elude us today. It nevertheless stands clear that the workings of adjacent areas were always important and that there were numerous interactions between regions. Geographically, these neighbouring areas were never far away, with natural passes connecting the often mountainously enclosed regions. Routes of movement were established as soon as there were settlements to be connected; only the technical level and the number and density of monuments changed over time. The distances within our focus area were never long. In fact the major settlements were often located in direct connection to the natural passes and situated at rather equal distances from each other. Around ten kilometres or just below seems to have been the preferred distance, corresponding to what would have been a return day journey on foot through most landscapes.

4 Phlious data: Casselmann et al. 2004, 18.
The picture offered by the combined information of available survey results (Fig. 2), is one of considerable fluctuations in terms of site number and distribution in the landscape over time. This picture is supported by the results of excavations and our knowledge of the material culture in general. Thus, the middle of the Early Bronze Age on the Greek mainland saw the emergence of a flourishing society, evidenced by a booming economy, monumental buildings and fortifications, economic administration, craft specialization, and communities acting as hubs in extensive trade networks. This development was reversed during the last centuries of the 3rd millennium BCE and replaced by a society with fewer and smaller settlements, few interregional contacts and economic recession. Four hundred years later, during the beginning of the Late Bronze Age, the area again saw a period of economic growth which climaxed in the Mycenaean civilization, a complex society with marked hierarchical order centred around palaces and communities heavily reliant on the exchange of goods. At the end of the second millennium came yet another ‘collapse’, and the society of mainland Greece went into a period often referred to as ‘the Dark Ages’, during which the hierarchical palatial state was replaced with the more diversely governed city-state (polis). The polis offered an arena where different political and economic interests as well as a new articulation of social and religious values were played out. These dynamic qualities overcame environmental stress and population growth, resulting in the spread of the polis model in at least two waves of colonisation and with the founding of new cities across the Mediterranean. In sum, the four periods can be characterized as two periods of societal downturn and contraction, and two periods of regeneration and societal expansion. This is an assumption largely grounded in the shifting distribution in time and space of settlements and material culture indicative of economy and degree of societal complexity.
Many theories have been launched to explain these apparent fluctuations in societal formation and organisation. While some scholars have favoured natural disasters, migrations, soil degradation or erosion as the roots for political and economic breakdown, others have pointed out that most of them may equally well be the result rather than the cause of the turmoil. Periods of decreased precipitation, affecting large parts of the Eastern Mediterranean in the 22nd and 13th century BCE, have also been suggested. All these causal explanations can be found among the top possible contributing factors to general societal 'collapse' listed by Jared Diamond in his latest and much debated study, which only goes to show that interpretations presented in relation to the Greek Bronze Age are in no way unique. In answer to Diamond and others suggesting environmental degradation as the major factor to societal collapse, Joseph Tainter has pointed out that the views of modern scholars and ancient people may deviate significantly. What we call 'degradation' may only represent a change of opportunities for others. Human perception and decision making (cognition) are thus at the heart of resilience and sustainability even when strong forcing factors (climatic and environmental) are present.

The Urban Mind project seeks to integrate datasets from historical ecology with cognitive interpretative models. As Todd Whitelaw noted in 2000, few studies so far have succeeded in combining the two and are therefore left on a descriptive rather than an interpretative level. His call for a more explicit and fine-tuned integration of environmental and archaeological investigations into Aegean prehistory still remains largely unanswered. The present chapter is intended as a step in this direction. Concepts such as ‘urbanity’ and ‘social complexity’ stress even further the need to acknowledge cognition more actively. The ‘urban mind’ will be a concept that incorporates the environment and at the same time, in a sense, excludes it by its transformation into the cultural, restraining possible negative effects that climate and environment fluctuations may have, or may have the potential to have, on human life. The four case studies singled out are presented in chronological order below, highlighting different aspects of socio-environmental interactions and the varying strategies chosen in the face of environmental and climatic change.

2300–2100 BCE. The decline of the Early Bronze Age societies

The period 2300–2100 BCE on the Greek mainland includes what has been interpreted as the zenith of a thousand-year-long cultural expansion phase as well as the beginning of a period of socio-economic recession lasting more than five hundred years. The transition is distinct in terms of material culture. It meant the end of monumental building complexes, extensive use of seals for admi-
nistrative and economic purposes, and a discontinuation of a koiné in material culture that had existed for centuries in large parts of the northern Peloponnese and central Greece. On an architectural level the disappearance of monumental houses known as corridor houses is apparent (Fig. 3). These complexes are usually considered to be important features in the definition of the Early Bronze Age mainland, as well as pinnacles of architectural achievements of the latter half of the period.9 The disappearance of this economically and administratively important type of building in many ways defines the cultural transformation around 2200 BCE. There are several independent indications of a society shifting from some sort of common organisation and administration, and from supra-regional concordances in material culture including a rather complex level of craft specialisation and advanced technical skills within a wide sphere of interaction, to more or less the opposite – seemingly all at the turn of a century. In terms of settlement

9 On corridor buildings, see e.g. Shaw 1987; Nilsson 2004; Weiberg 2007, 37–57.
distribution, a number of communities suffered destruction by fire around this
time and their number and size decreased and changed drastically.\textsuperscript{10}

The history of the north-eastern Peloponnese can be traced through four
stages of socio-environmental changes during the 3rd millennium BCE, inter-
changing periods of dispersal and nucleation (Fig. 4). The first stage is the peo-
pling of the landscape beginning in the final stages of the preceding Neolithic
period and culminating during the first half of the 3rd millennium. This stage is
followed at around the middle of the millennium by a withdrawal from many
farmsteads and small villages dotting the landscape, with the population instead
converging in one centre within each topographically distinct region. It is espe-
cially striking under these circumstances that many of the locations chosen were
also topographically distinct, with residential areas located on or around hillocks
or mounds elevated above the valley floors, making them visual eye catchers in
their local surroundings (Plate 1). The second stage is one of societal delineation
on a regional level, marked above all by architectural activities and elaboration
at the central locations. In fact, what is most pronouncedly expressed in the
Early Bronze Age archaeological record is that the physical manifestations of the
villages took on new proportions around 2500 BCE. At about this time the last-
ing mark of human presence in the landscape gradually became more and more
pronounced. The locations that became centres in this nucleation would remain
so in their respective regions throughout the Bronze Age, with few and short in-
terruptions in occupation. One period of interrupted habitation, however, is the
apparent abandonment of some of these locations during the third stage, in favour
of a few intra-regional and coastal centres where the development from the pre-
ceding stage is continued and refined until around 2200 BCE. The southern focus
for this development was the Argive Plain, and more specifically its two major

\textsuperscript{10} On the physical manifestations of the transition and the theories related to it, see Forsén 1992;
Maran 1998.
centres – Lerna and Tiryns (Plate 2). One can thereafter argue for a fourth stage, encompassing roughly the last two centuries of the third millennium BCE, when there are signs of reoccupation in inland valleys, indicating that the hold on the coastal regions had loosened.

The critical period in this scenario is the local nucleation phase in the second stage around 2500 BCE. This development set the scene for the following three hundred years, leading up to the events around 2200 BCE. It was around 2500 BCE that the patterns of the past – patterns of dispersed habitation that developed during the last phases of the Neolithic period – were first disrupted. This reflects a clear change in the lifestyle of the Argive inhabitants, suggesting changes not only in how and where they lived, but also in how they made their living and in the framework of values governing social life. Nucleation of settlements without a decrease in population is evidenced from this period and should be seen as the physical manifestation of an ongoing urbanisation process. A likely trigger is a growing receptiveness for the distinctions of different topographical and social regions and an identification process involving both the landscape itself and other people that inhabit it, evolving through the preceding phase of settlement dispersal into the greater landscape. A second likely trigger is the increasingly internationalised spirit of the mid-third millennium BCE. Many supra-regional correspondences and the visibility of new features in material culture suggest widely different influences and growing cultural values connected to long-distance travel and the products of long-distance trade networks over land and sea. A process of urbanisation and the forging of identities on both the regional and the local level is clearly, however, not a smooth continuation. There are a number of dents in the time line indicating rather fundamental changes in lifestyle for people in the Argolid. There would have been options, and also probably a majority choice in relation to these options at various points along the time line, especially around 3000, 2500, 2300 and 2200 BCE. The fact that the number of years between these turning points diminishes over time is probably a sign that the development accelerated from the mid-third millennium and that the first incentive to break a pattern of dispersed settlements was of central importance. One consequence was complex environmental conditions in certain parts of the area in question. Extensive erosion episodes are evidenced from the coastal region with an onset around the same time as the first nucleation within each region. It is likely that erosion was accelerated by the convergence of a larger number of people to central coastal locations, leading to increased pressure on the slopes of the surrounding mountains, which at this point in time were used for cultivation and grazing on a more intensive scale. The erosion episode can therefore be characterised as a relatively short-term effect of a change in settlement pattern and administration in a society at its socio-economic peak, including an at least partially centralised agricultural system, with increased woodland clearance and an overall intensified exploitation of the lands.

11 To the north along the coastline of the Corinthian Gulf, the settlement history is much less well known, but it seems likely that there were local centres also in this area that paralleled some of the activity at Lerna and Tiryns.
12 E.g. Wright et al. 1990, 628 (the settlement of Tsoungiza).
13 Early Bronze Age erosional episodes are recorded on the Argive Plain (Zangger 1993), Asine (Zangger 1994b), and Southern Argolid Survey locations (van Andel, Runnels & Pope 1986).
14 Contra earlier research which sees erosion as the cumulative effect of a long-term and unchanged system of widespread farming (e.g. van Andel, Runnels and Pope 1986, 113) it is argued that erosion was an unlikely cause of the depopulation of the landscape but a result thereof. Heightened
No climate sequences are available from central or southern Greece, but on the basis of the present knowledge, climatic factors seem of little or no direct importance for these local events on the Argive Plain. On a large regional level (i.e. the Eastern Mediterranean basin), as outlined by Martin Finné and Karin Holmgren\textsuperscript{15}, many records indicate that a generally drier climate, compared to the early Holocene, had been established around 3000 BCE. They further emphasise that there are no strong indications for climate events centred on 2200 BCE. Only in the easternmost parts are there some records indicating short lived phases of substantially increased aridity around this point in time, which have also been used to explain socio-cultural upheavals in those regions.\textsuperscript{16} Much more relevant for the present discussion, however, is the sub-regional inter-variability resulting in a climatic zoning for the approximate period c. 2450–2050 BCE, e.g. suggesting wetter conditions over northern Greece.\textsuperscript{17} At this time, therefore, it seems clear that Near Eastern climate records cannot be used to directly explain any contemporaneous historical events in the north-eastern Peloponnesse.\textsuperscript{18} The three records closest to central mainland Greece and the focus area indicate either a relatively cooler (southern Adriatic Sea) or a wetter (northern Greece and northern Aegean Sea) climate during the critical time period around 2200 BCE. This rather diverse and scantly evidence may clearly have been factors in the environmental as well as cultural developments in the second half of the Early Bronze Age on the Greek mainland, but any conclusion to this effect would need much further consideration and localised data of high resolution. Long-term as well as short-term climatic changes are likely to affect ecosystems, causing at times the crossing of ecological thresholds and resulting in changes in vegetation, which may in turn have led to erosion and other possibly problematic environmental conditions. If, for example, the Argive Plain saw wetter conditions after 2500 BCE as indicated by the northern Greek records, this may very well have worked to accelerate the erosion and sedimentation on the plain. With our present knowledge, however, the probability of human activity as the main forcing factor in relation to deforestation and erosion seems to weigh heavier.

The social and cultural reorganisations of the Early Helladic society around 2200 BCE bear nevertheless much resemblance to developments further east. One reason for this is likely to be found in the changes during the 3rd millennium in key agents within the pan-Aegean interaction zone, which for the EBA can be seen as a three-tiered development.\textsuperscript{19} The centuries leading up to 2200 BCE, corresponding to the zenith of cultural achievements on the mainland, are fore-

deforestation is evidenced from 2500 BCE from a pollen core from the former Lake Lerna on the Argive Plain (Jahns 1993, 197). Phases of deforestation are otherwise more common in the 5th and 4th millennia BCE, following the first expansion into the landscape in various areas, suggesting that the Argive pollen core reflects special and localized conditions. Cf. Maran 1998, esp. 450–457. Erosion may in the centralised case be caused by careless clearing or shortened fallow in times of prosperity (van Andel, Runnels & Pope 1986, 113–117, 125f.). As accelerated sedimentation is only recorded from coastal areas, the impact of the maximum transgression seems to gain further significance, and a likely secondary trigger is therefore the non-human effects of the rise of the eustatic sea-level, cited by Zangger (1993, 83) as one possible factor in the mid-Holocene erosion events, alongside the climatic optimum of the post-glacial, and the changes in land use techniques. 

\textsuperscript{15} Finné & Holmgren, this volume.

\textsuperscript{16} For overviews, see: deMenocal et al. 2001; Staubwasser & Weiss 2006.

\textsuperscript{17} The full results of the collection of climate series data, and attempted reanalysis based on fluctuations in proxy record in relations to their average value during the last six thousand years, from the eastern Mediterranean is presented by Finné & Holmgren, this volume.

\textsuperscript{18} Contra Maran 1998, 452; Fuchs 2007.

most characterised by an Anatolian element. It materialised in the wake of the increased demand for tin and gold, metals that the core area of the Aegean contact zone during the first half of the 3rd millennium, the Cycladic islands, could not supply. New eastern influences also meant the spread of new techniques such as the fast wheel for pottery manufacture, an increasing popularity of Anatolian drinking customs, and probably also an influence on aspects of architecture and administration. This corresponds in time with a development towards an increasingly complex society on the Greek mainland, something that is especially evident in the higher level of material indicators and the emergence of local and even regional centres approaching 2200 BCE. Some of the driving factors for this development can surely be found within a problem-solving spiral leading to a more complex and increasingly unstable and expensive social structure and to destabilised socio-political structures. Further, this development may well have meant that, along with the economic system, the basis for the Argive identity became increasingly frail and possibly vulnerable to any disruptions of traditional patterns. There is much to suggest that, during the 3rd millennium, the high-order life in our focus area had become increasingly centred on a set of social and cultural values connected to a specific type of economy and material culture – where interregional contacts and their products played a symbolically important role – which could lead to problems in upholding this identity and social cohesion if the bases for these values failed. Therefore, a breakdown in the contact networks in the Near Eastern inlands may very well have had consequences far beyond the core area and contributed to upset the social balance even on the Greek mainland. Faced with the new circumstances created around 2200 BCE by a combination of many internal and external factors, the choices made by the Argives led to the abandonment of the then current level, or type, of complexity and ultimately to cultural and social reorganisation.

Many communities in the Aegean area followed similar socio-cultural trajectories as did the ones in the north-eastern Peloponnese. Some, however, did not, and studies of Aegean Early Bronze Age history that do not consider the roles of other similar and adjacent contact zones will therefore not result in a full picture. Thus, when the activities in most settlements on the Greek mainland and in the Cycladic islands faltered, other regions prospered and life continued without major breaks into and through the last centuries of the 3rd millennium. One of these regions was Crete, which sailed forth (literally, with the first sailing ships in the Aegean) as the major factor within the pan-Aegean interaction zone during the last centuries of the 3rd millennium. The demise of cultural complexity at so many locations in the Aegean and Minor Asia thus did not mean the collapse of these networks, but rather a restructuring and even intensification, with new agents moving into more active positions. These Aegean 'success' stories prove that different settlements, or rather the individuals within them, reacted in a variety of ways to the turbulence of the time. In the light of these diverging histories, it seems therefore all the more vital that the histories of each region are carefully contextualised, and that the time- and space-specific mixture of factors is sought in order to more fully understand the drivers of these histories. The full

21 Maran 1998, esp. 433f., fig. 71A.
22 Maran 1998, esp. 443–450; Broodbank 2000, 325.
narrative up to this point and beyond was clearly much more complex than the possibility of partly climatically triggered disturbances within traditional trading circuits, and the outcome ultimately formed by the experiences and mentality of the people involved.

1700–1500 BCE. The rise of the Mycenaean civilization

Around 1630 BCE the central Aegean area in the Mediterranean was struck by an unparalleled natural disaster. A volcano on Santorini in the Cycladic Islands erupted, with devastating effects on the immediate surroundings. The following pages summarise the impact of this eruption, particularly on human communities in the NE Peloponnese on the Greek mainland some 200 kilometres to the north and north-west. Results from a multitude of scientific disciplines, coupled with different interpretative models and opinions, serve as sobering reminders of just how complicated it is to identify, let alone interpret, ancient environmental forcing events and their possible impacts on human societies. This particular case study was chosen partly to illustrate how unevenly a natural disaster can strike different areas at an approximately equal distance from its centre, but also to highlight the difficulty of correlating the extent and effects of environmental variability and human responses.

The Eastern Mediterranean is a highly volatile area and contains several volcanoes. In 1866 there was a minor eruption on Santorini. The event resulted in a French scientific expedition to the island to document its geology. The exploration team discovered a significantly larger and pre-modern eruption which had buried a prehistoric town under tens of metres of pumice. The archaeological finds suggested that the town should be dated to the Late Bronze Age during which a civilization had apparently existed on the island. In excavations on Crete, some 100 km to the south, archaeologists uncovered several large building complexes in different places on the island during the first decades of the 20th century. The most well-known example is the so-called Palace of Minos at Knossos, excavated by Arthur Evans. He concluded that there had been a flourishing civilization on Crete and that the finds, especially the works of art, were remarkably similar to the ones known from Santorini.

Evans and others had noted that almost all of the building complexes on Crete, today conveniently but probably erroneously labelled ‘palaces’, had been violently destroyed during the early part of the Late Bronze Age. In a now famous article of 1939 Christos Doumas proposed that the eruption of the Santorini volcano had devastated the Minoan palaces on Crete. By doing so, Doumas initiated a debate that has continued unabated until today and continues to involve scholars from a range of scientific fields. The debate revolves around the extent and effects of the ‘Minoan’ volcanic eruption as well as its exact position in chronologi-

24 Fouqué 1866; 1867.
25 Fouqué 1869.
26 The relative chronological sequences and cultural spheres of Minoan Crete, the Cycladic Islands and the Helladic Mainland were established by the early 20th century, see Tsountas & Manatt 1897; Evans 1906; Wace & Blegen 1916–1918. The absolute chronology used here follows Manning 1995 and Manning et al. 2006.
cal and causal terms. The date of the event, both in relative and absolute terms, has received enormous scholarly attention. Not only did the eruption effectively bury towns and villages on Santorini under a thick blanket of pumice, but it also had a demonstrated impact in areas of neighbouring cultures on the Cycladic islands, Minoan Crete, the Helladic Greek mainland, Hittite Anatolia, Bronze Age Cyprus, the Levant and Pharaonic Egypt. A tsunami followed in the wake of the eruption. Volcanic ash landed in areas over 1000 km away and pumice drifted ashore along the coasts of Egypt and the Levant. This eruptive ‘horizon’ in the Eastern Mediterranean has foremost been studied in attempts to synchronize different regional chronologies.27

There has been a fierce debate about the extent to which, if at all, the eruption and tsunami disrupted the environment and influenced the cultural trajectories of the peoples of the Eastern Mediterranean.28 Many scholars claim that the impact of the eruption was considerable and resulted in widespread famine in areas outside the Aegean29 and in global climate change,30 but the claim remains unproven.31 Some scholars have even suggested that Plato’s fourth century BCE allegorical narrative of the sunken city of Atlantis is a distorted echo of the Late Bronze Age eruption.32 Empirical data blend with fiction, opinions and different current research agendas in ways which are not easily digested by non-specialists. The simple truth is that the environmental impact is imperfectly understood despite enormous scholarly attention, especially in regions not immediately affected by heavy ash fall or the ensuing tsunami. The general methodological fault is that the net has often been cast too wide in the assessment of possible repercussions of the eruption. Instead of focusing on individual settlements or small geographical areas at regular intervals and in different directions from the disaster-stricken epicentre at Santorini, the resilience of entire civilizations in the Eastern Mediterranean has been assessed. This approach induces too many unknown variables in the working of large socio-economic structures in the past. The north-east Peloponnese of the Greek mainland held dozens of contemporaneous villages. What follows is a brief assessment of the direct or indirect effect that the eruption had on these communities.

The Minoan eruption was a natural event of very great magnitude. On the Volcanic Explosivity Index (VEI) it is ranked as 6.9 or 7.0 on a scale of 8.33 Calculations of the volume of eruptive materials dislodged differ markedly from around 30 km$^3$ up to 100 km$^3$.34 The mapping and geochemical attribution of tephra fall (i.e. fine-grained volcanic ash shards) in deep sea cores,35 lake sediments,36 and archaeological excavations37 suggest that the wind was blowing in an easterly direction at the time, thus affecting mainly the Eastern Mediterranean. The erup-

28 Driessen & MacDonald, 2000; Driessen, 2002; Bottema & Sarpaki 2003.
29 White & Humphreys 1994.
32 Friedrich 2000, 147–160.
33 Simkin & Sjöberg 1994. E.g. products volume and eruption cloud height are used to establish the value.
34 Cf. Pyle 1990; McCoy & Dunn 2002; Sigurdsson et al. 2006.
35 Guichard et al. 1993; McCoy & Dunn 2002; Aksu et al. 2008.
37 E.g. Bichler et al. 2006; Bruins et al. 2008.
tion also created a tsunami. There are several published models which seek to identify its possible mechanisms of generation and ultimate wave heights/crests in surrounding areas. Much like calculations of VEI and tephra fall, however, they reach different numbers.\(^{38}\) The most recent study of computer-simulated scenarios shows that the tsunami propagation was almost exclusively confined to the south-eastern Aegean. There was an initial wave around Santorini of 15–35 metres amplitude and a crest length of about 15 kilometres. A separate study of the Minoan town of Palaikastro in north-east Crete suggests that waves of about nine metres in height hit the shoreline and that the town was completely inundated.\(^{39}\) The damage to the infrastructure of the town, however, is difficult to assess and the number of human casualties is unknown. Interestingly, the Greek mainland seems to have been more or less unaffected by the tsunami. Similarly, while most of the ash fell in areas to the east, some wind-born tephra also landed over the Peloponnese but not to an extent that would have affected the agriculture or animal husbandry in a significant way.\(^{40}\) It is likely that the two to three years following the eruption witnessed slightly lower temperatures than normal in this semi-arid landscape due to the blocking of incoming radiation from the sun. In high altitudes this probably resulted in some loss of crops, especially olives and grapes, while in more low-lying areas the same conditions spurred the growth of some plants.\(^{41}\)

It is apparent that many communities on Minoan Crete, especially on its eastern side, entered a long period of disrupted exchange networks in the generations

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\(^{39}\) Bruins \textit{et al.} 2008.

\(^{40}\) Tephra fragments from the Santorini eruption are known e.g. in an off-shore core from the Kiladha bay (Bottema 1992, 117–38) and at the settlement of Kolonna on Aegina in the Saronic Gulf (Bichler \textit{et al.} 2006).

\(^{41}\) Cf. Pearson \textit{et al.} 2009 for the rapid tree growth at Porsuk in Turkey in the years following the Minoan volcanic eruption.
following the eruption. The harbours and the ships anchored along the north-east coast of Crete and in the south central Cycladic islands were either destroyed or heavily damaged in the hours after the eruption and tsunami. It is therefore highly likely that the immediate and apparently lasting effect of the Santorini eruption was a redirection of a southerly Minoan-Santorini trade route to a north Cycladic-north-east Peloponnesian. Social and economic turbulence culminated on Crete in the destruction and subsequent abandonment of several economic and political centres around 1500 BCE. At the same time, it is likewise apparent that the economic and social decline on Crete coincides with the appearance on the Greek mainland in 1650–1400 BCE of a ranked and highly complex society whose economy was based on an effective agriculture and husbandry and on intensive exchange with adjacent areas. The people of these communities are collectively known today as Mycenaean after Heinrich Schliemann’s excavations of one of their political centres in the north-east Peloponnese (Plate 3).

The Mycenaean had a background as agriculturalists and pastoralists living in villages without any apparent internal social stratification. In the generations before the Santorini eruption they had been exposed to the customs of people living on the islands to the south. This encounter resulted in a rapid change in the social structure with an ideological articulation of rank and status among certain competing families or lineages. Initially this process was visibly manifested in the mortuary practices, with some graves lavishly furnished with valuables, weapons and imported goods. During the funerals, the rights and privileges of individuals in the emerging elites were renegotiated. Over the course of time, rank and political power would be cemented and hereditary, and also would be expressed in public architecture — in the palaces of Mycenae, Tiryns and Pylos — around 1400 BCE. These economic, political and religious centres were the pinnacles in an ideological super-structure which stressed inequalities in an otherwise largely rural and dispersed agricultural landscape.

From a paleoenvironmental and archaeological perspective the Santorini eruption had no discernible negative effects on the Mycenaean in the Peloponnese. On the contrary, both the archaeological remains and, some three hundred years later, the historical documents (Linear B) suggest ever increasing social complexity, political centralisation and control, as well as the continued expan-

42 Driessen & MacDonald 2000.
sion of agriculture into previous marginal lands such as isolated valley systems and upland regions. Emerging elites utilised the increasingly travelled northern exchange networks to convert part of this agricultural surplus into desired goods and valuables (Fig. 5).

In retrospect it appears that new ideas surrounding power and legitimacy in combination with a flourishing economy paved the way for what we recognise as the Mycenaean culture in the NE Peloponnese. Unevenly distributed stress following the Santorini eruption around 1630 BCE contributed to a shift in the balance of regional power in the Aegean. The demise of Minoan hegemony was accelerated by the eruption. Not only did the Mycnaeans escape the worst effects of the disaster; they also took advantage of the vacuum in the exchange of goods previously dominated or even monopolized by the sea-going Minoans and islanders. Over time the human and physical landscape of the Mycnaeans was imbued with political and economic connotations. Their palatial centres should not be seen as urban entities, but as physical manifestations of political and selected economic control in the hands of a few lineages. This system was perfected (or driven to excess?) around 1200 BCE when fundamental shifts in the cognitive and physical landscape took shape again.

Fig. 6. Comparative view of excavated (black) and estimated (gray) areas of settlements at (a) Late Helladic IIIB Mycenae, (b) Tiryns, (c) Asine and (d) Early Helladic II Lerna.

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1200–1000 BCE. The demise of the Mycenaean civilization

The 13th century BCE has long been regarded as the zenith of the Mycenaean culture. The century, roughly corresponding to what prehistorians refer to as the Late Helladic IIIB period, ends with the destruction of several political centres followed by pronounced regression. In the Mycenaean heartland, the Argolid, the ensuing period is typically interpreted as having smaller settlements, fewer contacts with the surrounding regions, and a lower level of economic activity. The archaeological material lacks several traits that we have come to associate with the complex administrative system previously seen in the region. Clay tablets written in the Linear B script, large-scale storage facilities and other expressions of centralised political power are no longer visible.

The lack of these expressions of a highly organised society during the end of the Late Bronze Age has been interpreted as reflections of a radical change in the social and economic structure around 1200 BCE. Recent research, however, suggests that changes need not have been as radical as previously thought. Archaeological remains at palatial centres such as Mycenae, Midea and Tiryns and the village at Asine show that these places did not immediately revert to irrelevance; rather, there is a not insignificant measure of continuity (Fig. 6). This includes the continued existence of networks of exchange extending outside the NE Peloponnese, a finding that is supported, for example, by chemical analysis of pottery from Argive sites.45

All told, radical change is not as visible in the archaeological material as traditional accounts would lead us to believe. In the following, both old and new hypotheses concerning the destruction of the palatial society at the end of the mature Mycenaean period will be presented. Finally, the value of the concept ‘collapse’, presented earlier in this chapter, will be discussed as concerns the Argive Plain at the end of the Late Bronze Age.

The relative standing and position of ancient settlements on the Argive Plain have long attracted scholarly attention. Not only do they allow for a measured discussion on how ancient societies were organised more generally; they have also served as a frame of interpretation of exchange and settlement hierarchies.46 The mature palatial period suggests the existence of a diversified and decentralised exchange pattern where Mycenae, Tiryns and Midea were the major exchange nodes of goods, while minor settlements functioned as distributors of goods exchanged at lower levels.47 As noted earlier the period ends with destruction, c. 1200 BCE, and some settlements were not rebuilt to match their earlier status whereas at others life apparently continued. We may even find that some settlements prospered and expanded the settled area. As concerns the Argolid, there was a sharp decline in the use of tombs at all sites except for Asine, where it has been observed that earlier tombs were re-used. Several models of explanations are possible, such as that burial traditions had changed.

It has been said that the period following the destruction of the large settlements lacked the traits characteristic of the previous complex administrative system, such as Linear B tablets. The preceding period has also, if perhaps not

for entirely warranted reasons, been associated with large-scale storage facilities, and the assumed lack of these in the period following the destruction has been regarded as a change in the economic structure. Be that as it may, changes need not have been as radical as previously proposed.

The theories concerning the decline of the Mycenaean world are many and varied, and here will be mentioned just a few pioneering works. Perhaps the most popular are the migration theory\(^{48}\) and the drought theory\(^{49}\). Another theory focuses on system collapse based on internal factors. Decline may also have been caused by environmental degradation and/or climatic change such as droughts and plague but also earthquakes.\(^{50}\) Other theories are shrinkage of arable land or socio-political and demographic factors,\(^{51}\) the innovation of iron working\(^{52}\) and changes in warfare.\(^{53}\) Recent work has ensured that the invasion theory is still a potentially viable explanation. Thus, Eder argues that there was a short break between the end of the Bronze Age and the earliest Iron Age (the so-called Sub-Mycenaean period). In her opinion, the break with the Mycenaean burial tradition, the use of settlement areas for burials, and the changes in settlement pattern are evidence of the arrival of new groups of people.\(^{54}\) The reasons for the decline need not, however, issue from an invasion of foreign groups of people. K. Kilian,\(^{55}\) for instance, finds it more plausible that a succession of earthquakes hit the area during a longer period and had an adverse impact on the social and economic fabric of the area. The major impact of a simultaneous earthquake and flash flood was later questioned by Zangger, who pointed out a number of reservations such as chronological errors and insufficient published excavation data. Zangger does not rule out that a flash flood caused severe damage at Tiryns, but the evidence that the disasters hit simultaneously is in his opinion rather vague. Instead Zangger proposes that the flash flood could have occurred close to the dramatic Hekla 3 eruption in Iceland, an event that apparently caused climatic disturbance.\(^{56}\) The long-term effects of the eruption, such as a volcanic dust veil, were observed already in earlier articles that discussed the possible impact on human society, such as bad harvest, poor pasture, and impeded communications.\(^{57}\)

The reservations concerning the impact of earthquakes have recently been revised by Nur and Cline, as they point to the fact that it is time to reconsider the general effects of earthquakes that hit the Eastern Mediterranean and the Aegean area in the late 13th and early 12th centuries BC. According to Nur and Cline these are notable mainly on account of being the last of a long series of disasters to strike the area covering the geological faults of the Aegean and the Eastern Mediterranean.\(^{58}\) Another interesting factor is the impact of soil erosion and alleviation, as these were apparently not troublesome in Mycenaean times apart from locally. Effective soil management such as terracing seems the only

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\(^{49}\) Carpenter 1968.

\(^{50}\) Angel 1972; Kilian 1980; Butzer 1996.

\(^{51}\) Betancourt 1976; de Fidio 1987.

\(^{52}\) Childe 1942.

\(^{53}\) Drews 1993.

\(^{54}\) Eder 1998.

\(^{55}\) Kilian 1988b.


\(^{57}\) Baillie and Munro 1988, 346; Baker et al. 1995, 336.

\(^{58}\) Nur and Cline 2000, 61.
plausible explanation according to some scholars. On the other hand the human disturbances on the Bronze Age landscape have been pointed out, for example woodland clearance.

Can societal collapse and climate change explain the changes observed at the end of the Bronze Age? Concerning the collapse of societies more generally, different theories have been developed in regard to, for example, the fall of the Maya culture, the Roman Empire and many others. One of the pioneering scholars who address the fall of complex societies in general is Tainter. In a recent article he discusses the difficulties in applying theories of collapse and also questions the suitability of some studies dealing with collapse. In another article, Tainter discusses overshoot and collapse in Bronze Age societies such as Mesopotamia, and he points out that proximate causes could not be based on the Malthusian overpopulation or mass consumption theory, but rather elite mismanagement and failure of information feedback. The works of Tainter indeed bring into focus the problems involved when discussing major changes in prehistory, and the best conclusion out of the presented cases is that we must ask whether the end of the Bronze Age, such as demonstrated in the archaeological findings from the Greece mainland, should be defined as a collapse as is done in several studies. Tainter defines collapse as “rapid loss of an established level of social, political and/or economic complexity”. In a similar vein, a recent study by Diamond emphasises the need to apply, for example, climatic data with caution. This is because the consequences of climate change can vary between regions, as has in fact been documented for mainland Greece.

As noted, earlier effects of earthquakes in the Late Bronze Age have been observed as a plausible rapid explanation for the events occurring in the Argive region. Due to the fact that the Bronze Age landscape already was disturbed by human impact, the earthquakes may have caused local and regional environmental disaster. For example, landslides and flash floods negatively affected the environment, causing soil erosion and perhaps the destruction of some settlements. The effects on the regional economy may therefore have been rather severe. Communication is essential when discussing the prosperity of a region, and it has been proposed that the road system in the Argolid was of importance not so much for warfare as for the regional economic development, as roads probably were necessary for the transportation of goods inland over short distances. The network of roads seems, however, to have survived the disasters hitting the plain, and Argive settlements in use during the final period probably used the same roads as the inhabitants of the earlier palatial period.

Finally, is it necessary to apply the term ‘collapse’ to the final part of the Bronze Age as illustrated by material remains in the region of Argolid? Does the region show a rapid loss of an “established level of social, political and/or economic complexity”? The region may have been affected by several disasters emanating from earthquakes causing rapid but short-term environmental damage

59 van Andel et al. 1990.
60 Jahns 1993, 197.
62 Tainter 2006b.
63 Tainter 2006b.
64 Diamond 2005.
such as erosion, flash foods etc. The environmental damage could have been more devastating for some of the previously flourishing settlements whereas others, such as Midea, Tiryns and Asine, flourished in the final period. The causes were, however, together strong enough to change the previous economic and political pattern of development on the Argive Plain. The status of settlements changed after the destruction of the old palaces, and the region was affected by socio-economic changes. However, although a short-term collapse may be registered we may also find that the society was resilient enough to survive these disasters.

What, then, triggered the problems that caused the Bronze Age to come to an end? It is possible that the final phase of the Bronze Age, such as observed in the Argolid, may have been affected by the Hekla 3 eruption in 1159 BCE. The spread of volcanic ash from the stratosphere may have contributed to bad harvest and poor pasturage, affecting the local and regional economy and the development of the region. It must be remembered that the Bronze Age society was a small-scale economy and even one bad harvest may have caused severe damage. Further, available climate records illustrate that the general long-term pattern is characterised by decreasing moisture and drier conditions. Regarding temperature changes, cold intervals are inferred about 1050 BCE and at 800 BCE. The changes in temperature may have caused problems for the regional economy, until c. 800 BCE when an increase in olive cultivation is observed.

The intellectual efforts of the present ‘Urban Mind’ project have demonstrated that the climate characterising the end of the Bronze Age can not be defined as dramatic, even if the Hekla 3 eruption may have caused problems. Instead the processes should be characterised as long-term changes caused by changing environmental conditions that affected various parts of the Greek mainland in different ways. There are hypotheses that the survival of infrastructure and the continued development and maintenance of settlements such as Tiryns, Midea and Asine indicate the presence of a systematic cultural and social resilience in the final phase of the Late Bronze Age. The urban mind such as it was represented in the region of Argolid during the Late Bronze Age survived within the ‘human mind’ that was later re-established in Iron Age society.

800–600 BCE. The era of colonisation and the city-states

According to Aristotle (Politics 1.1.1), the term polis signified a political community but also an asty, i.e. an urban settlement as well as its hinterland, the chora. It has been argued that early poleis may have had their basis in the structure of the Mycenaean administration in the Late Bronze Age (1400–1200 BCE). The following is a brief attempt to outline the development leading to the rise of the Greek city of the later Archaic-Classical period, starting with a climatic kick-start and ending with the Greek polis.

Owing to a high pressure over the Asian steppes in the north-east, a drier climate developed in the Aegean and eastern Greece during this period. Prob-
ably more rain fell in western Greece due to prevailing winds, which gave better conditions for agriculture in this part of Greece. In the east, in rain shadow because of the mountain ranges in the Peloponnese and mainland Greece, the drier climate caused difficulties for those who cultivated on marginalized land on mountain slopes or land not fed by local water resources. Areas previously used for intensive cultivation would now be better used as grazing grounds, that is, as extensive land use. Less food would thus be produced, higher in protein content but with fewer carbohydrates. The result for the societies would be population stress, social unrest and rivalry between communities and between various groups within them.71

Groupings within the early Greek communities were based on lineages and families. The elite families displayed their lineage, its history and connections with the gods in the form of wealth based on land use, for example in rich graves and feasting. Elite goods in rich graves included weapons and armour, utensils for feasting and displays of pottery. In the new climatic situation, the strategy of the elite was to establish and consolidate their power and wealth through more extensive land use: grazing grounds for cattle as well as horses, and perhaps less intensive agriculture and hunting. The importance of cattle is best illustrated by the great amount of bovid votive figurines found at sanctuaries such as Olympia and by the significance of cattle and meat consumption in Homer’s epics (Iliad 11: 680). Wars between neighbours may have been raids for animals, including horses, which were needed for elite display as seen in depictions in vase paintings, horse figurines and horse burials.72 Earlier cultivated land would have been needed for grazing and perhaps was even taken by force. (One might compare with the Highland clearances of the 1700s.)73 With the ‘new’ land economy the competition for grazing grounds increased and would also have caused individuals from elite groups to feel the lack of land. The divide between the landowning elite and landless people became larger.74

71 The literature concerning period is large, see Coldstream 2003, Snodgrass 2006 and Shapiro 2007 for further references.
72 Horse burials, e.g. Lefkandi: Popham, Calligas & Sackett 1993. Horses in Homer, e.g. Iliad 11: 680: the booty Nestor’s raids included 150 chestnut horses, “all mares, and many of them had foals at the teat”.
73 Richards 2000.
74 Loan slavery during the 7th century is reflected in the story of Solon’s (c. 630–560 BCE) reforms in Athens, Block and Lardinois, eds. 2006.
Other changes also affected the societies. The settlements began to take more organised forms during the 8th century, and they began to emerge as planned ‘towns’ around 700 BCE.\(^{75}\) Metals, and especially iron, were more common by the end of the 8th century. Iron is in some respects a ‘democratic’ metal, more widely found and easier to work than the alloy bronze. More craftsmen would be engaged in metalworking in the settlements, under the eagle eye of, or as part of, elite families. With the growth of sanctuaries outside the settlements established in the 9th and 8th centuries BCE, new markets opened up as well as possibilities for the craftsmen, who did not necessarily have to confine themselves to working for only one group, chieftain or village.\(^{76}\)

In addition to this came the increased contact with other areas around the Mediterranean.\(^{77}\) The Phoenicians’ dominance of the sea was challenged during this period by Greek shipping, not least when colonisation started in the first half of the 8th century BCE. Ships loaded with people, probably mainly men, journeyed to western Asia Minor and the Black Sea, to southern Italy and Sicily,

\(^{75}\) Smyrna (Bayraklı), by modern Izmir, usually called the first Greek town, was rebuilt around 700 acc. to a planned system and with a defensive wall. Hall 2007, 42.
\(^{76}\) Risberg 1997; Nordquist 1997.
\(^{77}\) For trade and contact, see Tardy 1997.
and to the French and Spanish coasts (Fig. 7). The reasons are much discussed. One factor could be population stress caused by the new climatic regime and the consequences of the elite’s economic strategy to occupy areas for grazing grounds. Most colonies are placed in areas that suggest that a quest for agricultural land was behind them, although access to metal, especially iron, also seems to have played a role. Even if colonisation was often less organised than is usually stated in the handbooks, the divinely approved colonisation, led by an official oikist, a leader from an elite family, opened up possibilities for the dispossessed and for younger sons to establish themselves as landowners and citizens with a new social identity and in a new settlement. These apoikia (literally ‘home away from home’) were established both on mainland Greece and in the Aegean islands, but those that usually come to mind are all the new settlements in south Italy, Sicily, North Africa and the Black Sea region.

Communications between the Greek settlements increased as did the need for Greek-produced goods, giving rise to local production and trade. The new poleis were independent from their mother cities and were founded on new land in new areas; inhabitants had equal shares of land, and rights as citizens. Even if there were conflicts with the native population, over time intermarriages would also have occurred. The Greek identity was important: for the inhabitants of the new poleis ideas of what exactly established a Greek identity in culture, art, goods, philosophy and organisation must be expressed. The experience in organising space and building a functional urban system from scratch became important for the further development of cities in Greece proper.

Institutionalised cult space and sanctuaries outside the settlement frame and local elite control increased from the mid-8th century. Early records suggest that the large Panhellenic festivals originally were something for the elite for whom the display of prowess, athletic skill, and the beauty of its young men at, for example, Olympia (traditionally as of 776 BCE) was part of the ideological strategy (kaloi k’agathoi – ‘the Good and Beautiful’). The festivals were occasions for

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78 For colonisation, see Malkin 1998; Antonaccio 2007; Osborne 2009, 110–123. An earlier period of external movement at the end of the Bronze Age will not be discussed here.

79 As e.g. in the case of Pithekoussai on Ischia which may have had a population between 5000 and 10000. Osborne 2009, 106f.

80 For the role of the Apollo oracle at Delphi, see Antonaccio 2007; Neer 2007.

81 Osborne 2009, 112–118 for maps and a list of place names.

82 Hall 2007; Hansen 2006.

both individual and communal display and gave opportunities for the communities to establish their identities on a Panhellenic scale as ‘ethnic’ groups.\(^{84}\)

Whatever the original function of the term *polis*, its name was that of its citizens, that is, a political community. The *polis* was called the Athenians, not Athens, the Corinthians, not Corinth, Lacedaemonians, not Sparta. In a very real sense, the organisation of citizens as *polites*, or citizens, came before the urban setting of them in a physical space, the *astu*, the city proper, even if we find the two terms used more or less synonymously, for example in Homer.\(^{85}\) The festivals thus defined Greeks and/or citizens from the *poleis* with their settled centres and with their *polites* ‘citizens’ (some of whom may not have lived in an urban environment). At the end of the 8th century massive investments were made in the sanctuaries\(^{86}\) which became arenas for the display of larger group identities: the ethnic groups and/or *poleis*, arenas for demonstrating family and group solidarity, ideology and a place for diplomatic meetings between rivals. At the same time, around 700 BCE, the display of the elite burials, directed towards a local level, tend to decline. The development corresponds to the development of the *poleis* as an idea and organisation, a physical space, and the development of citizenship.\(^{87}\)

The economic increase included increased specialization, more mobile craftsmen and specialists, and more markets. Even the sanctuaries were markets where large numbers of people congregated periodically. Together with the increasingly lively international trade network, the economic specialists, the craftsman and the traders could not only survive but also make a good living outside the local settlement. New social groups could emerge that were not fixed to the soil, and which, with increasing trade and the new invention of coins, could collect a mobile fortune. Trade and the marketplace, both physically and as a concept, became more important and stood outside elite control, since commerce was never an accepted aristocratic way of living. An aristocrat should be a landowner – this remained the ideal long after it had been outmoded in real life.\(^{88}\)

In the aristocratic ideology there was a reverence for the past as it was constructed and depicted in Homer and in figurative art, for example in the vase paintings: a *basileus*, ‘king’ in the centre of a group of male followers. Other trends in this nostalgia for the past are the rise of the *hero* cult, the return to ancient places such as Bronze Age graves,\(^{89}\) and genealogies leading back to myths, as seen in the poems to elite winners of athletic contests, the so-called *epinikia* by among others Pindar.\(^{90}\) The chariot races depicted in Mycenaean times from the 16th to the 13th century BCE are found again in the vase paintings of the 8th century (Plate 4, Fig. 8). They also are among the first and most prestigious events at Olympia and other Panhellenic games.

The backward-looking ideology and conservatism of large aristocratic groups, together with the social upheavals caused by the changing economy, led to social uprisings in the later 7th to 5th centuries, with the so-called tyrants,\(^{91}\) often members of aristocratic families who took power and based their rule on the

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84 For a discussion on *polis* and *ethnos*, see Hall 2007, 49–59.
86 Early temples at Tegea (Nordquist 2002).
88 Tandy 1997; Arnheim 1977.
89 For a discussion of the often problematic issue of tomb-cult, in this case in Messenia, see Alcock 2002, 146–152.
91 Parker 2007.
non-aristocratic members of the *poleis*. Here, as well, the warfare based on the infantry played an increasing role, and eventually this led to group training and solidarity.\textsuperscript{92} In this turbulent setting, the alphabet began to come into general use. Most famous is the work of Homer, but even laws and regulations could now be documented and thus were not solely in the power of the traditional elite – another significant area in which aristocratic prerogatives were being challenged.

Thus, the early *poleis* were from the beginning groups of people in small settlements that were centred on the families and their economy, the *oikoi*.\textsuperscript{93} The groups included families of traditional landowners, elite as well as poorer citizens, craftsmen and slaves. As more and more people identified themselves and were identified by others as belonging to one of the increasingly larger communities, group identity became more important: to be a member, a citizen or of a citizen family, defined a person, and within the group of citizens one’s place was decided by lineage, family connections, sex and age. Into this new amalgamation of people came ideas taken from external contacts and from social inventions. A new urban class developed, one that questioned the traditional balance of power in the *polis*.

An increase in population has been claimed from the ninth to the eight century, at least in Attica and the Argolid, based on the increasing number of burials. It is, however, noticeable that there is also a change in the proportion between child and adult burials in Attica: in regard to the earlier part of the period up to the early 8th century, few child graves are found, but they increase dramatically in the second half of the 8th century.\textsuperscript{94} This change in burial patterns may reflect

\textsuperscript{92} Krenz 2007, 79–80, suggests that organised common charge against an enemy is as late as at the Battle of Marathon, 490 BCE.

\textsuperscript{93} Zagora on Andros is estimated to have had 225–375 inhabitants during the 8th c. BCE, Hall 2007, 42.

\textsuperscript{94} Osborne 2009, 73f.
the congregation of people to central places, the emerging polis centres, as well as a general increase in population. A contributing factor may be the introduction of new forms of burials that are more easily recognizable in the archaeological record.

During the 8th century BCE the *poleis* system became established over large areas of Greece and occupied a physical space that is remarkably similar in all Greek cities, especially when the orthogonal town planning system came into common use. It is noticeable that the early cities (except for those on the Anatolian west coast) are found in eastern Greece, that is, in areas which would have been more affected by the dry and cold climate (Fig. 9). Still, there remained areas that may have been less affected by the climatic stress due to good water resources and where the *polis* as a city did not develop or else was very late, such as the western part of the interior and the southern Peloponnese.95

The traditional cities on the Greek mainland usually grew out of older centres, as in the case of Argos and Corinth, or as a result of a conscious political decision to gather the population in one spot (*synoikismos*), as in the case of Athens according to tradition. But other old centres were not resettled, or remained minor communities. One example is Mycenae, the site of the Bronze Age citadel, where a small polis was established under the dominion of Argos, which retook the central role it had had at the end of the Middle and the start of the Late Bronze Age some hundred years earlier. In mainland Greece, as well, new *poleis* emerged as new settlements.96

As the cities grew they needed new forms of government and organisation.97 Urban life – i.e. social, religious and political activities – and society began to be concentrated to specific physical spaces, in towns and cities and to a certain extent also at the sanctuaries outside the cities. By the time the city as a physical entity with urban planning and large-scale architecture appeared, the *polis* as a community of people may have existed for a long time. We tend to draw conclusions from the end result of a long urban development, since little is known of the earliest phases of the Greek *poleis* because many sites continued to be settled and developed into cities. But it should be noted that the most important part of the city was always the open space, the *agora*, where people met and interacted,98 as in the case of Smyrna, where an area just inside the town fortification was left open when the town was rebuilt with a more regular plan around 700 BCE.99 As Alcock has suggested, it seems more realistic to see this growth of what would become big cities as a development, rather than a phenomenon linked to an ideal concept of a city.100 The ideal of the city grew together with the city fabric.

The urban remains that are preserved are mainly those that for one reason or another had been abandoned. Places often mentioned are fortified sites in the Aegean islands, such as Zagora on Andros, or the Cretan settlement of Kavousi,101 as well as Nichoria in Messenia together with Lefkandi and Eretria on Euboea.

95 Morgan 2003.
96 The literature on Greek urbanism is vast, and here only a few titles will be given. See e.g. Martin 1983; de Polignac 1987; *Acts of the Copenhagen polis centre*, 1–5 (1993–2000); Alcock 2002; Morgan 2003; Hansen 2006, all with further references.
97 Hall 2007; Snodgrass 1971, 2006; Damgard Andersen et al. 1997; Shapiro 2007; Martin 1983.
100 For a discussion, see Alcock 2002, 48f.
Leaving aside these places, we will concentrate on the example of Lathuresa in Attica, a settlement on top of a rocky hill that was established in the late 8th century. Delimited by a boulder wall approximately 200 m long, the settlement consisted of several house complexes with altogether some 24 rooms in houses of various shapes and sizes, both rounded and rectilinear. One of them, apparently planned as a unit, seems to have had a more central function. Even if its inhabitants may have numbered less than a hundred,\textsuperscript{102} Lathuresa shows some features that are also found in the Classical Greek cities, such as an open area and close to it a one-roomed building identified as a small temple; that is, the settlement had an open place where people could congregate for social, political and religious reasons and meet their neighbours; it had a temple area, later if possible on an acropolis. But the small hill-top was hardly suitable for the growth of a larger settlement, and the activities seem to have ceased at the beginning of the 5th century BCE.\textsuperscript{103}

No graves were found at Lathuresa. This also illustrates a development towards a more structured urban milieu. When the town space became defined, the dead were given their final resting places outside the city border, which became in a sense both a physical and a conceptual border between the city of the living, where the activities of the polis were conducted, and the places of the dead citizens. The burials were situated along the roads leading into town, where they attested not only to the family status of the dead but also to the power, status and history of the city itself. The city carried parts of its history in the burials leading into the centre.\textsuperscript{104} (Plate 5).

The urban centre developed rather late, and the development was not the same in all Greek areas. In some regions, such as the Cycladic islands, the number

\textsuperscript{102} Lauter 1985 suggested a population of approx. 80–100 persons.

\textsuperscript{103} Lauter 1985. Other sites that often are brought forward are Nichoria in Messenia (Rapp, Aschenbrenner & McDonald 1983) as well as Lefkandi (Popham, Sackett & Thenelis 1980 and Popham, Calligas & Sackett 1993) and Eretria on Euboea (Mazarakis Ainian 1987). See also Mazarakis Ainian 1997.

\textsuperscript{104} Osborne 2009, 76–82.
of settlements in the countryside decreased, while in other regions, such as southern Argolid, the settlements increased and also seemed to include a site hierarchy. It is also worth noting that even if many countryside settlements were abandoned they seem to have attracted, as did Lathuresa, cult activities for some time after-

Plate 6. Remains of one of the predecessors to the Parthenon on the Acropolis of Athens, in front of the Erechteion. Photo by Gullög Nordquist.

Plate 7. The drain on the agora of Athens. Photo by Gullög Nordquist.
wars.\textsuperscript{105} The same is true, for example, of Asine in the Argolid, which according to the ancient historians was deserted during the wars between Argos and Sparta around 700 BCE. Here archaeological finds show that some activity, including a temple on the Barbouna hill, took place for centuries to come, until the place was finally resettled in the Hellenistic period (3rd century BCE).\textsuperscript{106}

\textit{The continuation, c. 600–500 BCE}

The first monumental stone buildings erected after the Bronze Age were in the cities and in the sanctuaries around 600 BCE and were of religious character, such as the large stone temple of Apollon at Corinth with its magnificent monolithic columns. On the acropolis at Athens likewise a number of structures were built around this time or shortly thereafter, such as the old temple to Athena Polias, the Athena of the \textit{polis}, which was a predecessor to the Parthenon from the second half of the 6th century BCE during the time of the rule of the Peisistratides\textsuperscript{107} (Plate 6). Peisistratos was one of the so-called tyrants,\textsuperscript{108} dictators from the aristocracy that had taken power, often with the support of the ‘ordinary citizens’ in opposition to the traditional and conservative landowning aristocracy. These rulers needed the support of the population of the \textit{polis} and invested in structures that benefited them, such as fountain houses leading water into the centre, and

\begin{footnotesize}
\textsuperscript{105} Osborne 2009, 188–190.
\textsuperscript{106} Frödin & Persson 1938.
\textsuperscript{107} The early building history of the temples on the Acropolis is much discussed. Several pieces of sculptural work from large-scale temples in the Archaic period have been found on the Acropolis, now in the New Acropolis Museum, Athens, for example remains of a pediment depicting lions devouring a bull, or the so-called Blue-beard pediment.
\textsuperscript{108} The term ‘tyrant’, \textit{tyrannos}, in this period should perhaps best be translated with the modern ‘dictator’. It was men, usually from the aristocracy, who took power in the emerging \textit{poleis} with the support of non-elite citizens. Their rule usually was relatively short-lived and in no case lasted more than three generations.
\end{footnotesize}
temples demonstrating their piety. One such example is the drain in the agora of Athens, also established during Peisistratos’ rule (*Plate 7*).

This was also a period of economic change, when commerce flourished and the production of trade goods was directed towards the new, Greek cities outside Greece proper as well as other areas of the Mediterranean. As an example may be mentioned the production of the typical Corinthian pottery, with its light fabric decorated with friezes of fantastic animals, human and mythological figures, and decorative elements in dark red, black and white, inspired by contacts with cultures in the Eastern Mediterranean and spread by the networks of the Phoenician traders, whose ships reached most harbours of the sea. Vessels of this so-called orientalizing style were widely exported and inspired potters in other areas in their choice of colour and decoration (*Plate 8*). The development strengthened the producers, the traders, and those who invested in the ‘new’ economy settled in the urban centres.

However, the space for monumental architecture par excellence became the Panhellenic sanctuaries, that is, sanctuaries that attracted visitors from all over the Greek world. In these sanctuaries the first stone temples were built around 600 BCE, sometimes replacing earlier wooden structures, as in the case of the temple of Hera at Olympia. Likewise at Delphi, the temple from the 4th century BC, of which we see the ruins today, replaced a destroyed temple from the 6th century, which in its turn was built on the remains of a temple dating from the 7th century. The sanctuaries were the obvious places to demonstrate piety as well as richness, power and status for individuals but also for the *poleis*. Small and large votive offerings were given to the gods. One special type of votive offering was the treasuries, built to house the most important donations of a city to the god. Access to them was restricted, and those allowed to enter were selected visitors and the administrators who oversaw the operations of these buildings. The people of the island of Siphnos built their treasury at Delphi around 530 BCE.109 Herodotos (3.57) tells us that, “the Siphnians were at this time very prosperous and the richest of the islanders, because of the gold and silver mines on the island. They

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109 For a short description with pictures, see Andrea Hendrix, Coastal Carolina University, [http://www.coastal.edu/ashes2art/delphi2/sanctuary/siphnian_treasury.html](http://www.coastal.edu/ashes2art/delphi2/sanctuary/siphnian_treasury.html)
were so wealthy that the treasure dedicated by them at Delphi, which is as rich as any there, was made from a tenth of their income; and they divided among themselves each year’s income.”110 The Siphnians demonstrated their richness at home by using Parian marble for public monuments, and at Delphi by erecting the first religious structure built entirely of marble, with rich decorations that include statues of girls (karyatids) carrying the pediment as well as a frieze that depicts some of the myths that became common on later religious buildings: the hero Herakles, the congregation of gods, scenes from the Trojan War, and the battle between gods and giants, the gigantomachy.111

Thus, during this so-called Archaic period, 7th–6th centuries BCE, the typical Greek architecture was established. The temple and its proportions, the order of columns and the decorative elements, and the illustrated mythology are found all over the Greek area, showing how close the cultural connections were and attesting to the idea of a Panhellenic identity. This is best seen in the sanctuaries, with the erection of all the monuments by the poleis as well as by rich private citizens, not only to the main god but to other gods as well as heroes that cohabited with the main protector of the sanctuary. The builders also included wealthy colonies in Magna Graecia, the Hellenized south Italy and Sicily. The sanctuaries became arenas where wealth and status could be displayed, whether by a city or a private person. Polyzalus, a tyrant of the Greek city of Gela in Sicily, erected a magnificent bronze monument as a tribute to Apollo for helping him win the chariot race in 474 BCE. It consisted of the sculpture of a charioteer in his chariot, at least four horses and two grooms, all more than life-size.

111 Such treasuries continued to be built later; for example the treasury of the Argives, also at Delphi, dates to 380 BC.
Again, one can mention the odes of Pindar and other poets to victors of the games in the sanctuaries, many of them aristocrats from the Greek cities of Sicily and southern Italy. These odes namely show a common cultural identity and ideology found all over the Greek world. The tales of the Trojan War, the mythology in the so-called Homeric hymns, the work of the lyric poets such as Sappho, Alkaios and Archilochos, and the first theatrical performances established literary genres and use of the language and dialects that set the scene for cultural activity of the coming centuries. The poets also established an individual, un-heroic and un-mythological sphere that dealt with human emotions and passion, where a person’s attitudes and feelings did not necessarily correspond to what was publicly approved in society.112

Early Athens seems to have consisted of a series of building concentrations or villages with open land in between. In the Athenian self-history the foundation of the city, that is the move of population to one centre (synoikismos), was ascribed to the legendary king and hero Theseus. Excavations have shown that in Athens the burials in the later city centre, the agora, had ceased by the 7th century BCE, which then seems to mark the period when this was seen as the town area.113 As mentioned earlier, it was during the reign of the tyrannos Peisistratos that the first public structures, such as a fountain house and a drain that continued in use all through antiquity, were established, which suggests that some areas during this period were transferred to public from private use. A public space was created for the use of the public affairs of the polis and its citizens, and with that there developed a greater divide between public and private.

The fall of the Peistratides by 508 BCE and the change to a democratic political system meant that other types of structures were needed by the polis, such as places for the law courts, the magistrates and the council. They were placed along one edge of what was to become the agora (Plate 9). It was now also marked out by boundary stones, and the space of the agora was thus protected by both religious and profane rules (Plate 10). The same seems to have happened in other Greek poleis, in Argos and Corinth, for example. The agora became the important centre of any Greek town, essential for political and religious meetings as well as everyday life, trade and communication, and for social interaction between the citizens. In that sense it was seen, at least by the Greeks themselves, as something that set them apart from their eastern neighbours. Herodotos (1.153) lets the Persian king Cyrus say, “I have never feared men who have a place set apart in the middle of their city where they lie and deceive each other. If I keep my health, the Hellenes will have their own sufferings to worry about, not those of the Ionians.” For, as Herodotos comments, “the Persians themselves do not use agoras, nor do they have any”.

The other essential part of the city was the religious centre, if possible placed in a high place that also served as a fortress and refuge. The Acropolis of Athens is perhaps the prime example. At Corinth the lofty peak of Acrocorinth served the same function, but sanctuaries were also placed on its lower slope. During the later part of the Archaic period, up to the beginning of the Persian Wars in 490 BCE, people of wealth and status invested not only in large burial monuments, stelai, with reliefs and/or painted decoration, but also in rich gifts to the gods. Statues of young girls, korai, always clothed, as well as naked, athletic, young men,

112 Osborne 2009, 216–220.
113 The place of the earliest agora is much debated. Some scholars would like to place it on the slopes of the Acropolis. For the finds and the development of the agora, see the web site of the Athenian agora excavations, http://www.agathe.gr/.
kouroi, were put up in the sanctuaries together with various other votive offerings of value.

As mentioned earlier, the tyrants of the Archaic periods, such as Periander in Corinth and Peisistratos in Athens, initiated ambitious monumental building programs, erecting temples and other cult installations, such as one of the predecessors of the Parthenon in Athens. Such impressive monuments later became foci for other rulers, and their building history and functions reflect the changes in the socio-political landscape of the time. One case is that of the enormous temple to Olympian Zeus in Athens, started by the grandson of the tyrant Peisistratos, another Peisistratos in 515 BCE, and planned to become a large limestone building in Doric style with twenty columns on the long side and eight on the short side (Plate 11). However, only the podium, measuring more than 110 x 43 m, was finished at that time. When the tyrant family was deposed in 509/508 work stopped – the new democracy found little pleasure in a monument glorifying the hated Peisistratides. In the face of the Persian Wars at the beginning of the 5th century, parts of the finished stonework were used to build the city wall. And after the wars it was the Acropolis, as central to the polis and its ideals, which attracted the planners and builders of democratic Athens. The monuments destroyed by the Persian invasion were used to extend the building area on the Acropolis, their remains dumped into clefts in the rock, the so-called Perserschutt. But in the 4th century BCE the monarchic rule was back and another monarch, the Greek king of Syria Antiochos IV, saw a possibility to enhance his name by completing the old building project of the tyrants. He financed a new start with the Roman architect Cossutius, but now in marble and in the modern Corinthian style. Later under Roman rule, Augustus added his bit and finally the temple could be inaugurated in 131/132 by the emperor Hadrian after a building
history of over 600 years – longer than most houses stand. And inside it, Zeus, the original owner of the temple, now had company. Hadrian himself was put beside the Olympian god as a co-god.\textsuperscript{114}

After the wars and with the introduction of democracy, the way to attain status and power was to spend freely for the common good in the \textit{polis}, in water fountains, buildings, temples as well as theatre performances, or to invest in military equipment. Donors could be honoured by the council by means of honorary inscriptions, or by being allowed to erect monuments of their victories in, for instance, drama. In Athens such so-called choragic monuments lined the streets leading to the theatre, eternal monuments to the status of the donor. Their generosity and status became permanently visible to all citizens for all history.

Around 600 BCE and on, public buildings and monuments began to be built more often in stone, preferably marble, whereas private dwellings were usually simple, plastered, mud-brick structures with stone foundations, with a yard which contained, perhaps, a shady tree, vines or herbs, and which may also have housed chickens or, at least temporarily, a lamb brought in from the countryside to be used as sacrifice and food. One of the houses in the complex may have been two storeys high. Because of their simple construction, such buildings have been little explored within the limits of the modern cities; they often have been destroyed by later building activity.\textsuperscript{115}

Around the city was the countryside, \textit{chora}, which was also part of the \textit{polis}. Here were the farm houses; some of them were owned by families living mainly in the \textit{asty}, the city, and were run by relatives and or slaves, while other farms belonged to citizens settled in villages around the main centre. Even the villages were organised as communities, with magistrates, their own religious calendar etc, but they were still part of the poleis. How many there were and how they were organised would have differed since the poleis varied greatly in size, from Athens which in fact included the whole of Attica and a population counted in six figures, to small places such as Pallantion in Arcadia which may have counted its inhabitants in hundreds.\textsuperscript{116}

One of the consequences of the establishment of urbanised centres was the need for produce to reach the markets in these centres to feed the city population. Certain agricultural produce became important cash-crops in the wider commercial networks, such as wine and olive oil. But as seen above in the case of Siphnos, there were other economic activities besides agriculture that were important for several poleis, such as mining, quarrying, metal production, production of leather goods and textiles, as well as trade, to mention a few. All this meant increasing communication and transport of goods by sea and land and ever increasing trade networks.

\textsuperscript{114} It fell into disuse by the 5th century CE. In 1852 a storm felled one of its surviving 16 columns.

\textsuperscript{115} One example of the small classical city is Olynthos in northern Greece, destroyed by Philip II of Macedon in 348 BCE. The Classical city that replaced an earlier settlement had a regular plan with city blocks originally consisting of ten ground plots each with more or less identical houses, in two storeys around a paved yard. Over time some families clearly acquired part of their neighbours’ houses. These rather simple urban buildings may be compared to the large suburban villas with their mosaics, among the earliest in Greece. For an overview of the houses at Olynthos, see Nicholas Cahill, \textit{Household and City Organization at Olynthus}, \url{http://www.stoa.org/hopper/toc.jsp?doc=Stoa:text:2003.01.0003}

\textsuperscript{116} For further discussion, see Susanne Carlsson, this volume.
Another important change was the emergence of infantry warfare during the Archaic period. Weapons such as swords and daggers may be found in earlier graves, but it is by the middle of the 8th century that bronze helmets and body armour begin to appear in elite graves and in vase paintings. Such items would have been expensive and were treasured loot from vanquished enemies, suitable to set up as offerings to the gods. At the early stadium at Olympia, wooden stakes with the panoply of armour and weapons marked such victories, making Olympia the prime example of military victory display. The round hoplite shield, so well depicted on the so-called Chigi-jug from around 675 BCE, was held securely on the left arm, enabling groups of soldiers to fight as a unit, something that also necessitated training of the hoplites, the infantry soldier.117 These more modern fighting tactics may not have made the earlier cavalry obsolete – in fact it did remain – but the modern warfare started to require more coherent leadership, training of personnel and new strategic thinking.

Thus, from around the mid-700s to 500 BCE the Greek world changed, from small-scale villages with ruling aristocracies and regional contacts, to an international world with urbanised centres and a social and urban organisation of growing complexity, with a network of sanctuaries, with coinage and writing, and far-reaching communications. An important part of that process was the reflections of the early philosophers on the nature of the world and its inhabitants, an activity that began in Ionia, the Greek coast of Anatolia.

**Stresses and responses**

Mike Baillie has called attention to what he calls a ‘suck-in-and-smear’ effect in efforts to describe past environmental changes and cultural responses. Precisely dated events, like environmental stress as deduced from tree-ring sequences, tend to ‘suck in’ roughly contemporaneous but poorly dated cultural phenomena observed in archaeological materials from surrounding areas; the temptation to see a causal connection simply cannot be resisted by many scholars. At the same time, an abrupt climatic event dated by scientific methods with a much wider margin of error is ‘smeared’ with the risk that it may be linked to cultural ‘responses’ which could even have occurred before the event in question.118 This implies that all attempts to reconstruct human sustainability in the light of shifting environmental circumstances must strive to establish a firm sequence of events. Their dates in relative and absolute terms become important.

Todd Whitelaw addresses the problem of discrepancies and inadequacies of different datasets (environmental and archaeological) in studies of the prehistoric Aegean.119 He also turns the attention to intra-regional variation and relatively small-scale environmental changes due to a range of factors likely to have affected even neighbouring valley systems in different ways, a possibility that is masked by the conflation of datasets with different resolutions and reliability. The synchronization of processes and the correlation between different datasets (climate, environment and settlements) are more often assumed than demonstrated. This is a generalization, he argues, that will allow “little scope for the possibilities of alternative exploi-

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117 Osborne 2009, 161–166.
119 Whitelaw 2000, 145.
tation strategies, differently pursued by different local groups and individuals, de-
pending on how they evaluated their social as well as environmental opportunities
and constraints”. Like Tainter some years later, Whitelaw stresses that the actual
outcome of events after episodes or processes of environmental change lies in how
the events were perceived by the people most affected. Human decision-making
and agency are here continually underestimated and under-explored. Ultimately,
how the Argives and Corinthians experienced the events within and around our
four periods is dependent on a variety of factors. Considerable chronological leeway
is necessary given the inexactness of our dating methods. Over the course of one or
two generations a ‘collapse’ may equally well be regarded as the slow degeneration
of one way of life, and the innovation of another.

In order to arrive at nuanced and extended, time-sensitive and humanized
views on socio-environmental interactions in the pre- and protohistoric Aegean
in general, and in our focus area and periods in particular, more integrated studies
and high-resolution local datasets are needed. As outlined in the surveys above,
climatic and environmental events have been proposed for all four case studies.
On a general level, however, and based on the survey and analysis conducted
within the Urban Mind project, the impact of socio-environmental interactions
on the cultural transitional phases was quite different:

- Case study 1. Possible direct effects of local environmental change, as well as
  possible secondary effects of supra-regional climate situations contributing
to socio-cultural reorganisation.
- Case study 2. Possible secondary effects of supra-regional environmental
  anomalies contributing to a positive economic development and socio-
cultural boom in certain areas.
- Case study 3. Possible direct (and cumulative) effects of local natural
  disasters contributing to socio-economic instability.
- Case study 4. New climatic conditions contributing to new socio-
economic structures and strategies, through adaptation and development,
  leading to economic and socio-cultural boom.

Overexploitation with resulting degradation of lands in marginal and uplands
areas is a common denominator in previous research in three of the four case stu-
dies. The results thereof are, however, different. Our understanding of the Early
Bronze Age has so far been impaired by an apparent over-generalization of both
climatic and other environmental effects, as only coastal areas seem to be affect-
ted and the likely cause is short-term effects of intensive use during a nucleation
phase (a possible contributing factor for failure to maintain current social struc-
ture). Any effects of the expanded use of the greater landscape during the first
half of the 3rd millennium seem not to have been a major factor in the later
socio-economic decline. Instead, local and short-term effects seem more relevant
in the focus area. During the last centuries of the Late Bronze Age, the landscape
was clearly densely occupied and utilised. It seems, however, that the landscape
was well managed through terracing and that negative effects came only as a
result of decreased societal complexity, with the degeneration of these environ-
mental countermeasures, as central Mycenaean control weakened. During the

120 Whitelaw 2000, 145.
121 Cf. Broodbank (2000, 321) arguing from the point of view of the Early Bronze Age Cycladic
islands and the Aegean around 2200 BCE for “a major ending and a beginning of a new order”.

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Iron Age, climate-induced aridity caused problems in maintaining agricultural activities on marginal lands. Still, the area most affected remained the core area of habitation, and the problems became incentives for socio-economic reorganisation through societal hierarchisation and ultimately the regeneration and the end of, or at least the diminishment or alteration of, aristocratic rule.

It is difficult to disentangle the difference between long- and short-term events and their possible effects on life and the different measures taken by people in relation to them. The volcanic eruption on the island of Santorini caused total devastation locally and also disruptions in neighbouring areas to the east and south, but it led to regeneration and economic expansion on the Greek mainland. During the Early Bronze Age, high-effect climatic events in Asia Minor were probably direct factors for major local disruptions. This time these distant events seem to have had secondary negative effects on the Greek mainland as well, but in other areas of the Aegean the time was one of increasing prosperity. It is therefore inadequate to evoke Middle Eastern data sets to explain and/or nuance events on the Greek mainland without considering regional climatic variability within the Eastern Mediterranean. Finally, earthquakes led to local problems in the Argive area during late Mycenaean times; they may have contributed to the cultural decline but are not likely to have been decisive, and moreover the extent of the decline is in question.

Tainter has argued that increased complexity is a sign of successful problem solving. The three historically based outcomes of long-term change in problem-solving societies (or institutions) are continuity based on growing complexity (i.e. sustainability), simplification (i.e. resiliency) and, simply, collapse. Increased complexity will increase costs, while the two other outcomes will cut costs, whether deliberately or by force. Tainter is careful to distinguish between sustainability and resiliency, arguing that “[m]ost of us prefer the comfort of an accustomed life (sustainability) to the adventure of dramatic change (resiliency)”[122] He also argues that “sustainability is not the achievement of stasis”,[123] but must be achieved through action. With the involuntary element inherent in the term ‘collapse’, it follows that, according to Tainter, collapse can never be the intended result of successful problem solving. The two roads to societal survival must therefore be increased complexity to secure continuity, or deliberate and dramatic change. But we ask ourselves: how do we make out intentionality or the lack thereof in prehistory? On the face of it, our four case studies seem to fall into two groups, with two periods of economic expansion and increased complexity, and two displaying many signs of decline and relatively rapid change. All four case studies hold discussions on societal complexity, whether waxing or waning. For the three Bronze Age case studies, the grounds for arguing societal complexity are similar. The physical appearance of the ‘urban’ thus is manifest in the layout, distribution and organisation of monuments, and evidenced in supra-regional contacts, communication and trade, within an administrative and economic system. For the Iron Age case, the urban comes out as initially more of a mentality – an urban mind. Perhaps it is telling that it is the youngest case study that brings this result. This is a time when the archaeology of the Greek past begins to be supplemented by written texts. How would the three Bronze Age cases be understood if we had the same nuanced record for these time frames?

[123] Tainter 2006a, 93.
What seem to be the most significant signs of change around 2200 and 1100 BCE are the disappearance on a supra-regional scale of common features in material culture, and the pronounced regionalism and small scale of life, coming out on the other end. For the events centring around 1600 BCE and 700 BCE the reversed is apparent. Above all, the marked distinctions between the before and the after in all four case studies suggest that the attitudes of the people concerned had somehow shifted. Were these changes the outcome of external forcing mechanisms? New prerequisites seem to be present in all cases. These need not be seen as either positive or negative in themselves. There is also a significant measure of continuity, at least in the Mycenaean case of apparent decline, through some continuations of organisational complexity.

In a long-term perspective, surpassing the two-hundred-year time frames of the case studies but still central for the discussions of all four, climate change set into motion one process that had, at least from a modern point of view, generally positive effects. During the course of the Iron Age, an elite way of life was set aside or at least effectively balanced by a growing sense of communal identity, leading to new urban classes and a renegotiation of government and organisation. In some sense, an elite cultural overlay of aristocratic competition and display was gradually replaced with a new one based on other ideals and social hierarchies. Reviewing the evidence from the Bronze Age, similar processes may in fact have been in effect.

In the first and third case studies, events can be described as the disappearance of a cultural and economic overlay developed over previous centuries and leading to ever increasing societal complexity. A high level of social hierarchisation and complexity was clearly manifest in both cases (the degree and extent more commonly accepted as higher for the Mycenaean case than the Early Bronze Age). In the Mycenaean case, these processes got a kick start partly through the Santorini eruption and the waning dominance of Minoan Crete, as outlined in the second case study. If anything, the prerequisites seem to have been benevolent for agriculture (possibly wetter conditions during the Early Bronze Age, and geomorphologically stable conditions on the Argive Plain during the Middle Helladic and Early Mycenaean times) which was positive for developments in farming societies like these. Climate and environmental variability seem, however, to be just two of several factors causing the disappearance of political and economic centralisation and/or control around 2200 and 1100 BCE. Judging from archaeological data pertaining to these events, the effects seem rather more negative than in the Iron Age case, and it would appear that Tainter’s definition of collapse is valid in that a “society has collapsed when it displays a rapid, significant loss of an established level of socio-political complexity”.\footnote{Tainter 1988, 4.} “Complexity”, in turn, “refer[s] to such things as the size of the society, the number and distinctiveness of its parts, the variety of specialized social roles that it incorporates, the number of distinct social personalities, and the variety of mechanisms for organising these into a coherent, functioning whole.”\footnote{Tainter 1988, 23.} The description fits well with the decrease in settlement numbers and size, the decrease in craft specialization and the disruptions in long-distance exchange networks, as well as the loss of administrative tools and central places.
Many societal processes are, however, difficult to reach when dealing with the distant past. One common problem is to find ways to elucidate events on the level below the more acutely visible cultural overlays. As already mentioned, another problem is to forge out and close in on the (degree of) intentionality in the apparent downsizing of some societies, without having evidence of, for example, wage cuts and economic mergers as cost-reducing strategies. Collapse on the surface may in any society, and with all the facts at hand, turn out to be acts of resiliency at work on a more basic level. In fact, there may be cases for all three outcomes as listed by Tainter to be working simultaneously but on different levels in the same society. This would depend on whom you ask in any given society. As argued by Tainter himself, “people sustain what they value”, and this can clearly differ between different groups within the society as well as between individuals.

Were urbanism and/or the urban mind in the Aegean Bronze Age in fact something for the political elites? Probably not, but to get to the configurations and expressions of the urban minds of other groups we need to acknowledge alternative, less monumental, physical manifestations of the mental processes at work. All elites may have their value base concentrated on the physical manifestations as ground for conspicuous display and political competition. For most people living within or close to the larger settlements, the physical manifestation instead may have worked as expressions of group identity focused on a certain place in the landscape. The physical expressions, such as walls, streets and monumental buildings, may thus be seen to frame the experience but not define it, as is very clear from the development of the poleis during the Iron Age. In the last case study it is evident that the physical city was only the tip of the iceberg, appearing only at the end of a long process.

Life in prehistoric and early historical settlements always had agriculture and herding as its main economic base. At times, however, throughout the Bronze and Iron Ages and beyond, it seems that the communal ‘urban’ life – with a greater emphasis placed on trade, administration and specialization – held a higher attraction for a larger number of individuals, perhaps at the cost of basic activities, perhaps even at the cost of society’s well being, and thus contributed to the end of expansion phases. Life continued even after these turning points, without Early Bronze Age corridor houses or Mycenaean palaces, and likely with the central value bases intact for most of the people concerned. It would have been a time of restructuration of society, but how profound was it really? Is this sustainability through ‘collapse’? Or are we dealing with resilience? Or do these terms fail to take in the full dynamics of human and urban life? Erosion or other kinds of environmental degradation do not in themselves bring about decreased settlement numbers, nor does climate cause a ceramic style to change. People do. People relate to and act in the face of new circumstances before the impact of the circumstances is fully understood. Even in the face of forcing factors, patterns of life are changed only after deliberation by the people involved. The outcome of fundamentally changed prerequisites for a society should therefore also be seen as a mental process, and important keys for the understanding of cultural transformations are likely to be found in that process, generating in turn the more acutely visible material circumstances.

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126 As in the examples given by Tainter for what he calls the early Byzantine recovery during the 7th century CE (Tainter 2006a, 97f).
127 Tainter 2006a, 92.
Future prospects

In regard to using social lessons from the past to address today’s challenges, we see several ways to continue. More in-depth and integrated analyses of climatic and archaeological data are clearly needed and potentially very fruitful. In that vein a project is now underway as a result of the Urban Mind Idea Development Project, involving archaeologists and natural geographers in a study of cave speleothems and archaeology in the north-eastern Peloponnese. The intended focus period is the Bronze Age and the aim is to build a contextualised socio-climatic sequence for the region to evaluate any local and regional climatic stresses on the historical development.128

In the “Climate and Ancient Societies” conference in October 2009 in Copenhagen, it was continually emphasised that collapse is something for the long-term perspective to pass judgement on. Even in historical studies, it is sometimes necessary to point out the importance of the long-term view to understand relatively short-term events. In studying actual changes, however, focus should instead be on the short term and on the choices of the people who experience the changes. In that respect the urban minds of these people gain additional importance. It is also increasingly clear that the urban mind is something beyond the physical manifestation of any settlement, town or city; it is rather a mindset that enables the development of a physical urban environment, whatever its form. What did people value enough to sustain and what was allowed to pass, and what can that tell us about the past and how does it apply to the future?

References


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zeit (Kleine Schriften aus dem Vorgeschichtlichen Seminar Marburg, 17), 23–52.
Marburg: Philippus-Universität Marburg.


Hägg, R. (ed.) 1999. Ancient Greek Hero Cult: Proceedings of the Fifth International Semi-


Mazarakis Ainian, A. 1997. From Ruler’s Dwelling to Temples: Architecture, Religion and...


