



# Establishing the Middle Sea: The Late Bronze Age of Mediterranean Europe (1700–900 BC)

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## Abstract

The Late Bronze Age (1700–900 BC) represents an extremely dynamic period for Mediterranean Europe. Here, we provide a comparative survey of the archaeological record of over half a millennium within the entire northern littoral of the Mediterranean, from Greece to Iberia, incorporating archaeological, archaeometric, and bioarchaeological evidence. The picture that emerges, while certainly fragmented and not displaying a unique trajectory, reveals a number of broad trends in aspects as different as social organization, trade, transcultural phenomena, and human mobility. The contribution of such trends to the processes that caused the end of the Bronze Age is also examined. Taken together, they illustrate how networks of interaction, ranging from the short to the long range, became a defining aspect of the “Middle Sea” during this time, influencing the lives of the communities that inhabited its northern shore. They also highlight the importance of research that crosses modern boundaries for gaining a better understanding of broad comparable dynamics.

**Keywords** Late Bronze Age · Mediterranean · Networks · Society · Mobility · Collapse

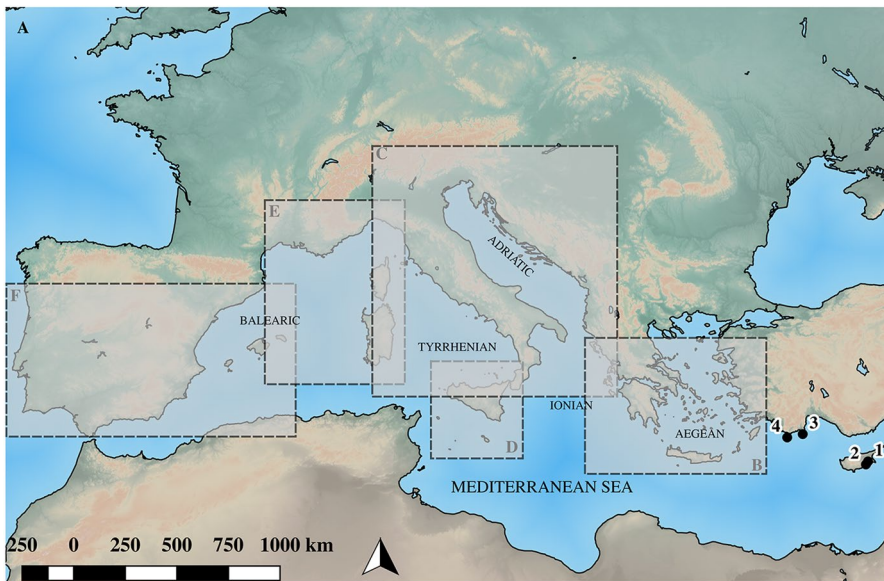
## Introduction

Recent syntheses have emphasized the interconnected nature of the Mediterranean during the second millennium BC and proved that raising our gaze above the usual disciplinary/geographical boundaries, typical of the scholarship of the Bronze Age, can be conducive to new insights (e.g., Knapp and Van Dommelen 2014).

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**Fig. 1** A) General map of the regions discussed in the text: B) Aegean area (see Fig. 3); C) Peninsular Italy and the Balkans (see Fig. 4); D) Sicily, its islands, and Malta (see Fig. 7); E) Corsica, Sardinia, and southern France (see Fig. 9); and F) Iberia and the Balearics (see Fig. 11). Sites in Cyprus: 1) Pyla Kokkinokremos, and 2) Hala Sultan Tekke. Location of Bronze Age wrecks: 3) Cape Gelidonya, and 4) Uluburun

This period witnessed the encounter between individuals and groups—including the “paradigmatic” complex societies west of Asia (bearing names with a considerable heritage in later phases, such as the Minoans and the Mycenaeans) and the multitude of “nameless” but no less important peoples—represented by a complex palimpsest of mutually interrelated archaeological cultures. Such encounters created an intense network of relationships that is a (if not “the”) crucial factor that shaped developments in the area, *de facto* justifying the very label of “Middle Sea” as a *trait d’union* between these diverse realities that is being increasingly adopted by scholars, essentially following the lead of Broodbank (2013). In a similar vein, the subtitle “The Late Bronze Age of Mediterranean Europe” (henceforth LBA) is undoubtedly an artifact of a longstanding academic bias that has traditionally seen the Mediterranean as primarily represented by its northern half (Broodbank and Lucarini 2019). However, even with this limitation, such a unit of analysis has the benefit of breaking up other subunits, like the one that clumps together by default the eastern Mediterranean with the Aegean as the core of Mediterranean “civilization” and consequently relegates what happened to the west and north of the Mycenaean palaces to the role of preamble to later developments of the first millennium BC, a view also shared in the past by attentive observers of the deep history of the area (Sherratt and Sherratt 1993).

The geographical area in this survey (Fig. 1) is the northern coast of the Mediterranean Sea, from the modern boundaries of Greece to Iberia. This is not only to

highlight the high level of interconnectedness between these areas, normally considered relatively minor in comparison with what was occurring to the east, but also to encompass much of the southern maritime interface of the European continent. Indeed, the impact and significance of some of the trends and processes identified extend to the hinterland of the continent. The Black Sea area together with Cyprus and the European part of Turkey deserve specialist consideration beyond the immediate scope of the present work and are not included. The chronological limits of the LBA in Mediterranean Europe have been particularly hotly debated due to a number of factors (see below), but for the purposes of this survey, we focus on the period between 1700 and 900 BC, which encompasses the majority of the trajectories here discussed.

Following a synthetic discussion of the main chronological issues, we present a geographically organized systematic survey of the main recognizable developments, focusing on settlement patterns and demography, burial practices, production, economy, and exchange. We proceed from east to west, presenting the material as if it were part of an ideal periplus of the northern littoral of the Middle Sea from Greece to Iberia, bearing in mind that this is a mere narrative expedient and does not assign primacy to any specific area. When we discuss typological groupings, we occasionally use “facies” instead of the traditional “culture” in order to respect the original terminology of different traditions of study. For our purposes, the two are broadly equivalent.

We follow with a selective discussion of main themes relevant to the overall region: the considerable variability in terms of social and political organization across the whole area, the exponential growth of networks of trade and exchange at a pan-Mediterranean scale, together with the appearance of broad transcultural phenomena that affected a vast portion of Europe and its southern maritime interface. The latter include elements related to the ritual/religious domain, such as the widespread occurrence of specific symbolisms, the expansion of cremation in urns as a funerary rite, and the emergence in certain areas of recognizable warrior figures. Additionally, we address the contribution of human mobility to these trends as explored through the burgeoning methodologies of stable isotope and aDNA analysis. Finally, we discuss the role of all these entangled aspects in the unfolding of the trajectories that led to the end of the Bronze Age and examine differences and analogies recognizable across the overall area.

## Chronology

The chronology of the LBA in Mediterranean Europe is broadly based on the assessment of two essentially independent terms of reference: on the one hand, traditional chronology has imported Aegean-type materials (primarily pottery) as its backbone and is cross-referenced to the list of Egyptian Pharaohs (Jones et al. 2014; Warren and Hankey 1989); on the other hand, absolute dating is fundamentally based on calibrated radiocarbon dates (Manning 2014). The main geographical foci in which each of these terms of reference are more commonly used are far apart, although with frequent contacts. Traditional or historical chronology plays a greater role in

the Aegean and in the Balkan worlds, while radiocarbon dating is more frequent in continental Europe and the western part of the Mediterranean basin, with the Italian Peninsula bridging these two trends (Jung and Weninger 2009; Manning 2014; Wiener 2010). The discrepancy between the two systems is particularly noticeable with the dating of the notorious Thera eruption, which has been placed by scholars either in the late 17th century BC (Friedrich et al. 2014; Manning et al. 2014; Meller et al. 2013) or sometimes after the beginning of the New Kingdom in Egypt, traditionally starting in 1550–1500 BC (Warren and Hankey 1989). Much has been written on this topic, and attempts have been made to find a middle ground; e.g., using alternative calibration curves (Pearson et al. 2018), adopting an offset on the calibration curve at some key points (Manning et al. 2020), or using calendar-dated tree ring sequences (Pearson et al. 2020). Another period when science-based dating and traditional chronology differ the most is toward the very end of the LBA, due also to the general indeterminacy connected to the C14 calibration curve between the 12th and 11th centuries BC (Plicht and Nijboer 2018).

The general framework, as summarized in Figure 2, includes the chronology of Greece, the western Balkans, Italy, France, and Iberia. Overall, the period that can be labeled as LBA from east to west lasts almost 900 years, covering more than the second half of the second millennium as well as the initial part of the first millennium BC. The earliest date of the LBA is recorded for the Late Helladic (LH) I

Iberia	Balearics	France	Corsica	Malta	Sicily/ Aeolian Islands	Italy and Sardinia	Western Balkans	Greece		
Bronze Antiguo	Bell Beakers / EBA	Bronze ancien	Bronze ancien	Tarxien Cem. IIA	Castelluciano/ RTV/ Capo Graziano	EBA	EBA	MH/M III (1700-1600)	1750	
								LH I LM IA (1600-1520)	1700	
Bronze Tardio	Naviform	Bronze moyen 1-2	Bronze moyen 1	Borg in Nadur IIB1		MBA 1	MBA		1650	
			Bronze moyen 2			MBA 2		LH IIA LM IB (1530-1460 1520-1440)	1600	
			Bronze moyen 3					LH IIB/LM II (1460-1390)	1550	
Bronze Final	Proto-Talayotic	Bronze final 1	Bronze recent	Borg in Nadur IIB2	Thapsos/ Milazzese	MBA 3	LBA	LH/M III A (1390-1330)	1450	
						RBA 1			1400	
						Pantalica I/ Ausonio I		RBA 2	LH/M III B	1350
										1300
						Pantalica II/ Ausonio I		FBA 1		1250
Hiero 1	Talayotic	Bronze final 2	Bronze final	Borg in Nadur IIB3		FBA 2	EIA	LH/M III C	1200	
								FBA 3		1150
								EIA 1		1100
		Bronze final 3	Âge du fer		Pantalica III/ Ausonio II	EIA 1		Subminoan	1050	
					Pantalica IV	EIA 2		Protogeometric	1000	
								Early Geometric	950	
								Middle Geometric	900	
									850	
									800	

**Fig. 2** Comparative chronological chart of regions discussed in the paper, based on the high chronology (Manning 2014). The dates of the low chronology (Warren and Hankey 1989), however, are reported in brackets in the Greece column. Abbreviations: EBA = Early Bronze Age, MBA = Middle Bronze Age, LBA = Late Bronze Age, RBA = Recent Bronze Age, FBA = Final Bronze Age, MH = Middle Helladic, MM = Middle Minoan, LH = Late Helladic, LM = Late Minoan

period in Greece while the very last period that bears a “Bronze Age” label in Mediterranean Europe is the Bronze Final 3 of southeastern France and the Bronze Final III of Iberia, whose end has been placed around 800 BC (Castro et al. 1996; Janin and Chardenon 1998; Jover et al. 2016; López Cachero and Pons i Brun 2009). Evidently, not all periods in this interval always fall within the Bronze Age in all areas discussed, but the usual “drift” between southeast and northwest of the Mediterranean basin (Sherratt 1997) can be recognized. Such a drift is at least partially connected to major technological innovations, such as the use and trade of tin bronze that unfolded during the Bronze Age and connected the far west of Europe with the eastern Mediterranean (Berger et al. 2019; Earle et al. 2015; Vandkilde 2016); the use of iron, which likely occurred first in Anatolia (thus, at the eastern margin of the study region) in the second millennium, was adopted in western Asia and the Levant only at the very end of the millennium (Erb-Satullo 2019; Sherratt 2000), only reaching the northwestern sector of the Middle Sea within the following 200 years (Plicht and Nijboer 2018; Rafel 2017).

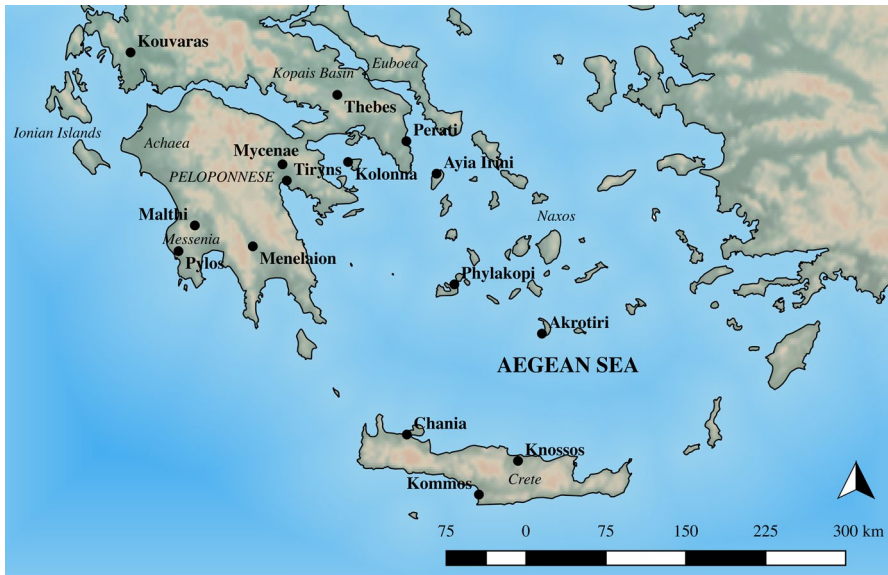
Our level of understanding of internal partitions within macro-phases of the LBA is extremely uneven. While in some cases, the existence of numerous stratigraphic sequences and radiocarbon dates has allowed a detailed phasing, for others, this is still lacking. The Aegean and to some extent Italy benefit from chronologies linked by fairly secure correlations that have long been established, as does the Iberian Peninsula, including the Balearic Islands (Jover et al. 2016; Jung 2006, 2015; López Cachero and Pons i Brun 2009). Conversely, in the western Balkans, archaeological phases are extremely schematic and difficult to compare to other neighboring sequences, especially to the central Mediterranean ones. This problem is indeed rooted in the ex-Yugoslavia research tradition, which was strongly influenced by central European periodization that was applied to the entire country regardless of archaeological differences. In Dalmatia, for instance, the paucity of well-excavated contexts presents a major problem for defining LBA chronology, as its definition is still largely based on the northern Croatian and Pannonian urnfield chronology (Barbarić 2009). Relative chronology for this period relies heavily on the few contexts for which stratigraphy is available, for example, the Varvara hillfort in northern Herzegovina. Southward, in Albania, traditional LBA chronology has been challenged by new excavations at Sovjan and Lofkënd, where archaeological evidence combined with absolute dating has allowed for a more precise comparison of the Aegean LBA and Early Iron Age (EIA) with the north (see Gori and Krapf 2016; Papadopoulou et al. 2014).

## Regional Trajectories

### The Aegean

#### Settlement Patterns and Demography

Our knowledge of early LBA mainland Greece (Fig. 3) settlement patterns is still limited in comparison to later phases. If tombs are a proxy to go by, there appears



**Fig. 3** The Aegean area, showing sites mentioned in the text

to be widespread habitation across most of the southern Greek mainland, not only in plains and coastal areas but also in inland valleys (e.g., Jazwa and Jazwa 2017), a practice that became mainstream during the Mycenaean palatial period (14th and 13th centuries BC), when the number of settlements almost doubled in the Peloponnese by comparison to LH I–II (Wright 2004).

Settlement expansion in the 14th and 13th centuries BC, particularly in “palatially” controlled territories, appears to be associated with an interest in expanding cultivated land (Weiberg et al. 2019). Major infrastructure projects probably facilitated this expansion, for example, the partial drainage of the Kopais basin (Aravantinos et al. 2006; Lane et al. 2016, 2020) and possibly also of the Nemea Valley (Cherry and Davis 2001). The most important of these settlements, socially and politically, are located on either flat ground or small hills (up to 300 m), which combine easy access to the surrounding land and defensibility (Malaperdas and Zacharias 2018).

Settlements of the early LBA on the mainland range from villages (usually 1–2 ha) to more complex, urban agglomerations (e.g., Malthi in Messenia, the Menelaion in Laconia, usually >10 ha). Town-like formations, under the influence of Neopalatial Crete, were already prospering at the onset of the LBA in the Aegean islands (e.g., Kolonna, Ayia Irini, Phylakopi, and Akrotiri), while major administrative centers long existed on Crete. Between 1400 and 1300 BC, certain sites on mainland Greece, such as Mycenae, Pylos, and Thebes, became the dominant administrative regional centers (“palaces”). Unlike Crete, most major mainland centers had a simpler design and were rather small. Even the current underestimate of ~60 ha for Late Minoan (LM) II–IIIA Knossos (Cutler



and Whitelaw 2019, p.15) makes it considerably larger than the largest mainland centers (Mycenae: ~32 ha; Thebes: 25–30 ha).

Houses were modestly built with stone foundations and mudbrick superstructures. More elaborate complexes show additional care (e.g., dressed stone façades, walls and floors plastered and occasionally painted with frescoes). Fortifications, already in existence in the early LBA, became a trademark of certain sites in the southern mainland and the Cycladic islands. “Lower towns”—outside the fortification walls—also existed, but their nature is still poorly understood with a few exceptions (e.g., Tiryns and Mycenae’s extramural complexes; see Shelton 2010).

Since the 1960 and 1970s, regional surveys have drawn attention to the broader range of settlement types beyond the palaces (Bennet 2007, 2013). Data from these surveys are now becoming available, making comparisons across space and time possible, for example, in Messenia (Jazwa and Jazwa 2017) and central East Crete (Spencer and Bevan 2018). Although mainland Greece appears to lack the settlement complexity of Neopalatial Crete, and despite notable regional variation in the number and distribution of settlements (most with an urban character), settlements in southern mainland Greece and Crete in the LBA were probably hierarchically organized.

Studies on demography remain relatively underdeveloped (Bintliff 2019). The main baseline of events at an Aegean-wide level is a process of generalized growth after the Middle Bronze Age (MBA), followed by a decline (Weiberg et al. 2019). Based on excavation and survey data, and an estimate of 200 people per hectare, populations of ~6400 have been suggested for Mycenae (Bennet 2007, p. 187) and ~50,000 for the polity of Pylos in LH IIIB (Whitelaw 2001, pp. 63–64); 34% of this population lived in the 20 or so of the polity’s larger settlements (Bennet 2007, p.188). The estimated population of the largest LBA urban center, Knossos, reached a maximum of ~20,000–25,000 at its LM I peak (Whitelaw 2020), which probably was halved during LM II-III A (Cutler and Whitelaw 2019). An overall population of 600,000 living in about a dozen palatial regions of mainland Greece has recently been suggested (Murray 2017, pp. 236–238). Following the demise of the palaces (late 13th and early 12th centuries BC), some regions of the Aegean appear to have been hit worst population wise than others (e.g., Messenia, especially in the first phase of LH IIIC), while the number of archaeological sites appears to have increased in Achaea (see Moschos 2009). Populations may have dwindled overall to ~330,000 at the beginning of the Iron Age according to a recent estimate (Murray 2017, p. 237—caution is needed, however, when it comes to population estimates and the scale of decline in the postpalatial and EIA periods, as a lot depends on how we interpret the visibility, or lack thereof, of material culture). Tiryns aside (the Lower Town of which displayed major building activity in LH IIIC, occupying ~25 ha), most settlements during this period were small villages (<1 ha) with limited signs of urban complexity, except where earlier remains were appropriated and reused.

## Burials

More than 6000 tombs have been excavated in the southern Greek mainland over the last 150 years, forming the single most extensive dataset for researching the Aegean LBA. There is a plethora of burial types, especially during the early LBA, and there is considerable regional variation in terms of artifactual frequencies, burial practices, and architectural preferences (Cavanagh and Mee 1998; Galanakis 2018; Papadimitriou 2018).

At the onset of the LBA, some continuity from earlier phases is observed, for example, in the use of pits, cists, and crouched inhumations, and in furnishing burials with a few objects. At this juncture, however, notable changes occurred, and new tomb types were introduced (e.g., shaft graves, built chamber tombs, tholoi, chamber tombs); the dead were increasingly placed in an extended position, and burials were furnished with a considerable diversity of objects (Galanakis 2019). Material culture was actively used in Late MBA/early LBA burials as a means of achieving/promoting social differentiation, particularly in regions where later centralized administrations were established (Voutsaki 2012; Wright 2010; see also Galanakis 2019).

In LH II, tholos and rock-cut chamber tombs—the two most popular Aegean LBA tomb types—spread for the first time beyond the Peloponnese across a wide area, from Thessaly to Crete and from the Ionian Islands to the west coast of Turkey. Based on their distribution, similarities in mortuary practices, and the almost formulaic inclusion of specific objects in some high-profile burial contexts, the consolidation of a shared elite ideology can be postulated, one that celebrated self-aggrandizement, aggression, contacts, and drinking/dining habits (e.g., for the development of a burial “etiquette” in the southwestern Peloponnese, see Zavdil 2013). Some of the sites associated with monumental tombs and elaborately furnished burials managed to expand their reach and became regional centers (e.g., Pylos, Mycenae, Thebes), while others that had been prominent in the early LBA were abandoned or demoted/subsumed into the emerging polity’s territory (Galanakis 2019).

During the palatial period (14th and 13th centuries BC), there was a progressive shift—particularly noticeable in the main administrative regions—from building monumental tombs to placing emphasis on settlements, fortifications, roads, dams, bridges, and terraces (Wright 2009). Generally speaking, use of tombs peaked across the Aegean, with extensive evidence for reuse, during LH IIIA2. Funerary assemblages were less diverse in terms of their composition while the increasing pace of reuse of tombs would have necessitated further development of commemorative rites and performances (Gallou 2005). The latter had always been a crucial part of LBA funerary ritual but might have become even more crucial politically in palatial times (Boyd 2014; Middleton 2017b; Papadimitriou 2016).

While some chamber tombs continued to be built in the 13th century BC, the construction of new tholoi was almost abandoned, with very few exceptions. In palatially associated regions or regions outside the sphere of influence of the main administrative centers, tombs and burials began to play an important role in regional power dynamics. Crete is notable here; mortuary experimentation on the island during 1450–1400 BC, especially at Knossos and Chania, was followed by a period of standardization in elite self-representation. Following the demise of Knossos,



c. 1375–1350 BC, several communities across Crete may have started to express themselves using a Knossian-inspired funerary vocabulary in architecture and burial practices (Galanakis 2019; Preston 2004).

After the demise of Mycenaean palaces, no new monumental tholos or chamber tombs were constructed, and the number of visible burials was considerably reduced in certain regions, still, the picture is far from even. Elaborately furnished burials (also in reused tombs) did not die with the “collapse” of palatial bureaucracy. Burial elaboration resurged in certain regions, especially those “peripheral” to the palatial territories, as late as LH IIIC-late with the richly furnished “warrior” burial at Kouvaras, west Greece (Jung et al. 2017a). At this time, cremation burials were rare, occasionally organized in mounds, although such early complexes do not appear to be connected to the later resurgence of this rite during the Protogeometric period (Palaiologou 2013; Ruppenstein 2013).

### Production, Economy, and Networks

We have little direct evidence regarding production and the economy of the early LBA on mainland Greece. Most of the evidence comes from graves, where precious metals, semiprecious stones, imported objects, and luxury items played a significant role in political economy and the shaping of elite ideology. More is known about LH IIIA–B, where Linear B records (c. 1400–1200 BC) provide invaluable insights into the workings of the Mycenaean palaces (see Dickinson 2014; Driessen and Langohr 2014).

The Mycenaean palatial economy is characterized by the mobilization of resources and services for the benefit of the ruling groups and their agents (Bennet 2013; Killen 2008). It has long been known (Halstead 1993) that palatial interests were selective, probably in those areas that maintained the elites at the top of the scale. “Para-palatial” economy (Bennet 2007, p.190), operating alongside or outside the palaces, also played a significant role in Mycenaean Greece. Although palaces may not have been as uniform in their operations as previously thought, they were involved in the control of productive resources and appear to have developed out of and were sustained by dynamic socioeconomic interaction (Nakassis 2013, 2019; on markets in Mycenaean Greece, see Parkinson et al. 2013). In addition to the palaces, there also was a non-palatial economy within and outside the palatial areas that possibly included religious and peasant economies (Halstead 1993; Lupack 2011; Pullen 2011)

Neopalatial Crete and subsequently the centers of the southern Greek mainland were both producers and consumers of materials, particularly metals. The use of gold, silver, copper, and tin, as well as other luxury materials (ivory, glass, wood) suggests that the LBA Aegean palaces largely shared the value systems of the eastern Mediterranean (Feldman 2006). Those in charge of these centers were interested in the acquisition of exotic raw materials and the production of value-added products. Certain industries (e.g., woolen textiles, bronze, and chariot wheels) were organized around the *ta-ra-si-ja* principle. For products more difficult to control (e.g., aromatic oils) and for high-value items, the palace authorities exercised direct control, although inconsistencies in how these industries operated suggest that

mobilization may not have been strictly standardized (Blackwell 2018; Killen 2001; Schon 2011). With the palaces sponsoring the production of high-end products, the need for hoarding imported materials and finished products became less pronounced in the 14th and 13th centuries BC, and this development may also explain their progressive disappearance from funerary assemblages (Schon 2009).

Crete long had contacts with the eastern Mediterranean, especially Egypt and the Levantine coast. On mainland Greece, based on burial finds (e.g., in the Mycenaean shaft graves), certain individuals within their communities had access to goods, materials, finished products, and technologies from the Baltic areas (via the Adriatic and the Italian Peninsula), Anatolia, and Neopalatial Crete—for mainland/Crete relations in the early LBA see also the tomb of the Griffin warrior at Pylos (Davis and Stocker 2016; Stocker and Davis 2017).

The progressive importance of Cyprus in Mediterranean networks, the possible shift from low-bulk/high-value items to high-bulk/low-value items, and disturbances across the Aegean and adjacent lands from c. 1250 BC coincided with palatial monopolies breaking down at the end of the 13th century BC (Bennet 2007, p. 191). Progressively, the major centers of mainland Greece appear to have also established networks with Cyprus and the wider eastern Mediterranean. Shipwrecks (such as the Uluburun and Gelidonya; see Fig. 1) attest to different scales of interconnections in the Aegean and the Mediterranean (Burns 2010; Tartaron 2013).

With regards to postpalatial networks, recent studies (Murray 2017) provide a warning to not take too readily “imports” from funerary contexts as necessarily or solely indicating social status and direct exchange contacts. Instead, in the 12th century BC, Murray sees “imports” as having acquired different roles in mortuary beliefs and rituals (e.g., at Perati). Lack of “exotica” in tombs may therefore coincide with a shift in burial practices rather than simply denoting lack of participation in exchange networks.

## Western Balkans

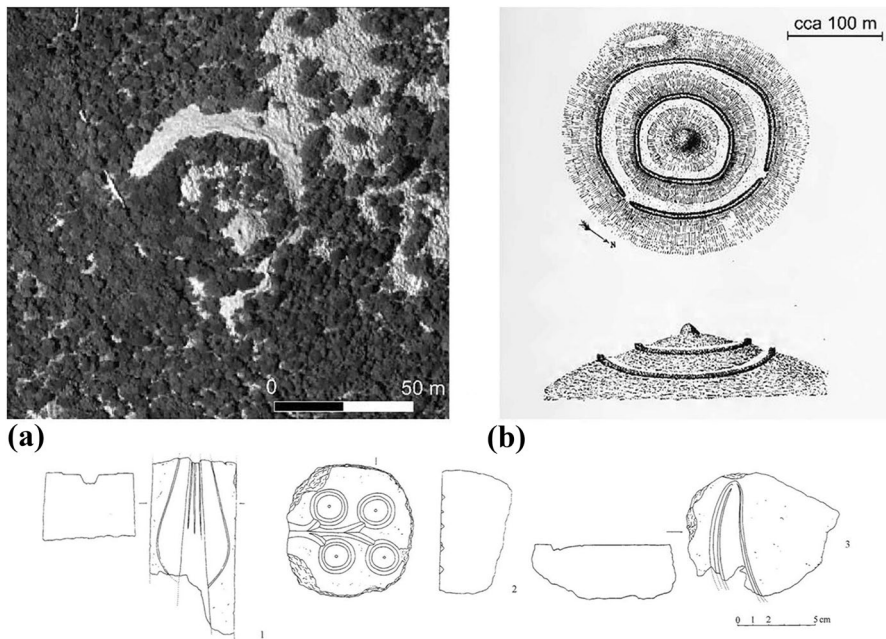
### Settlement Patterns and Demography

The western Balkans (Fig. 4) settlement pattern is characterized by an impressive number of hillforts, fortified settlements located in high positions known as *castellieri* in the Caput Adriae (the upper corner of the Adriatic Sea) and *gradine* in the rest of the region (Mihovilić 2013). The sites are often strategically situated to control the surrounding territory and communication routes. Hillforts spread along the entire eastern Adriatic area, from Istria to present Albania. Most hillforts are known from surveys and appear to be densely distributed in the territory. Some evidence from Dalmatia suggests that a marked increase in the building of hillforts took place during the LBA, when in neighboring regions in the interior (from present Serbia to Hungary and Romania) some forts were gargantuan (more than 1700 ha), so much so that the term mega-fort has been proposed (Molloy et al. 2020). Closer to the sea, the main problem remains understanding whether these fortified hillforts were in use simultaneously and/or may have had



**Fig. 4** Peninsular Italy and the Balkans, showing sites mentioned in the text

different functions. The traditional chronology for hillforts is LBA–EIA (Fig. 5), but research has proved that at least some of them were occupied initially during the Early Bronze Age (EBA) and already were extensively occupied in the MBA. Istria is one of the most researched areas, where ~400 hillforts are recorded. Only a few of these have been dated with survey finds (Buršić-Matijašić 2007). The impressive fortifications at Monkodonja in Istria, with walls standing 3 m high, are among the best preserved of the northern Adriatic. The main fortification wall had three phases, dated by radiocarbon to c.1900–1600 cal. BC (Hänsel et al. 2015). The Varvara hillfort in northern Herzegovina was also occupied for a long span of time, from the Copper Age to the beginning of the Iron Age. New research at Gajtan, a hillfort in the southern Skadar Lake area (Albania) also has a long history from the EBA to the LBA throughout the Iron Age (Galaty et al. 2019). Comparison of settlement patterns across the Adriatic suggests that although connected, the networks of western and eastern Adriatic communities, particularly in the central and southern Adriatic, were characterized by different



**Fig. 5** The fortified sites of Bog/Vela Straža on Lošinj island (a) and Gradina near Malinska, Island of Krk (b) (after Čučković 2017, fig. 5). Below, casting molds from Dugiš (after Barbarić 2009, fig. 3)

settlement patterns that stem from local phenomena of socioeconomic interactions (Recchia and Cazzella 2019).

The general impression of a “militarized” settlement pattern existing throughout the Bronze and Iron Ages is diminished by the existence of open-air settlements in humid zones, such as the ones located in the upper Cetina River course, in central Dalmatia (Marović 2002), or in the Korçe basin, in southeastern Albania (Gori and Krapf 2016). The recovery during the Urnfield period (1300–1100 BC) of a great number of small and large metal hoards (Teržan 1996) and individual metal finds throughout present-day Slovenia in both mountainous and coastal areas suggests that the Caput Adriae was a key area that linked the Alpine region to the Carpathian Plain in the east, and to the Po Plain in the west. Such practices show close connections with Slovenia, Italy, and central France (Gori and De Angelis 2017).

## Burials

The most widespread funerary architecture in the western Balkans is undoubtedly the tumulus, a mound of earth and stones raised over one or more graves. Known also as *gomile* or *tumaj*, these funerary barrows were present since the Copper Age. One remarkable characteristic is that in some cases they maintained their funerary function from the EBA even to the Middle Ages, for example, the Velika Gruda barrow in present-day Montenegro (Della Casa and Primas 1996). A crucial aspect that remains to be addressed for the LBA and other epochs is the relationship of

these structures with the landscape and continuities in the funerary–ritual sphere. The archaeology of Albania has centered on the research and excavation of tumulus burials, which were considered crucial to address topics such as ethnogenesis and the relations with neighboring areas (Gori 2012).

Recent research addresses regional identities from the perspective of dress and body ornaments. Amber seems to have been a good indicator of social status, given its overall rarity and association with graves; almost all the graves have rich grave inventories, including amber beads and other imported materials (see Kurti 2012).

## Production, Economy, and Networks

In Croatia and Bosnia-Herzegovina, evidence for LBA metallurgical activities is rare, and science-based research on metallurgy is in its initial stages. Due to the shortage of raw material, finished metal objects are interpreted in Dalmatia as imports from the Urnfield area, even if there are examples of metal production at sites such as Dugiš (see Fig. 5, Barbarić 2009) and Varvara (Gavranović 2013). In Bosnia, metallurgical activities increased significantly in the periods following the end of the Bronze Age. The hilltop settlement of Varvara in the border zone between Bosnia and Herzegovina is one of the most evident sites with emerging bronze production (Gavranović and Mehofer 2016).

## Adriatic Italy

### Settlement Patterns and Demography

In Adriatic Italy (Fig. 4), settlements of the last part of the MBA are generally of small size and, with the exception of the northeastern and southeastern area, show no evidence of fortifications. The almost complete lack of funerary remains hampers our ability to analyze social and economic organization of communities that are traditionally seen as pastoral, even though we should not underestimate the importance of agriculture.

In the northern area, the early phase of the Recent Bronze Age (RBA) is the apex of a period of demographic increase in which prosperity was marked by the continuity of earlier villages and a still active capacity to expand colonization of the landscape through a systematic spread of occupation (Cattani and Miari 2018). This process occurred in a vast area from the Istrian Peninsula, the Friuli Plain, and eastern Veneto to Romagna, including the area of the famous *terramare*, the embanked settlements typical of Emilia (see Bernabò Brea et al. 1997). Parallel processes were occurring in other neighboring areas, for example, the Danubian Carpathian basin (Marková and Ilon 2013).

There is a considerable gap near the mouth of the Po River, due probably to both the state of archaeological research and the thick alluvial deposits that cover Bronze Age strata. Only the Friuli region is well known (Borgna et al. 2018), with a settlement pattern characterized by the continuity of *castellieri*, fortified settlements, and several other types of settlement located along the coast or close to the mouths of

rivers and lagoons (Tasca 2019). The fortifications associated with these settlements (normally covering between 1.5 and 3.5 ha) range from enclosing embankments with wooden structures to the exploitation of natural boundaries, such as riverbanks or topographic relief.

Recent discoveries related to settlements along ancient branches and at the mouth of the river (Balista et al. 2017; Cattani and Boccuccia 2018) have gradually filled in the picture on the southern side of the Po, as well as along the coast between the Adige and Tagliamento Rivers (Cupitò et al. 2015). High-output production, especially of ceramics, bone and antler items, and textiles, along with a significant increase in the diffusion of bronze items, confirms the vitality of the period (Sabatini et al. 2018).

In the latest phase of the RBA, especially in the first half of the 12th century BC, expansion in the Terramare area stopped, and the abandonment of many settlements began. Only a few sites, almost evenly distributed in each regional zone, remained active. A recent interpretation of the collapse of the settlement pattern on the Po Plain suggests a wide movement of people southward, a real *diaspora* that occurred more intensively along the Adriatic coast (Bettelli 2018; Cardarelli 2010). Apart from the crisis of the Terramare, of which there were early signs already in the second half of 13th century BC (no new settlements were founded after this period), we can recognize a still active occupation of territories that face the Adriatic to the south, such as coastal Romagna whose stable trajectory of occupation suggests continuity possibly driven by well-established interactions between the northern regions and southern peninsula (Iacono 2019, pp. 134–139).

In the aftermath of the Terramare crisis, a new configuration of social and economic systems emerged. The area of the Po Delta, where Frattesina was a hub receiving products from central Italy, the Aegean, and the European continent, was one of the most active (Bietti Sestieri et al. 2019). Other centers located along the coast next to the lagoons or the mouth of the rivers, like Caorle, Concordia, and in the south at Verucchio, have been investigated only cursorily but show direct connections between ports and main hubs.

Frattesina, established during the second part of the RBA, grew to its maximum in the middle of the Final Bronze Age (FBA), when it participated in a possible territorial system extending from Villamarzana to Campestrin di Grignano Polesine, with specialized manufacturing and incipient forms of market exchange. The system was connected to different regions of Europe and the Mediterranean.

To the south, recent investigations emphasize the importance of high-altitude frequentation of the Apennine during the mid-second millennium (Cazzella et al. 2018), not unlike what happened in other districts of the Apennine mountain range to the west (Ialongo 2007), although the picture for later stages is less clear. In the Marche, there was considerable continuity between the MBA and the beginning of the RBA, a period marked by a considerable increase in the number of sites that are normally without artificial defenses (Baldelli et al. 2006); in Abruzzo, where centers emerged only toward the very end of the Bronze Age, they accumulated substantial amounts of agricultural surplus (Di Fraia 1995).

Through much of the second millennium, territorial occupation in the southern portion of the Adriatic possibly was organized by a system of small hamlets and



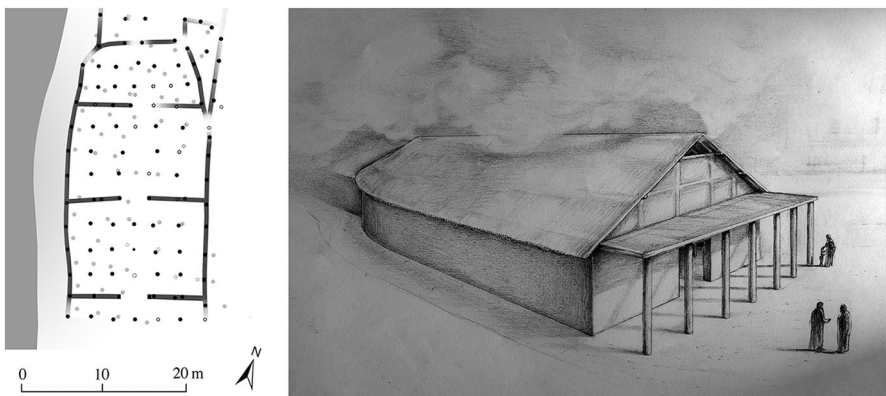
slightly larger (~3–5 ha) fortified villages, with drystone walls (sometimes with complex plans), in the case of Roca, up to 25 m wide (Cazzella and Recchia 2013a; Guglielmino 2013). By the mid 14th century BC, the southern Adriatic experienced a change in site location. Particularly during the 13th and 12th centuries BC, based on ceramic indicators (but see Recchia and Ruggini 2009), there were fewer sites, but they were more frequently located in coastal and semi-coastal areas, with a greater proportion having fortifications. Again, in the FBA, the number of sites increased, reminiscent to some extent of the settlement pattern in the earliest part of the millennium (Iacono 2019).

Within settlements, we rarely have enough information to comparatively assess the size of different buildings, but large structures are present at a number of locales, including Scoglio del Tonno, Roca, and possibly Torre Castelluccia (Iacono 2019, pp. 127–128). Those at Roca, of which the best explored measures 40 x 15m (Fig. 6), date to the FBA (Coluccia 2017; Maggiulli and Malorgio 2017), when other smaller houses were present at Leuca (Cremonesi 1978). There also were relatively large central buildings, and later on storage areas with large jars, at Broglio di Trebisacce in Ionian Calabria, another key area for the Italian LBA that presents both main settlements and necropolis, as well as hamlets, mostly located in the foothills of the Apennine (Arancio et al. 2004; Vanzetti 2000).

## Burials

The central Po Plain is the region of the northern Adriatic basin that has the largest funerary record for the second half of the second millennium BC. Cemeteries included hundreds if not thousands of graves and are systematically located near the villages.

During the MBA, north of the Po, single flat inhumations largely prevailed, for example, at Bovolone, Scalvinetto, and Castello del Tartaro (David-Elbiali 2010). At Olmo di Nogara, around one third of the inhumations contained prestige goods, such as bronze ornaments, amber, or long swords (Salzani 2005), which indicate



**Fig. 6** Plan and reconstruction of the so-called temple hut at Rocavecchia in Puglia (courtesy of Luigi Coluccia)

clear connections with the Tumulus culture of the central Danube plains. Around 1450–1400 BC, the “urnfield model” was widely adopted by the Terramare communities (Cardarelli et al. 2020). The transition from one rite to the other is marked by a significant reduction of grave goods in burials and the almost total disappearance of weapons. North of the Po River, the new funerary custom co-occurred with inhumation and gradually became prevalent throughout the RBA. South of the Po, by contrast, there are no documented inhumations, as the Terramare communities (e.g., Pragatto, Casinalbo, Montata, Copezzato, Beneceto) buried their dead in large urnfields, characterized by a very standardized ritual (Cardarelli 2014; Cardarelli and Tirabassi 1997; Cavazzuti and Salvadei 2014).

In the southern Adriatic, after the demise of traditional dolmen mounds—mounds with a dolmen constituting the remains of a cist tomb (see Recchia 2011)—a considerable variety of both ritual forms is recognizable. Mounds that have clear parallels with the other side of the Adriatic are present at Torre S. Sabina (Onnis 2010), while urnfields have also been occasionally recorded (Lo Porto 1997; Vanzetti 2002). Finally, more lavish interments were domed rock-cut tombs and large hypogea—underground chambers that contain potentially hundreds of inhumations (Cipolloni-Sampò 1998; Tunzi Sisto 1999) and numerous offerings. These have been interpreted as directly related to emerging forms of hierarchy (Peroni 1999). Finally, cave frequentation continued from previous periods and normally had a cultic/funerary use.

The changes recorded in the north during the 12th century BC in the aftermath of the so-called collapse of the Terramare also is mirrored in the burial record. Well-known cemeteries, such as Le Narde di Frattesina, clearly show new emerging elites (Cardarelli et al. 2015; Cavazzuti et al. 2019a) who emphasized their high-status through the display of prestige grave goods (including weapons).

Despite a general trend in which urnfields spread southward across the Italian Peninsula, inhumation survived for a long time in the Adriatic area to the south (Baldelli et al. 2006) well into the EIA, with cemeteries like Paludi Celano and Monte Saraceno. The former presents unusual depositions in tree-trunk coffins while the latter has occasional grave markers in the form of round sculpted heads (Accoccia and D’Ercole 2012; Nava et al. 1999)

## Production, Economy, and Networks

Throughout the Bronze Age, demographic growth in some areas and renewed systems of production and exchange led to increased integration among communities. The management of resources within an economy based on agriculture and animal husbandry as well as the provision of raw materials provide explanations for these connections. Metal collected and distributed from the Alpine regions played a critical role in mobility and exchange with the peninsula.

In the latest phase of the MBA on the Italian Peninsula, a common production of decorated pottery was shared across southern and central Italy, extending significantly into northern Italy as far as Romagna. Identified historically with the Apennine culture (Damiani 2010; Macchiarola 1987; Puglisi 1959) and traditionally interpreted as the material cultural manifestation of a pastoral economy, the formal

uniformity of this pottery style is currently interpreted as the product of the interactions and ties among communities with circulation of products (textiles and metals) that, especially in the Adriatic, extended widely from the Po Plain to Apulia.

Subsequent interactions among communities on the Adriatic side can be identified with the so-called sub-Apennine facies of the LBA, but instead of interpreting it as a south–north expansion, it is increasingly clear that it was a series of regional developments with original contributions in material culture from the Marche (Baldelli et al. 2006), Romagna, Po Delta (Cattani 2015), eastern Veneto (Cupitò et al. 2015), and north Adriatic coast (Tasca 2019). High-output production, especially of ceramics, bone and antler items, and textiles, confirms the vitality of the period, as seen also from the significant increase in the diffusion of bronze items (Sabatini et al. 2018).

For much of this period, particularly on the Italian side of the Adriatic, material culture shows greater technological and stylistic affinities with the Aegean world. Indeed, during the earlier part of the millennium, the Adriatic area seems to have represented a unique stepping stone to the Tyrrhenian; the RBA marks a definite change, with the Adriatic coast up to the northern area interspersed with spot finds of Aegean-type material, mostly pottery (Iacono 2017; Jones et al. 2014). It has become increasingly clear, based on chemical provenance (imitations cannot be distinguished in the absence of these), that this material was mostly imported during the MBA and predominantly locally imitated in the LBA (Jones et al. 2014). And yet, the relationship with the Aegean likely continued, as attested by close stylistic affinities with coeval developments in Greece and specific technical developments, such as bichromy in the northern Adriatic (Bettelli et al. 2015; Iacono 2019).

Important ports were probably located at Roca (which yielded over half of the Aegean-type pottery recovered west of Greece), Scoglio del Tonno (where the Greek colony of Taras was subsequently founded in the Iron Age), and, to the north, at important internal nodes like Moscosi di Cingoli and Cisterna di Tolentino, where considerable traces of metallurgy have been recovered together with Mycenaean-style pottery. Other specialized production is also well attested, particularly in the south, where it is potentially connected to the development of so-called “specialized sites” (Cazzella 2009), where activities like purple dye production (e.g., at Coppa Nevigata, where this activity started well before contacts with the Aegean) and metallurgy (e.g., at La Starza) were conducted (see Albore Livadie 1996; Cazzella 2009; Marín-Aguilera et al. 2018). Limited evidence for specialized activities beyond settlements has also been identified, such as salt production at Vasche Napoletane (Iacono 2019, p. 72).

An intense local network of interaction, possibly involving the movement of people and craftsmen and supported by the sharing of decorative features on pottery, seems to have been in place. Such a network was, at least in Apulia, facilitated by the presence of pack animals such as donkeys, whose earliest remains in Italy, at Coppa Nevigata, date to the RBA (see Iacono 2019, p. 50).

A considerable concentration of hoards dated toward the end of the FBA has been recovered on the southern tip of Apulia, an area that is completely devoid of metal resources. Such hoards often show connections with other areas rich in metal, such as northern Italy and the Balkans (see Bietti Sestieri 2008; Gori 2006).

## Tyrrhenian Italy

### Settlement Patterns and Demography

In Tyrrhenian Italy (Fig. 4), a long-term process of increasing stabilization of communities and of the selection and concentration of settlements on naturally defended positions north and south of the Tiber River occurred at various times between c. 1650 and 1000 BC. This process has left signs of clearance in the pollen record (Alessandri 2013; Barbaro 2010; Stoddart et al. 2019). In the historical region of Latium Vetus (in the central Tyrrhenian coast), after multiple ephemeral open-air sites were abandoned in MBA1–2, settlement organization became more structured from the MBA3 onward. Larger settlements on defended positions, for example, Luni sul Mignone and Rome-Campidoglio, acted as longstanding central places, while the open and minor ones functioned as nonpermanent bases for subsistence and other productive activities (Alessandri 2013, pp. 29–33; Cardarelli and di Gennaro 1996). The central role of some major settlements, such as Luni sul Mignone and Monte Rovello in southern Etruria, is additionally supported by large rock-cut features traditionally interpreted in Italian scholarship as the semisubterranean foundations of monumental buildings (di Gennaro 1999; Peroni 1996).

At the climax of this trend, in FBA 3 southern Etruria, two-tier “micro-systems” developed that articulated with densely inhabited villages on vast plateaus (up to 12–15 ha) endowed with high defensive potential and smaller settlements in less defended locations (Barbaro 2010; Pacciarelli 2001). These are the logical premises of a simultaneous and momentous process that started in the 10th century BC, when communities abandoned most of their villages and concentrated on large plateaus (~100–150 ha) that became the seats of the Villanovan/Etruscan proto-urban and urban entities of the early first millennium BC (Pacciarelli 2001, 2017a).

The limited data available on the internal organization of settlements in southern Etruria during the FBA suggest that these were highly populated villages, mostly concerned with defending their territory. At Sorgenti della Nova (Farnese, VT), which occupies a tufa plateau of about 15 ha, the settlement layout was extremely densely arranged into artificial terraces, each possibly corresponding to a household or family plot. These included wooden huts and small rock-cut cavities intended for various quotidian activities and cultic practices (Dolfini 2013; Negroni Catacchio and Domanico 2001). In other settlements, signs of competition for territorial control are associated with evidence of collective rituals. At Monte Cimino (near Viterbo), the highest mountain in southern Etruria (1053 m), two lines of imposing artificial fortifications enclosed a permanently occupied settlement with an area of ~5 ha (Cardarelli and Trucco 2014). A 100-m<sup>2</sup> area within a huge monumental building constructed on the most elevated peak of the mountain has yielded substantial remains including bonfires and traces of feasting (drinking cups, ovens, etc.).

In the southern Tyrrhenian, the best-documented area is the vast promontory of the Tropea or Poro Plateau in southern Calabria. This is a florid patchwork of different landscapes, which thanks to its fertility and wealth of resources attracted communities for several millennia (Pacciarelli 2001, pp. 74–85, 2017b). Peculiar to this area was the gradual formation of hierarchical territorial systems centered

on hilltop settlements from the EBA onward, well before most of peninsular Italy. At the same time, discontinuities, sudden accelerations, and crises match parallel cultural and historical developments in the Aeolian Islands and northeastern Sicily. In the MBA3 (the equivalent of Thapsos facies in Sicily), people concentrated in a few large sites on defended plateaus above the principal natural harbors (such as the one located on the vast promontory currently occupied by the town of Tropea, measuring ~8 ha).

The generalized crisis that characterizes the FBA in this district of southern Calabria, in particular the abandonment of several sites and the concentration of others in very few locations such as the Tropea stronghold, has been linked by scholars to the dramatic events hypothesized for Lipari and northeastern Sicily after 1200 BC (see below and Pacciarelli 2017b).

## Burials

In southern Etruria during the MBA, at the same time that settlements began to be located on hilltops, restricted social segments developed new burial practices that were different from previous collective inhumations in natural caves (Guidi 2003) and deposited their dead in chamber tombs akin to those of southeastern Italy (di Gennaro 1999). The RBA saw the advent of entirely new burial customs. Extra-mural urnfield cemeteries representing broad sections of communities appeared in Latium. Cremated remains deposited in nonstandardized urns were accompanied by scarcely differentiated grave sets, as in the Cavallo Morto necropolis near Anzio or at Lucus Feroniae (Angle et al. 2004, Trucco et al. 2014). In the 11th–10th centuries BC, the uniform Urnfield-type ritual gave way to a much more complex system of mortuary customs consisting of individual assemblages that represented the afterlife as a miniaturized world (Bietti Sestieri and De Santis 2003; Iaia and Pacciarelli 2012). The most highly codified version of this burial tradition occurred during the FBA 3 in Latium Vetus, where some assemblages materialized hierarchies in which imagery of military and sacral power intertwined: complex sets of miniaturized weapons/tools (including shields and swords) are thought to refer to male community leaders, while females associated with “sacrificial” knives are interpreted as individuals invested with cultic functions (Bietti Sestieri and De Santis 2003; De Santis 2011). Given the minimal number of graves per plot (rarely exceeding 4–5 individual units) and the presence of rich infant burials, a mechanism of strict selection of access to formal burial based on rank and status membership seems to have been in action.

Inhumation was more persistent in the southern Tyrrhenian, where a remarkable funerary complex at Castellace di Oppido Mamertina (Pacciarelli 2001, pp. 191–202) consists of a group of six FBA 1–2 inhumation burials accompanied by unusually rich grave sets, including variable panoplies of bronze/iron weapons (swords, spearheads, greaves) and golden ornaments. All artifacts show manifold typological connections, ranging from the north Adriatic to the Balkans. These assemblages suggest the establishment of élites who supported a complex military organization and were involved in long-distance connections.

## Production, Economy, and Networks

In mid-Tyrrhenian Italy, there was a constant increase of ovicaprids in the archeozoological record from the MB3 to the FBA (Minniti 2012). Sheep and goats were mainly a source of meat, but the importance of wool in the FBA emerges from the artifacts in the mortuary records. An increase in circulation of breeds, including the import of new species (e.g., the donkey), might explain the considerable heterogeneity in the morphological characteristics of animal species. A significant novelty of MBA and LBA settlement contexts in Tuscany was the increasing coexistence of wild, semidomesticated, and domesticated *Vitis vinifera*, which might be an indication of winemaking (Bellini et al. 2008).

Local diversification and specialization in crafts are evident particularly in the FBA. The extensive copper, lead, and iron sources of coastal Tuscany, one of the wealthiest metallurgical areas in Europe, and the increasing social complexity might explain the role of FBA Etruria, with particular regard to its mining district, as a “core area” of the Italian Peninsula in terms of technological innovations and capacity for stylistic elaboration in metalworking (Bietti Sestieri 1998). A number of rich hoards concentrated the largest set of artifacts, such as working tools, weapons, and vessels in bronze sheet, while burials contained a limited selection of ornaments, fibulae, and personal items (Fugazzola Delpino and Pellegrini 2010; Iaia and Pacciarelli 2012). Metalwork, however, is only a facet, possibly an overemphasized one, of the picture. The presence in FBA female cremation burials of specialized tools for spinning and weaving attests to the growth in importance and technical complexity of the manufacture of woolen textiles (Pacciarelli 2001, pp. 208–210). The finding of a fragment of textile with borders worked by tablet weaving in a FBA 3 burial from Santa Palomba near Rome confirms this assumption (De Santis 2011, pp. 32–37).

Crafts and specialized productive activities are frequently attested in what can be defined as “secondary” settlements. In the late RBA and FBA, small agglomerations near watercourses and lagoons or close to the sea hosted various activities, including salt extraction (Attema and Alessandri 2012; De Castro et al. 2018). In the open village of Scarceta in southern Tuscany, a large elliptical dwelling has produced several indicators connected to the final steps of bronze working and the processing of bone/antler alongside spinning/weaving (Poggiani Keller et al. 2002).

Maritime trade and technological stimuli, possibly linked to the demand of exotica by emergent élites, increased in the 12th century BC. Some settlements on the coastal area of southern Etruria and Latium Vetus have yielded a variable quantity of fragments of Aegean-type wheel-made and painted pottery (Barbaro et al. 2012), some of them either locally produced or (very rarely) imported from southern Italy. However, this phenomenon was ephemeral and had limited effects in the long run. In the same period, metalwork shows multiple typological connections ranging from continental Europe to the central and eastern Mediterranean (Bietti Sestieri 1998). The appearance of the domestic donkey (Minniti 2012, p. 109), presumably introduced from the Aegean or the Adriatic area (see above and Pappi and Isaakidou 2015), might have facilitated overland bulk transport.



At Punta di Zambrone, recent excavations have brought to light a small village dating to the RBA, located on a promontory flanked by two natural harbors and defended by an artificial ditch and wall (Jung et al. 2015). This same ditch has yielded large quantities of artifacts imported from the Aegean, including in particular numerous Mycenaean ceramics, which sharply contrast with the locally manufactured “Italo-Mycenaean” ceramics found in Ionian Calabria and Basilicata. All data speak for a special functional role of Zambrone as a bridgehead to the Aegean (possibly through piracy or trade), which still deserves an explanation (Jung et al. 2017b).

## Sicily, its Islands, and Malta

### Settlement Patterns and Demography

In Sicily (Fig. 7), a maritime outlook characterizes the sites—Thapsos, a coastal site in southeastern Sicily, and Punta Milazzese, in the Aeolian Islands—after which the MBA3 Thapsos-Milazzese phase is named. A fortified trading settlement with a natural harbor, Thapsos epitomizes Sicily’s “international” zeitgeist with its Mycenaean, Cypriot, and Maltese materials. Rectangular buildings with central courts and narrow streets, arguably inspired by Mycenaean architecture, replaced earlier



Fig. 7 Sicily, its islands, and Malta, showing sites mentioned in the text

round huts around the 13th century (Leighton 1999, p. 152; Voza 2008). Despite being only partially published, detailed revisions to the chronology (spanning the 14th–ninth centuries BC) and alternative models of local development and interaction with incoming groups have been proposed (Alberti 2007). Punta Milazzese on Panarea, with its oval huts perched on a steep promontory, exemplifies life on the smaller islands at this time (Fig. 8). Villages of 100–200 inhabitants favored defended locations, such as the Lipari acropolis, Portella on Salina, and Faraglioni on Ustica (Bernabò Brea and Cavalier 1980; Martinelli et al. 2012; Nicoletti and Tusa 2012; Spatafora 2016). The recent calibrated  $^{14}\text{C}$  date range from the Milazzese phase village at Portella on Salina is 1525–1320 BC (Martinelli 2010, pp. 247–248).

During the subsequent Pantalica I culture, settlement shifted from the eastern to the southern coast and to the interior of Sicily, with characteristic hilltop sites and rock-cut tombs (Leighton 1999, p. 150). Key LBA sites include large cemeteries at Pantalica, Montagna di Caltagirone, and Dessucri; settlements include Sabucina, Montagna di Polizzello, and Scirinda (Bietti Sestieri 2013, pp. 663–664). A large rectangular building at Pantalica, the Anaktoron, has been interpreted as the house of the local ruler and bears similarities with Mycenaean (as regards the use of ashlar masonry) but also (in terms of plan) with much later Byzantine buildings (Bernabò Brea 1990; Leighton 1999, p. 155). Recent investigations support the use of the area of the Anaktoron during the LBA (Militello 2017). In the Aeolian Islands, fire destroyed the Milazzese settlements, and the subsequent phase is associated with Ausonian or sub-Apennine pottery. The change may have been brought on by a population influx from Calabria, although this explanation has been questioned (see Bietti Sestieri 2015, pp. 88–89; Cazzella and Recchia 2013b, p. 88).

Settlements belonging to the Pantalica II Cassibile phase comprise both coastal sites and interior hill settlements (Leighton 2016, pp. 142–146). The archaeological record is an intricate mix of cultural traits from mainland Italy and Sicily, combining



**Fig. 8** Photo and reconstruction of the village of Punta Milazzese on Panarea (composition by Helen Dawson)

Thapsos-Pantalica pottery and Ausonian metalwork as seen at Cassibile, Pantalica, Dessucri, and Scirinda (Bietti Sestieri 2015, p. 92, Leighton 2016, p. 127, fig. 3). In the Aeolian Islands, the Ausonian I settlement on the Lipari acropolis was destroyed by another fire around the early 12th–mid 11th century BC, only to be replaced by a new settlement of large quadrangular huts (Ausonian II), which may have lasted until the mid-ninth century (Bernabò Brea and Cavalier 1980, pp. 710–718; van Wijngaarden 2002, p. 209).

Borġ in-Nadur, the eponymous site for the Maltese LBA, is a fortified settlement located on a low, steep-sided ridge overlooking Marsaxlokk Bay, at the southernmost tip of the island (Tanasi and Vella 2011, 2015a). The inhabitants of Borġ in-Nadur reused an earlier Neolithic temple structure for habitation and built a new settlement of oval and rectangular huts that covered ~3.4 ha. Besides coastal settlements, small rural hamlets dotted the interior, and cave sites, among them Għar Mir-dum, were used for temporary shelter (Sagona 2015, pp. 160–161; Tanasi 2014, p. 306). At the end of the second millennium BC, the focus shifted from Borġ in-Nadur to Baħrija, a settlement overlooking a steep cliff in the northwest of Malta (Sagona 2015, pp. 183–186).

## Burials

Burial types during the Thapsos-Milazzese phase comprise chamber tombs and single inhumations in jars. At Thapsos, ~300 chamber tombs and 20 jar burials span the 15th–12th centuries BC. The chamber tombs comprise simple subcircular or circular chambers entered by a vertical shaft; more elaborate versions have anterooms, passageways, niches, pillars, side rooms, and benches (Leighton 1999, pp. 162–167). The tomb ceilings are reminiscent of Aegean tholos tombs, although direct derivation is contentious (Militello and Żebrowska 2017; Tomasello 2004;). Evidence for burials during this phase from the Aeolian Islands and Ustica is lacking. At Pantalica, chamber tombs range from large rectangular to small oval chambers, which were heavily disturbed in antiquity but preserved large amounts of grave goods, including gold, silver, and bronze utensils and handmade and wheel-made pottery, such as the distinctive large pedestal basins (Leighton 1999, p. 167, 2019). Cremation cemeteries are known during the FBA Ausonian II period; at Piazza Monfalcone on Lipari, for example, the cemetery combined cremation and inhumation jar burials (Bernabò Brea and Cavalier 1960, pp. 89–172).

Burial and ritual practices during the Borġ in-Nadur phase have left no traces apart from a burial from Għar Mir-dum cave, which is of uncertain date (Tanasi 2014, p. 305). This is in stark contrast to the preceding Tarxien Cemetery phase (2400–1500 BC), which saw the reuse of earlier “temple” structures for cremation burials (especially at Tarxien Temple and Ħal Saflieni Hypogeum) and the widespread adoption of dolmens from the continent (Sagona 2015, pp. 138–153).

## Production, Economy, and Networks

Sicily is a large mountainous island with vast coastal plains, fertile river valleys, and several good harbors. Incoming groups might have come in search of metals

and mineral resources, especially sulfur and alum, as well as organic products. Evidence for metalworking is extensive, both in Sicily and the smaller islands (Albanese Procelli 2006). Fragments of oxhide copper ingots from Cyprus have been found at Thapsos, Cannatello, and Lipari (Lo Schiavo et al. 2009a), where a bronze hoard of 75 kg, the largest-known LBA hoard in Italy, contained fragmentary Thapsos daggers, ingot fragments, and sherds of bronze bowls, with Italian and Aegean prototypes as well as Sicilian parallels (Bettelli 2006, pp. 243–244). Aegean-type and Cypriot ceramic fragments at Cannatello included transport stirrup jars probably from western Crete and Cypriot pithoi (Day and Joyner 2005). On the Lipari acropolis, the excavation yielded ~300 sherds of imported Mycenaean pottery (LH I–II and LH IIIA–C). The majority is distributed throughout the settlement and comprises common tableware, while there is a distinct lack of storage containers (Iacono 2017; van Wijngaarden 2002).

Imports and (to a lesser extent) local imitation of Aegean pottery are found mostly in burials in southeastern Sicily and in settlements in the Aeolian Islands, including the remote Stromboli (Levi et al. 2017), indicating that these communities benefited in different ways from their location *en-route* to the Tyrrhenian, while later on the single Mycenaean find from Pantalica may reflect an apparent decline in contact with the Aegean (Iacono 2019). During the sub-Apennine/Ausonian phases, there are but a few LH IIIB and LH IIIC sherds in Sicily (Bietti Sestieri 2013, p. 662). On the other hand, Nuragic pottery found at Cannatello and at the Lipari Acropolis indicates sustained contacts with Sardinia (Paglietti 2013; Russell and Knapp 2017).

In Malta, numerous rock-cut pits and channels found near the settlements may have been used for dyeing textiles using purple dye from the murex shell and were possibly exported to Sicily in return for sulfur and alum (Sagona 2015, p. 152). Borġ in-Nadur pottery has been found in large quantities at 11 sites in southeastern Sicily, including Thapsos and Cannatello, with the largest assemblage at Cozzo del Pantano (Tanasi 2008, 2011). The pXRF analysis of Maltese ceramics found in Sicily shows that they were produced with Maltese clays and therefore imported to Sicily (Pirone 2017). Sicilian pottery of the Thapsos phase is reported from the northern enclosure of Tas-Silġ (Recchia and Cazzella 2011, pp. 388–389), from the Borġ in-Nadur temple, and from the settlement sites of Baħrija and In-Nuffara (Tanasi 2011, p. 148; Tanasi and Vella 2015b, p. 65). Pantalica North/Montagna di Caltagirone and Casibile/Ausonian II facies pottery (Sicilian RBA–FBA) was identified in storage from the excavations of Borġ in-Nadur, both from the settlement and the reoccupied temple area, indicating continued contacts with Sicily (Tanasi and Vella 2015b, p. 66).

Interaction with the Aegean appears to largely exclude Malta, where only two Mycenaean sherds and a few exotic items have been found so far (Bonanno 2008, p. 35; Recchia and Cazzella 2011, p. 381). A fragment of a Mycenaean kylix at Borġ in-Nadur and another Mycenaean sherd at Tas-Silġ represent the entire corpus (Tanasi 2011, pp. 139–142). Trace elemental data for the Borġ in-Nadur kylix sherd indicate it was made with clays from a Maltese source (Pirone 2017, p. 218). A few bronze items and a stone mold from Borġ in-Nadur attest to the earliest use and production of metal on the island; a lump of bronze, two bronze rivets, and a dagger with a finely carved bone handle with Sicilian parallels are reported from Għar Mir-dum cave (Tanasi 2014, pp. 302–303).

## Sardinia, Corsica, and Southern France

### Settlement Patterns and Demography

Massive structures in drystone masonry, called *nuraghi* (singular: *nuraghe*) make up most of the evidence related to settlements (Vanzetti et al. 2013) in Sardinia (Fig. 9). Nuraghi were built between c. 1600 and 1150 BC, with commonly accepted figures accounting for at least 7000 sites. In their most characteristic form, nuraghi are complexes of conical towers with superimposed tholos chambers. These complexes could cover surfaces of up to 3000 m<sup>2</sup>, and the towers could reach 25–30 m in height. Nuraghi are so prominent in the local landscape that the Bronze Age in Sardinia is commonly referred to as the “Nuragic Age.”

Based on available evidence, the first nuraghi were built around 1600 BC (Vanzetti et al 2013). The earliest forms, “archaic” nuraghe, are massive one-story structures with roughly rectangular plans, based mostly on the trilithic system. They do not have towers—tholoi are either not present or they appear in embryonic forms—and they are often crossed by corridors that connect small rooms, while internal staircases connect the corridor to the roof.

**Fig. 9** Corsica, Sardinia, and southern France, showing sites mentioned in the text



Tower nuraghe, such as Nuraghe Macomer (see Moravetti et al. 2017, p. 324) are generally thought to be slightly later than archaic nuraghi (c. 1500 BC) and are composed of a variable number of towers (between one and eight). Multitower nuraghi always have a main tower—taller than the others and architectonically more complex—around which the secondary towers were placed. Towers are connected by a bastion, sometimes provided with internal corridors. In multitowered nuraghi, the main gate runs through the bastion and leads to a courtyard where the main tower stands (Vanzetti et al. 2013).

Towers can vary in size but mostly present standard features. They are always conical, with two or three superimposed tholos-chambers connected by spiral staircases running within the thickness of the walls. Only a handful of towers are preserved up to the base of the third floor, and none are complete up to the top. Based on later models (c. 950–725 BC), the top was occupied by a jutting terrace, held up by corbels. Many multitower nuraghi (and a few single-tower ones) present an *antemurale*—a further fortification wall delimiting an open space around the bastion—also provided with towers.

The continuous architectural production has resulted in thousands of monuments, not only nuraghi, many of which are still well preserved today. Such monuments fulfilled different purposes at different times: as dwellings, warehouses, landmarks, fortifications, hydraulic structures, burial places, and temples.

The “Nuragic expansion” probably started in the middle upland regions, where the highest concentration of archaic nuraghi is recorded (Webster 1996, pp. 68–71). The expansion eventually involved more or less the entire island, with central regions maintaining the highest density, sometimes more than two nuraghi per square kilometer. During this period, the overall settled surface (ideally correlated to demographic figures) grew by 800 to 1400% (Ialongo 2018). Villages often developed around preexisting nuraghi. Early villages were small, comprised loose concentrations of round houses, were built in drystone masonry, and tended to grow in the subsequent phases (Fig. 10). Settlements with perishable structures also existed, but their presence was limited to the Campidano Plain, in the southwest, where no nuraghi are documented (Usai 2011).

The expansion reached a plateau ~500 years after it began. Nuraghi and so-called giants’ tombs (see below) ceased to be built, and the concurrent processes of selection and enlargement of preexisting settlements ensued. Many nuraghi were abandoned, even though they were still standing and functional; others collapsed partially but continued to be settled and expanded (Vanzetti et al. 2013). The previous phase produced densely settled compounds, and liminal areas between compounds became progressively depopulated. Many surviving villages, especially those surrounding multitower nuraghi, expanded (up to ten times), with houses clustering in agglutinated compounds around communal courtyards (Webster 2015, pp. 97–107). Based on hypothetical figures, it cannot be excluded that the population continued to grow even during this apparent crisis (Ialongo 2018).

In Corsica, drystone fortresses called *casteddi*—for example, Castellucciu-Calzola and Castidetta-Pozzone (see Cesari 1992)—whose summits are surrounded by a *torra*, similar to the coeval Sardinian nuraghi (Pecche-Quilichini and Cesari 2017) characterize the second half of the Bronze Age (1500–1000 BC), especially in the





**Fig. 10** Nuragic village at Barumini (source: Wikimedia Commons, [https://commons.wikimedia.org/wiki/File:Su\\_Nuraxi\\_de\\_Barumini\\_39.jpg](https://commons.wikimedia.org/wiki/File:Su_Nuraxi_de_Barumini_39.jpg))

south. At the same time, open settlements consisting of large elongated houses were distributed over the foothills (e.g., Campu Stefanu). In the FBA, small fortified sites appeared, along with the multiplication of some kinds of elliptical dwellings (e.g., Cuciurpula, Puzzonu) grouped into villages at the foot of the fortresses. These data could mirror a significant population increase. The study of the settlements' organization reveals similarities with neighboring regions (Tuscany, Lazio, Balearic Islands) and highlights differences with Sardinia (Pecche-Quilichini et al. 2015).

Unlike other Mediterranean regions, southern France is characterized by the elusive nature of its settlements, which may partly explain the documentary gap in that region (Lachenal 2014a). These mainly consist of sites characterized by a small number of conservation pits, suggesting the existence of dispersed and isolated settlements or of groupings of a small number of dwellings. The construction of massive earthen architecture, identified at Laprade (Billaud 1999), for example, could partly explain the difficulty of identifying dwelling structures. This difficulty also may be related to a reorganization of the settlement system toward increased mobility, corresponding to a turn to a colder and wetter climate between 1700 and 1400 BC (Capuzzo et al. 2018). From this period on, naturally defended sites emerged, although it was not until the very end of the Bronze Age (Bronze Final 3b, ninth century BC) that this type of settlement really developed, in conjunction with an increase in the size and density of sites (Lachenal 2018; Py 1990).

## Burials

The so-called giants' tombs of Sardinia, at Orroli, for example (see Perra et al. 2015), were built between c. 1700 and 1150 BC (Depalmas 2009); these monumental gallery graves with their recurrent structure were the main burial feature of the

second millennium BC. In many respects, such tombs—built of large stones and comprising multiple inhumations—feature a type of ritual and monumentality with clear “megalithic” linkages. They can contain hundreds of individuals, normally with very few grave goods, such as ornaments, but rich exceptions do exist (see Perra et al. 2015). They were often used long after their construction had definitively ceased (Blake 2001). Individual burials emerged in Sardinia later in an advanced phase of the LBA (Usai 2015).

We know nothing about MBA burial contexts in Corsica. For the later FBA, the data allow us to consider the practice of cremation, materialized by the presence of biconical urns in natural caves, in line with customs that spread in the northern Tyrrhenian from the 13th/12th century BC onward (Peche-Quilichini et al. 2015). The recent (and unpublished) excavation of the Grotta Laninca revealed the remains of seven to eight individuals buried during the 12th century BC. No furniture is associated with these inhumations with the exception of two yew-wood coffins.

In southern France, funerary practices show considerable variability during this period (Lachenal et al. 2017). The early phases (Bronze Moyen and Bronze Final 1, 1650–1200 BC) are dominated by collective cave ossuaries. At the same time, burials in stone barrows are known, as is the reuse of dolmens from the end of the Neolithic. In the lowland territories, burials are interred in circular pits, shaped like silos, within domestic sites. This type of tomb, documented since the Middle Neolithic, occurred up to the BF2. Most of the funeral practices that characterize the MBA/LBA in southern France are already illustrated in previous periods. The only really noticeable innovation, at the beginning of the LBA in eastern Provence, consists of secondary cremation repositories, in pit or urn, whose practices are similar to those of northwestern Italy. These incinerations correspond to isolated graves or small funerary sites with a maximum of five individuals. The large cremation necropolises developed in southern France only at the very end of the LBA (ninth century BC), in western Languedoc and Roussillon (Dedet 2004).

## Production, Economy, and Networks

In Sardinia, the hoarding of metals is first documented in the LBA, much later than in many areas of continental Italy. Metallurgy shows innovation in terms of style and technological development. Formal types are clearly more related to the Atlantic façade than to continental Italy and central Europe, a feature that mainly characterizes the EIA (Giardino 1995). Use of the lost-wax technique for making iconic *bronzettii* (small well-rounded bronze statues and figurines) represents one of the many facets of the connection between Sardinia and Cyprus (Araque Gonzalez 2018, p. 70). Copper ingots of Cypriot origin, known as oxhide ingots, likely reached the island in good number during the LBA but are frequently documented in contexts dating to the early first millennium BC (Lo Schiavo et al. 2009a). Sardinian pottery has been recovered at the port of Kommos in southern Crete in association with material from Cyprus, while pottery from Sardinia has been recovered at Pyla Kokinokremos and Hala Sultan Tekke on Cyprus (Gradoli et al. 2020).

The LBA in Corsica is also marked by profound mutations within material production, especially ceramics. During the MBA 2, local production was clearly

influenced by Italic material culture (Viverone, Grotta Nuova, and Protoapenninic), for example, at Filitosa and Monte Ortu, while this phenomenon drastically decreased thereafter (Peche-Quilichini and Cesari 2014). During the earliest phases of the FBA, the commonalities observed with the closest regions, Tuscany and northern Sardinia (Gallura), are evident in the “Apazzu-Castidetta-Cucuruzzu” pottery (see Peche-Quilichini 2012). The most significant examples are the diffusion of flaring neck jars, which testifies to contacts with Tyrrhenian Italy, and the abundance of plates, which show frequent relations with Nuragic groups. In the latter case, the recurrence of the specific technique of flattening the bottoms on discoidal basketry makes it possible to envisage technical transfers and even small-scale displacements of populations between the two islands, which are only 13 km apart (Peche-Quilichini 2009).

Metallurgical production (essentially tin bronze) illustrates a similar range of cultural connections. Thus, the weapons preferentially show similarities with the Italian peninsular repertoires (e.g., the Contigliano-type swords), while the tools seem to have been inspired by Sardinian models (e.g., Chilivani-type axes). The production techniques seem to have been inherited from local traditions, but they also adopted some Italic features (Peche-Quilichini and Graziani 2018). By the FBA, these techniques underwent quantitative growth and qualitative improvement.

Contacts with the eastern Mediterranean during the LBA are attested by the presence of amber and glass Aegean beads (Campu Stefanu) and oxhide copper ingots (Peche-Quilichini et al. 2017). At present, no Aegean-type pottery has been found on the island.

In southern France, from the beginning of the MBA, the pottery styles had many similarities with those of the northwestern Italian Peninsula (Lachenal et al. 2017). Thus, in eastern Provence, the pottery facies was similar to the Mercurago-Monate, with many vases with axe handles (*anse ad ascia*). Farther west, in western Provence, Languedoc, and lower Auvergne, these connections gave rise to an original decorative style called Saint Vérédème. In parallel, some forms and decorations present mainly on the Mediterranean coast of France reveal direct influences of the cultures of central and Padan Italy (Protoapenninic and Grotta Nuova facies), a dynamic confirmed in the BM2 and up to the BF1 (1550–1200 BC). Connections are thus perceptible with the Viverone facies, then with those of Alba-Scamozzina and Alba-Solero, from Piemonte and Liguria. On the other hand, some of the shapes and decorations of the BM3 were derived from the Apenninic facies pottery. They were once again concentrated in coastal areas, which raises the possibility of trade networks between Mediterranean France and central Italy in the MBA. But from the beginning of the LBA, typological connections were also established with the pottery styles of central France. This reorientation of cultural connections was particularly marked from the BF2 onward, with the emergence of a ceramic style akin to the Rhin-Suisse-France Orientale (RSFO) group and the fading of connections with Italian cultures (Lachenal 2014b).

Connections with northern Italy are also visible in bronze objects and the importation of faience beads that probably were made in this region. An exchange network had to connect both sides of the Alps, which did not then function as a border. It is probably not a coincidence that the end of these relations (around 1200 BC)

corresponds to a crisis period on the Po Plain, with the collapse of the Terramare culture. This phenomenon could have had an impact beyond its nuclear zone and led to a destabilization of the existing networks. In the BF2 (1200–1000 BC), connections with the eastern Po Plain and Frattesina are visible in the presence in southern France of glass beads and so-called *pani a piccone* ingots, but the distribution of these objects suggests that exchanges passed through the northern Alps, via the Urn-field complex and the RSFO group.

In parallel, for the period from 1650 to 1200 BC, there were links between the Gulf of Lion coastline and central Italy, suggesting maritime contacts. One hypothesis is that the cultures of the Italian Peninsula may have served as intermediaries for the exchange of oriental products with southern France, such as high-magnesium glass beads, or the oxhide ingot found in the sea near Sète (Guilaine and Verger 2008, p. 226; Lo Schiavo 2013). Thus, an exchange network could have developed in the northwestern Mediterranean in the margin, in parallel, or under the influence of the network recognizable to the east.

## Iberia and Balearic Islands

### Settlement Patterns and Demography

In Iberia (Fig. 11), the start of the LBA was marked by the demise of several social and political entities, notably El Argar, Bronce Valenciano, and Motillas, which had gone through an exceptional development during the first half of the second



Fig. 11 Iberia and the Balearics, showing sites mentioned in the text



millennium in southeastern Iberia, the Levante, and La Mancha (Hernández Pérez et al. 2013; Lull et al. 2013). In general, in the former Argaric territory population density dropped and remained low for several centuries, as also suggested by pollen data (Fyfe et al. 2019). Destruction and settlement abandonment, or sharp decline, are also occurred in the La Mancha and regions close to the former northern Argaric frontier, although social and economic change seems less marked to the north at Valencia, Castellón, and Catalonia (Aguilella 2017; Jover et al. 2016). The fertile Guadalquivir Valley, including the nearby exceptional copper and silver mining districts of Sierra Morena and Rio Tinto, began to regain the central position in the social and economic development of the Iberian Peninsula that it had lost at the end of the Copper Age. Northeastern Iberia, in particular the Segre-Cinca I group, with settlements like Genò (Fig. 12), is another area where a continuous and demographically ascending development occurred after c. 1600 BC (Soriano 2013).

In the Vinalopó Valley (Alicante), the ~2-ha settlement of Cabezo Redondo (Vilena) emerged around 1700 BC, contemporary with the final phase of El Argar, as a strategic hilltop center and communication node in a fertile valley between the Mediterranean and inner Iberia, and Andalucía (Hernández Pérez et al. 2016). Square and rectangular buildings, up to 100 m<sup>2</sup>, were closely built on the previously terraced slopes of the hill.

Apart from settlements such as Cabezo Redondo (Alicante), Gatas (Almería), Cuesta del Negro, and Cerro de la Encina (Granada), most of the LBA population was highly dispersed, with settlements occupying less than 0.3 ha surface.

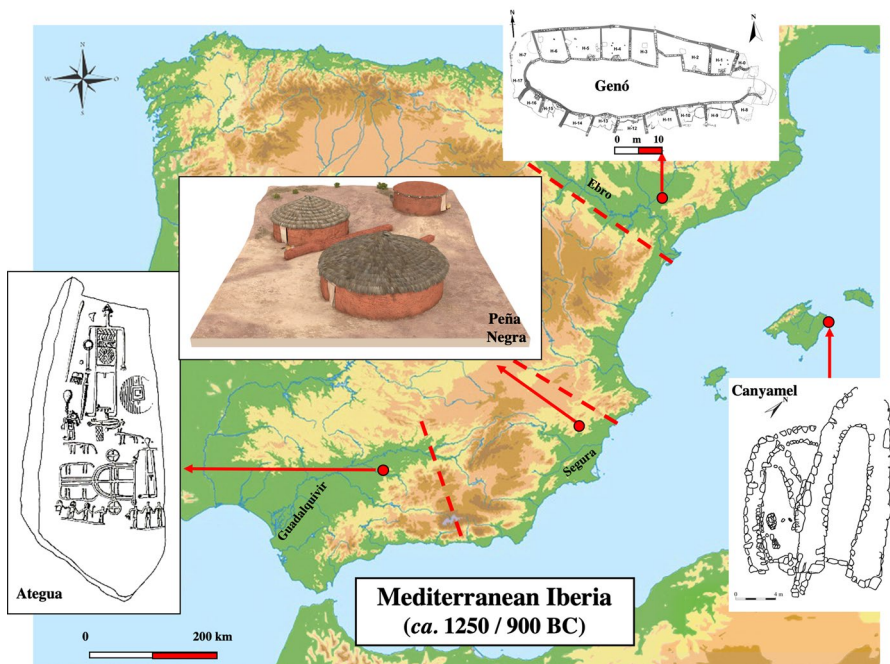


Fig. 12 Plans and location of the main Iberian sites discussed in the text (figure by Roberto Risch)

Fortification walls have occasionally been identified (Aguilella 2017; De Pedro Michó and García Borja 2015). An increasing number of known and excavated small sites (Altet de Palau, Valencia; El Negret, Alicante) of 100–350 m<sup>2</sup> points to a highly fragmented society, which was already the common trait of the EBA outside El Argar (Jover et al. 2018). While hilltop sites are better known, minor occupation was also present in the lowlands. Particularly in the northeast, caves continued to be used as dwelling areas, at least on a temporary basis.

The end of the second millennium BC continued to be characterized by large variability in social practices but also by a generalized demographic and economic growth (see Capuzzo et al. 2018; Fyfe et al. 2019). Rock shelters, caves, small villages, and hilltop settlements continued to form part of a diverse settlement pattern. A reasonable estimation, based on settlements and cemeteries, suggests self-sufficient communities with ~50 to slightly over 150 members. Larger centers with proto-urban layouts were founded *ex novo*, such as Peña Negra-Herna (Crevillente, Alicante; Fig. 12) with an area of nearly 40 ha (Lorrio et al. 2020). Its protected hill position required important terracing works and allowed an exceptional control of the fertile plain of the lower Segura River. This settlement became particularly relevant in the EIA, when the Phoenician colony of La Fonteta was founded at the Segura River mouth. Other settlements formed of oval huts, such as Castro dos Ratinhos (Moura, Portugal), were protected by a defensive wall and ditch. In this hilltop site, a large building interpreted as a Phoenician sanctuary was constructed at the end of the ninth century (Berrocal-Rangel and Silva 2010).

In the Balearic Islands, the LBA/FBA was marked by exceptional architecture, both domestic and funerary, economic innovations, and demographic increase. Around 1600 BC a new type of settlement appeared, formed of large naviform (boat-shaped) buildings (Pons Homar 1999; Sureda et al. 2017). These cyclopean constructions, ~14–18 m long and 3–6 m wide, dominated the island's landscape between 1600 and 1050 BC, either as isolated building or loosely distributed clusters, e.g., Closos de Can Gaià, Canyamel (Fig. 12, Mallorca), Cala Blanca (Menorca), Cap de Barbaria (Formentera). The central fireplaces, benches, and rather uniform set of tools found inside the naviform buildings, as well as the bioarchaeological information gained from contemporary collective burials, allows us to link these buildings to small residential groups (Lull et al. 1999; Rihuete Herrada 2003).

Between 1500 and 1400 BC, there was a significant population increase, which can be identified in the number of dated anthropological remains, excavated habitation phases, and surveyed settlements. This development cannot be explained in terms of endogenous growth alone but probably required the arrival and subsequent integration of foreign individuals (De Cet et al. 2017). The construction of coastal fortifications, starting during the Middle Naviform period (Calvo et al. 2011), may be related to these major immigration episodes. After 1200 cal. BC larger population centers and more complex architectural structures possibly reflect a demographic peak (De Cet et al. 2017; Fyfe et al. 2019).



## Burials

Funerary practices in the former El Argar territory are little known, with only occasional intramural single burials (Cerro de San Cristóbal, Granada) and the scattered reuse of Copper Age megaliths (El Barranquete 8, 10, and 11, Almería) (see Aranda Jiménez et al. 2018). In other areas, recent studies are confirming the reuse of Late Neolithic and Copper Age megalithic tombs and hypogea for individual or collective burial, for example, Pantano de los Bermejales 8, Granada; Hypogeum 14 of Alcaide (see Lozano Medina and Aranda Jiménez 2018; Soriano 2016; Tovar Fernández et al. 2014). Caves also continued to be used amply as burial spaces, especially in the northeast (Montanissell, Forat de la Conqueta). Reuse of the mounds or dolmen-like structures of the EBA in the northeast was also practiced (Aguilella 2017). Skeletons, either complete or disarticulated, are found in pits and shafts (Can Roqueta and Mas d'en Boixos, Barcelona). Grave goods are rare, hindering the recognition of strong social differences, at least in the funerary realm.

In the FBA (Bronze Final), funerary spaces became more numerous and larger, but their diversity continued to be a recurrent trait. Next to newly introduced cremation rites, which are well documented in the northeast (e.g., Can Misert, Can Piteu-Can Roqueta,) and the southeast (Les Moreres), inhumation continued to be practiced in caves or megalithic tombs (Capuzzo and López Ian 2017; Lorrio 2017). In the southwest, the supposed new social complexity is barely visible in the earliest cremations of Setefilla (Sevilla) or the *tumulos* 1 of Las Cumbres (Puerto de Santa María, Cádiz) (see Brandherm and Krueger 2017, p. 308; Torres 2017, p. 364). The notable amount of bronze objects found in some burials, such as in the reused megalith of Domingo I (Granada), suggests growing social differences at the community and possibly also territorial level (Lorrio 2008, p. 417).

In the Balearics, the increasing Naviform and Proto-Talaiotic communities engaged, particularly on Menorca, in a prolific development of below- and above-ground collective funerary structures (Gili et al. 2006). While the hypogea with megalithic entrances, dolmens, and mound structures of the EBA were still used, funerary caves started to be blocked with megalithic walls, and different types of hypogea, with or without *dromoi* (corridors), were cut into the limestone rocks. Finally, in the Proto-Talaiotic period (c. 1100/1050–850 BC), the monumental collective burial tradition culminated in Menorca with the construction of often two-storied, boat-shaped *navetas*. This structural diversity appears to be combined with an exceptional uniformity of an increasingly sophisticated inhumation ritual and of the collective grave goods. Even a distinctive ritual of the late second millennium BC that involved the dyeing, combing, cutting, and placing of the hair of some deceased individuals in wooden or horn cylinders is found on Menorca in caves with megalithic entrance walls, simple rock-cut tombs, and *navetes* without distinction (Lull et al. 1999, 2013).

## Production, Economy, and Networks

The settlement of Cabezo Redondo strongly resembles some late El Argar settlements, not only in terms of its architecture but also the variety of means of

production and the large amount of grinding tools and storage jars. The economic power attached to this settlement was also manifested in the abundant gold and silver ornaments. The type and dating of these objects to 1500–1300 BC is the same as the famous “Villena treasure,” which contained ~9 kg of gold and was found in a nearby riverbed in 1963 (see Hernández Pérez et al. 2014).

At least in southeastern Iberia and the Levante, available intrasite analyses show widespread access to metalworking tools, grinding slabs, and other macrolithic tools, and the absence of concentrations in specific buildings. Except for specific cases and regions, such as Cabezo Redondo, raw materials and technology became much more accessible to small communities and domestic units than in the EBA, suggesting the beginning of a household type organization (Delgado-Raack and Risch 2015). The widespread use of tin bronzes also highlights the intensification of interregional exchange networks and an increased access of a large diversity of communities to nonlocal resources after 1500 BC. Faunal studies suggest strong intersite variability in husbandry and hunting, which in all cases seems to indicate self-sufficient production of meat, milk, wool, and means of transport or traction (Andúgar Martínez and Sañá Seguí 2004). A greater importance of pulses, the possible beginning of olive and vine cultivation, as well as the introduction of millet has been suggested at least for some regions (Alonso 2000; Castro et al. 1999).

In the final phases of the Bronze Age, changes in settlement pattern were stimulated by the development of larger interactions networks that linked Iberia to the Atlantic sphere and led to the spread of new ideas, techniques, and probably also people. Connections at this time included contact with central European Urnfields societies, trans-Mediterranean contacts, particularly (but not only) with the early Phoenician world, known as precolonization, or the probable arrival of specialists from the Atlantic world (Celestino et al. 2008; Rafel 2017). The more than 400 bronze objects in the Ría de Huelva metal deposit with (Fernández 2014; Ruiz-Gálvez 1995) have been interpreted as ritual offerings in relation to initiation rites, as the accumulation of recycling material, as traded goods, or even as treasures related to conflicts. The typology, diversity, and volume of metals implies an increase in mining, technological competence, production, and the related growth of exchange networks. The best example of this highly specialized production has been found in a metallurgist’s dump in the large Peña Negra settlement, which contained over 400 fragments of sandstone and clay molds that were used to produce a variety of items at least partly meant for export (González Prats 1992).

In the Balearic Islands, different spheres of production underwent a gradual process of intensification (metallurgy, bone industry) and technological shift (pottery). The presence of exotic materials confirms the involvement of the Naviform communities in the growing long-distance networks of the time. Menorca and Mallorca were among the first regions in the western Mediterranean where tin bronzes as well as tin and iron objects were used, while ivory seems to have been obtained from North Africa throughout the whole of the Bronze Age (Lull et al. 1999). Many of metal artifacts recovered in the Balearic Islands date to this period, probably using ores from southeastern Iberia (Sureda 2020), while connections with other areas (northeastern Iberia and Sardinia) are also recorded. Interestingly, before the end of the second millennium BC, there was a nearly complete absence of specialized

weapons, such as swords, spearheads, or new axe types, which have been related to the emergence of warriorhood in a context of increasing social turbulence. Gold and silver ornaments, which became the symbolic privileges of this new elite and their kin, were equally absent until Roman times.

## From Lineages to Palaces: Variability in Sociopolitical Organization

Throughout the LBA, Mediterranean Europe showed a considerable degree of diversity in social organization. Traditionally, such diversity has been misleadingly ordered on an ideal scale of social complexity (ultimately leading to our own society) with palatial polities at the apex and everything else ranking lower. While such an approach has evident limitations, it has at least helped conceptualize macroscopic differences in organization that can be recognized between the Aegean and central/western Mediterranean.

Many areas of the Aegean probably did not present a greater level of societal stratification than much of the areas to the west, but some evidently did. One of the most discussed aspects in which such a difference can be noticed is undoubtedly the existence in the east of palatial polities or “state societies” (Bennet 2013; Galaty and Parkinson 2007). The most easily distinguishable character of these is certainly the presence of “archival economies” interested in keeping track of surplus and a variety of aspects of production (although, importantly, not all of them) through various forms of accounting that feature some of the earliest writing systems in Europe; Wengrow (2011) contrasts them to “sacrificial economies” that are typical of metalhoarding Europe).

The trajectory of state societies in the Aegean has been variously linked to processes of capital accumulation and debt creation (Voutsaki 2016). For almost three centuries (c. 1650–1350 BC), different scales of elaboration and conspicuous consumption in mortuary practice appear to imply the existence of social stratification and competing centers that vied for power. Some of these centers continued, and a few actually grew stronger and ended up forming “regional capitals” (e.g. Pylos) or second-order centers, while others were abandoned (Cosmopoulos 2019). Despite similarities in the methods of competition, however, the pathways to social complexity followed by the emerging elites were neither linear nor always/necessarily successful (see Pullen and Tartaron 2007 [Corinthia]; Whitelaw 2018 [Crete]; Cosmopoulos 2019 [mainland Greece]).

For the palatial period, Linear B is a major source of information, and in general terms scholars working in the Aegean have somewhat stepped back from conceiving palatial systems as redistributive in the sense of Renfrew (Nakassis et al. 2016). Scholars now tend to think of palatial polities as structures of power whose ultimate scope was to secure resources necessary for their own survival (Halstead 1993).

How Mycenaean “palaces” should be understood is debated among scholars: from highly centralized authorities—state capitals, akin to the Mesopotamian model (Killen 2008)—to hillforts facilitating trade (Sherratt 2001) or as centers having a small role in their regions, with most economic activity under “private” control of local elites, sanctuaries, and village communities (Galaty

and Parkinson 2007; Lupack 2011). Others have recently reanimated the idea of a “Mycenaean empire,” i.e., separate palaces owing allegiance to a super king (Eder and Jung 2015; Kelder 2010). Irrespective of the scale of centralization of these entities, their economic reach (based on Linear B evidence) appears regionally focused, while ideologically they shared very similar religious, social, and political concerns (expressed via common systems of communication and representation). That Crete—not as a single political entity but as a sociopolitical region of influence—and possibly also some of the Cycladic Islands had a role to play in the emergence and shaping of these mainland polities and their ideologies is highly plausible, although the nature of this relationship continues to be debated (Gorogianni et al. 2016; Parkinson and Galaty 2007)

Most of the Linear B evidence on social and political organization comes from Knossos (more than 4000 documents) and Pylos (the best preserved of the Mycenaean palaces). Both of these centers had a hierarchical structure and were led by a *wanax* (king) and his entourage (Shelmerdine 2008). All political titles were held by men, from the top of the ladder to the regional elites, and a gendered division of labor is evident (Olsen 2020). The term ‘wanax’ lacks Indo-European etymology and may have originated in Crete. The administrative center was able to levy taxes (on both resources and finished products) and organized some production on the principle of *ta-ra-si-ja* (Killen 2008), where weighed quantities of materials were given out to craftworkers who then returned a finished product of equal weight, very similar to the Mesopotamian *iškāru* system (Bennet 2013, p. 248; Postgate 2010). Second-order centers facilitated the operations of the polity’s “capital.” In the Pylian polity, around 1200 BC there was an extra division between a “Hither” and a “Further Province,” the former having a clear ideological advantage (Killen 2012).

The complex system involving several hierarchically ordered elites and sub-elites roles recorded in the Aegean testifies to an organizational complexity that is currently not recognized west of the Mediterranean basin. Hierarchy and internal differentiation, however, are not directly related to the presence of settlement nucleation and/or of larger settlements, as indeed areas where there are no “traditional” signs of institutionalized social hierarchies can produce substantial communities

North of Italy, in the Terramare area, social organization has been almost paradigmatically considered as egalitarian due to the general organization of settlement involving a tight “communitarian” organization of space as characterized by modular planked structures. However, in recent times the acknowledgment of possible hierarchies within Terramare settlements, as well as the reassessment of the funerary record, have allowed detailed reconstruction of the development of societal differentiation that was already in place in an earlier phase, evident in the cemeteries of Olmo di Nogara and, above all, later on at the site of le Frattesina-Le Narde. Notably, the emergence of these new conditions appears to coincide with the crisis of the Terramare society previously discussed; therefore, these two aspects might be systemically related (Cardarelli 2015, Leonardi and Cupitò 2005). Relatively large political entities with well-defined central places seem to have emerged rather clearly in the Grandi Valli Veronesi–Veneto area as a result of both local processes and connection with other areas of Italy and the Mediterranean (Cupitò et al. 2015).

In southern Italy, signs of societal differentiation in burial and/or architectural displays are less uniform. For instance, the kin groups who buried their dead for ~250 years within the Ipogei of Trinitapoli in Apulia (Tunzi Sisto 1999), or burials in some of the richest cemeteries west of the Mycenaean world, hint at the existence of an elite group (sometimes with warrior features) that was able to accumulate resources to invest in burial display over time; similar although more limited phenomena of accumulation of wealth finance (sensu Earle 2002) can be suggested for occasional rich tombs such as those at Oppido Mamertina (Pacciarelli 2001). Similarly, rich cemeteries in the southern Balkans occasionally point to the emergence of elite groups. Inhumation graves in the Iglarevo cemetery (Luci 1998) yielded bronze ornaments and weapons, including a Mycenaean rapier, which along with other examples suggest a local tradition of use and reuse of these objects (Molloy 2018b, p. 216). Demand for exotica from distant lands might point to emerging social roles toward the end of the LBA (Cwaliński 2014). In North Macedonia, both the inhumation cemetery at Ulanci Dimov Grob along the Vardar River and the urnfield cemetery of Hipodrom Klučka close to Skopje suggest forms of social differentiation through display of prestige objects in form of copies (Ulanci) or imports (Hipodrom) from the south (Mitrevski 2003). Fortifications in Adriatic Italy have been linked to the existence of coordinating elites (e.g., Scarano 2012, pp. 384–385), but they might also have resulted from common efforts of entire communities, with few institutionalized hierarchies (Cazzella 2009; Cazzella and Recchia 2013a), which can be inferred for the Adriatic Balkans. Rituals of commensality that involve feasting, and possibly the consumption of alcoholic beverages, seem to have represented common social lubricants. These sometimes involved only small numbers, as perhaps in the case of Broglio, and in others almost the whole village, as for Roca in Italy (Iacono 2015). The latter site also has substantial buildings and experienced a possible increase in the size of kin groups (Iacono 2019, pp. 191–195).

Southeastern Sicily might equally present evidence of the same trend. Both burial display and potential architectural elaboration at sites like Thapsos (Alberti 2007), Cannatello (Tusa 2004), and later on Pantalica, where there was a possible central building (Bernabò Brea 1990; Militello and Żebrowska 2017), are probably telling of a broader trend of societal differentiation in these areas. Settlement hierarchies, evidence for storage facilities and craft specialization, differences in dwelling and tomb size, layout, and related goods all support the idea of an increasingly stratified society, with status possibly inherited via kinship (Leighton 1999, pp. 182–183). Such societies have been defined as “complex chiefdoms” (Leighton 2016, p. 143), and there is a longstanding debate on the extent to which these changes were the result of external influences or of internal processes, or a combination of both (Russell 2017).

In Malta, the size of fortified settlements suggests a well-organized society largely engaged in agricultural and exchange activities. The lack of wealth differentiation in the settlements, together with an absence of burial evidence, makes it difficult to characterize social and political organization or support the idea of a chiefdom (Cazzella and Recchia 2015, pp. 101, 106). During the earlier Temple period, a “transegalitarian” society has been postulated as focusing on “cooperation and consensus,” which apparently continued to be unaffected by the trends

of centralization and wealth accumulation seen in Sicily throughout the LBA (Malone et al. 2019, p. 4303).

Other areas, for instance the central portion of the Italian Peninsula, with very limited exceptions, e.g., Monte Cimino (see Cardarelli and Trucco 2014) are characterized by less visible traces of internal differentiation (confined essentially to burial display), at least until the EIA when trajectories began to take a very different turn (Pacciarelli 2001). However, the evidence at hand is remarkably limited, and it is possible that this trend is the result of an exploration bias.

The rich body of evidence related to Sardinia has been recently interpreted as the product of a unique social configuration without elites (Araque Gonzalez 2014). However, such a hypothesis derives from a synchronic reading of the Sardinian evidence that is problematic. The expansion of nuraghi between c. 1600 and 1150 BC seems dictated by the need to acquire new land to sustain a fast-growing population (Vanzetti et al. 2013). The process seems to follow regular patterns in central areas; since most of the Nuragic settlements are located in the middle uplands, the model applies to most of the available evidence. Generally accepted models assume that a previously uninhabited patch of land was settled, for the first time, through the construction of a single nuraghe. As the first group of settlers grew in size, further nuraghi were built in the surrounding area. The process was repeated until densely settled compounds measuring c. 20–50km<sup>2</sup> were formed. This probably means that single settlements were meant to remain small, and that groups of settlers were sent out to found new sites when demographic pressure grew too high (Ialongo 2018). This pattern has been explained as the outcome of small communities based on patrilineal/patrilocal lineages (Webster 1996, pp. 125–129) periodically expelling cadet groups, according to contingent necessities. The oldest nuraghe is usually the one whose surrounding village grew the largest through time, and it is generally thought to have maintained a primate status within a given compound. The conical-clan model is generally used to describe power and hierarchy.

In the course of the late second/early first millennium BC, the expansion process was inverted. Several sites were abandoned, the territorial compounds shrank, and surviving villages expanded, which is generally considered evidence of a political crisis: compounds could not expand anymore, except by engaging in open conflict. Since there is no clear evidence of conflicts (Depalmas 2006), a political solution must have been found. Sanctuaries (like the one at Santa Cristina) were founded in “no man’s lands” between neighboring compounds; they are generally viewed as the correlate of territorial agreements that put to rest the potential conflict, through the formation of “confederations” of peer polities (Usai 2006). The growing demographic concentration in larger villages fomented the differentiation of the relations of production and the emergence of specialized craftsmanship and favored the formation of power relationships based on kinship and patronage (Webster 1996, pp. 164–168). Whether the term ‘aristocracy’ is appropriate or not, there is still wide agreement that nuragic elites emerged as driving forces of societal change (Lo Schiavo et al. 2009b). The ritual display of status was a substantial part of the elites’ strategy to seize legitimation: temples collected massive quantities of bronze offerings, in the form of complex sets of individual depositions (Ialongo 2013).



Rich evidence of social development also is present in post-Argaric Iberia. The beginning of the LBA is marked by the dismantling of the El Argar social and political organization in southeast Iberia. By 1750 BC, a network of large hilltop settlements with a highly centralized economy, urban planning, and specific intramural funerary practices occupied the whole of southeast Iberia and the southern parts of the central Spanish Meseta, an area of about 35,000 km<sup>2</sup>. Different archaeological features and material relations suggest that El Argar became a state organization, based on a tributary system, a highly specialized metallurgy, and armed forces controlled by a dominant class (Lull et al. 2011). Around 1550 BC, most of the Argaric settlements were abandoned, the centralization of agricultural production ceased, and the funerary ritual related to high-status individuals disappeared (Lull et al. 2013). Internal conflicts seem the most likely cause of the sudden collapse of this highly integrated organization. Subsistence shortages, derived from an unsustainable agricultural practice focused on an extensive barley monoculture, combined with an escalation of social exploitation and differentiation at the end of El Argar, seem to have led to a generalized revolt against a firm combination of economic, political, and ideological practices, whose principal traits had remained unaltered for centuries.

After 1550 cal. BC, the hierarchical organization of production and consumption observed in Cabezo Redondo and the Vinalopó Valley remains exceptional. But even this socioeconomic and political entity does not seem to have extended its dominion beyond a regional level. The diversity of funerary practices and habitation sites points to the existence of politically autonomous small-scale communities. Mobility, interaction, and communication between regions, however, seems to have been high, as manifest in the widespread access to bronze and the necessary casting/forging technology. Only, toward the end of the second millennium and the early first millennium BC did new forces begin to strive for economic and political power in the middle and lower Guadalquivir Valley and in the area around Peña Negra-Herna in the southeast.

At a broad comparative level, it has been recently suggested that during the second millennium BC the diversity described up to this point might represent the end result of trajectories that emerged during the Copper Age/EBA and saw social complexity and sharp inequality in certain areas positively associated with land marginality—a hypothesis essentially based on the work of Picketty for modern economies (see Leppard 2019). This theory undoubtedly captures some of the features typical of Bronze Age social dynamics, such as the role of already acquired surplus in triggering “rich-get-richer” phenomena, especially during the second millennium BC. Nonetheless, a focus on agricultural potential is limited, and we should include other aspects that we know had a considerable impact on Bronze Age economies, in particular trade.

## Trade and Exchange: A Pan–Mediterranean Phenomenon

The LBA of the Mediterranean saw the formation of long-distance networks, where people, commodities, and ideas circulated faster, farther away, and in much larger amounts than ever before. These long-distance networks emerged gradually through

what has been defined as the “long 3rd millennium” (Broodbank 2010) from smaller local networks, which were ubiquitous across the Mediterranean from east to west, fractally expanding from individual settlements to regions (e.g., connecting Italy with southern France, or communities across the Adriatic) and linking individuals, lineages, and communities in a myriad of exchanges of things, blood, and ideas.

By the LBA the process was largely driven by the need to secure the supply of copper and tin, the main components of bronze alloys. In fact, the sources of these metals, especially tin, are rare and scattered throughout the continent; thus trade was essential to sustain economic development (Earle et al. 2015; Kristiansen 2018a, b; Vandkilde 2016).

The invention and spread of weighing equipment and weight systems provided the cognitive framework to compare the value of things (Iacono 2016; Pare 2013) and favored the emergence of metallic money (Rahmstorf 2016). Balance weights were present in the western Mediterranean at least since c. 2000 BC, and by the LBA they were widespread everywhere in Europe (Ialongo and Rahmstorf 2019).

In the eastern Mediterranean, a new connectivity was promoted by towns and palatial hierarchies: kings needed commodities to support their reigns and goods to participate in gift giving. Such a Mediterranean system had an acme in the LBA, when ports became main features of the seascape (Broodbank 2013; Knapp 2018). In the Aegean, Cretan palaces dominated a new maritime environment (Gorogianni et al. 2016). With the disappearance of Akrotiri as a result of the Thera eruption, new agents—formerly marginal early Mycenaean communities—entered the international scenario. These later formed a new core (Sherratt 2009), possibly also due to their silver resources. In the 15th century, people from mainland Greece appear to have now entered the network of international diplomacy of Knossos, where prestige goods were produced and the work of craft specialists, such as fresco painters, was an integral part of a highly exclusive relationship (Brysaert 2008).

In the 14th century, the communities of mainland Greece, some now organized around palaces, had a special role in the trade of crafts such as painted pottery, perfumed oils, and textiles (Papadimitriou and Kriga 2013; Sherratt 2001). While merchants and markets have been widely accepted in the Near East (Bell 2012; Knapp and Demesticha 2017), the existence and extent of structured trade systems in the Aegean is still debated (Parkinson et al. 2013; van Wijngaarden 2016). Export-oriented pottery production in the Argolid could point to merchants (Jung 2015), but in some cases the Mycenaean palaces could have exploited foreign traders, such as Cypriots, as mediators (as appears to be the case at Thapsos, Sicily). The Uluburun shipwreck points to professional traders who provided the palaces with commodities while carrying out private transactions through the circulation of valuables (McGeough 2015).

That commodity exchange had a role in the establishment of relationships with the central Mediterranean, where patterns and values of market exchange likely had only a minor role initially, is still to be proved (Borgna 2013; Iacono 2016). Different opinions have been put forward regarding modes and nature of contacts (Bietti Sestieri 1988; Borgna 2013), ranging from structured contacts administered by the palaces to balanced relationships involving non-palatial Aegeans and local communities and aiming at the acquisition of either raw materials or social resources.

Metal, sulfur, alum, and amber could have prompted early visitors, during the 17th–15th centuries, to enter local networks in the Tyrrhenian Sea (Cazzella and Recchia 2018).

Merchants' ships seem to have entered the central Mediterranean only later along the east–west route linking Cyprus to Sardinia, the latter possibly a hub of tin distribution. While Aegean and Cypriot endeavors toward the west have been traditionally highlighted by scholars, more recent perspectives have emphasized the critical role played by possible “western” maritime activities from both mainland Italian (Borgna 2013; Iacono 2013) and Sardinian (Sabatini and Lo Schiavo 2020) communities. Also, the promotion of specific craft enclaves could have played a role in travels to and from the central Mediterranean, as the Cypriote raw metal at Thapsos and Cannatello potentially suggests (14th–13th centuries BC) (Borgna n.d.). Technological transfer, well-exemplified by local production of Aegean pottery, promoted indeed a shared *koine* of social practices that arguably created a hybrid Italo-Aegean identity (Borgna and Levi 2015). Whether or not foreign components had a role in social change at some sites where large buildings were founded toward the end of the LBA, such as Roca, Scoglio del Tonno, Porto Perone, is a hotly debated point (Cazzella and Recchia 2018; Iacono 2019).

Diversity is a distinguishing feature of the relationships regarding both provenance (Jung et al. 2017b) and modes of interaction (Iacono 2017). Direct, long-lasting contacts mainly involved some coastal communities: Lipari, Thapsos, Scoglio del Tonno, Roca, Antigori—at times named “emporía”—stand out for the quantity and quality of foreign ceramics (Jones et al. 2014) and for the complexity of their social practices, such as banqueting and ceremonial activities (Borgna 2012; Iacono 2015). DNA analyses help us explore such a complexity, tracing aspects previously untapped, such as animal resources in interregional transactions (Meiri et al. 2019). A pattern of complex interaction, possibly founded on mobility of local people traveling back home with technological expertise, is represented in the Italian RBA by some inner communities, e.g., in Campania and the Marche (Jones et al. 2014), that produced notable amounts of Aegean-type pottery.

In the 13–12th centuries, Aegean connections in the Adriatic possibly indirectly contributed to the increase of production of the southern Alps and the so-called metallurgical *koine*, a geographically extensive phenomenon involving the widespread sharing of metal types and attributes (Bettelli 2002, pp. 133–137; Jung 2006, pp. 52–57). A new system of values, well rooted in eastern market economies, began subverting local values and promoting the commodification of metal, as evidenced by LBA hoards. These consisted mainly of raw and scrap metal (Borgna n.d.) and were widespread in the Alpine regions and neighboring areas, including the Balkans and parts of central Europe, and represent a hallmark of the LBA, particularly of the period 1300–1100 BC (Harding 2000, p. 356).

In the northern Adriatic, Fondo Paviani may have controlled the supply of Alpine copper and northern amber (Bettelli et al. 2017), a role potentially inherited later, in the 11th century, by Frattesina (Bellintani et al. 2019). Bronze circulated mainly as finished artifacts—as objects of exchange or as personal equipment—confirming that social relationships based on individuals living in the peripheries of the declining Mycenaean world dominated a scenario of extreme mobility.

Eastern Alpine ores appear to have supplied most of central Europe, with an increase in production in the LBA (Pernicka et al. 2016), while copper from Sardinian and Iberian sources might have reached as far as Cyprus (Stos-Gale and Gale 2010). Oxhide ingots of Cypriot origin are the only clear evidence of imports of metal from the eastern Mediterranean, and they are mainly distributed in Sardinia. Interestingly, Cypriot copper seems to have been seldom employed in Nuragic metallurgy (Begemann et al. 2001).

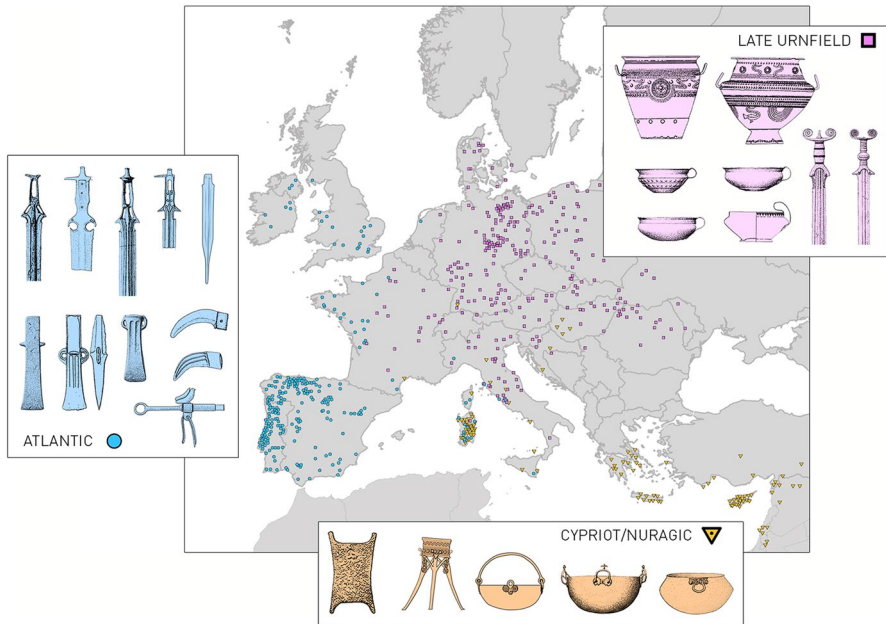
Recent analyses of the few tin ingots available (~27 specimens) suggest that the provisioning of tin, the other chief ingredient of bronze together with copper, might have shifted from sources to the east (such as Afghanistan) to the western portion of the Middle Sea. This shift is supported by the possible eastern origin of tin ingots from mid-second millennium BC Crete and by the possible western origin (potentially Sardinian) of ingots from the Uluburun wreck and 13th–12th century BC modern-day Israel (possibly Cornwall, see Berger et al. 2019). A similar long-range west–east pattern also was present immediately after, around 1000 BC, when silver of Sardinian and Iberian origin is documented in Phoenician sites in the Levant (Eshel et al. 2019).

The distribution of metal types provides a picture of the connectivity network that tied together Europe and the eastern Mediterranean in the centuries around 1000 BC (Fig. 13): both the Atlantic and the Late Urnfield (1300–1100 BC) “cultures” are characterized by specific metallurgical products. A virtual border ran between Sardinia and Mainland Italy—separating European metal types from Cypriot and Cypriot-style Nuragic materials—with the Tyrrhenian basin as the crossroads between the two. Objects belonging to both types/styles were mostly locally produced, which supports a general framework in which metal trade actually took place in this part of the Middle Sea: a global network connecting many smaller ones, each characterized by their own connectivity routes and peculiar advantages and constraints (Earle et al. 2015).

The picture is further modified by the earliest evidence of a Phoenician presence in Sardinia, western Iberia, and North Africa in the ninth century BC. The distribution of Phoenician-type materials is systematically associated with Greek and Nuragic pottery, both in Phoenician and indigenous settlements (e.g., Cardoso et al. 2016; González de Canales et al. 2004), which highlights the important role of Phoenician seafarers in the western Mediterranean trade network.

## Transculture

Together with burgeoning trade networks, other forms of interaction during the LBA were part of what has been defined as a “transculture” of Europe, a set of cultural features incorporating the Mediterranean and Europe into a unique “globalized” whole (Kristiansen and Larsson 2005; Maran and Stockhammer 2012; Peroni 2004; Vandkilde 2016). The domains in which these transcultural elements can be encountered are the most varied, ranging from burial ritual, to religious symbolism, to the spread of specific objects, and the role of certain individuals such as warriors. While overlapping significantly with the metallurgical koine previously mentioned, this



**Fig. 13** Approximate distribution of characteristic metal types of the Atlantic and Late Urnfield cultures, and of Cypriot and Cypriot-style Nuragic metalwork c. 1100–800 BC (figure by Nicola Ialongo)

trend is not always without its own directionality, and it is possible to recognize within it renewed Adriatic/central Mediterranean as well as Carpathian influences to the east toward the Aegean (Jung and Mehofer 2013; Pabst 2018).

Traces of transcultural elements can be recognized in religious symbolism in the presence of motifs such as the so-called *vogelbarke* (a boat with bird-head shaped extremities), solar representations or the spiked wheel, and the European v-notch shield, some of which remained in the symbolic repertoire of many areas well into the beginning of the Iron Age (Bettelli 2012; Gori and De Angelis 2017; Iaia 2004; Molloy 2018a).

With respect to burial practices, this transculturality is manifested in the appearance/resurgence and diffusion of cremation cemeteries in a broad peri-Mediterranean area: occasionally in the Aegean, more diffusely in parts of the Balkans, Italy, Malta, southern France, and the Iberian Peninsula. The ritual practices in these cemeteries either replaced or blended with existing burial traditions (Barceló et al. 2014; Cardarelli et al. 2020). Of the main islands of the central and western Mediterranean, Sardinia and the Balearics seem largely to fall outside of this broad pattern, an exception undoubtedly demanding further comparative investigation.

The distribution of individual categories of objects such as Allumiere-type amber beads, or violin bow fibulae, potentially related to a variety of different personal identities including, potentially, high-status women (based on stable isotope studies), have also been related directly to these transcultural phenomena and might reveal aspects related to dress otherwise difficult to glimpse (Cavazzuti et al. 2019b;

Iacono 2019, p. 240–242, Marín-Aguilera et al. 2018, pp. 141–142; Negroni-Catacchio 2014)

## Warriors

The highly social role of warriors, evidenced by the diffusion of Naue II swords, could have potentially represented an element of this transcultural “package,” although evidence from the Mediterranean area is patchy in this respect (Harding 2018; Kristiansen and Larsson 2005, pp. 231–236; Molloy 2016).

While warrior burials are present at various points in time in the Aegean during the LBA, they do not constitute a unified horizon and, despite some variability, seem to cluster in areas and periods of stress and/or competition: e.g., Shaft Grave period (Harrell 2014), post-Neopalatial-destruction Knossos and coeval Chania (Galanakis 2019, with additional references; Kanta 2003), and Late Palatial mainland Greece (Deger-Jalkotzy 2006). Even in these contexts, not all burials with weapons should be considered evidence for warriors (Georganas 2018). Warriors are, however, well represented in Aegean iconography in a variety of media, ranging from glyptic art to frescoes to pictorial pottery (Blakolmer 2012; Crouwel 2007; Papadopoulos 2012; Stocker and Davis 2017).

In the southern Balkans, weapons occur in tombs throughout much of the Bronze Age, though in some regions they are better represented in later phases (Bejko 2009). Recent research focusing on weapons themselves, especially swords, supports the existence of specialists in military craft (warriors) who operated alongside other specialists of the Bronze Age (Molloy 2018b).

Swords and weapons also are well represented in northern Italy (Leonardi and Cupitò 2005) and at selected locations in southern Italy (e.g., at Trinitapoli); they are quite rare elsewhere (e.g., in Apulia), particularly during the LBA (see Recchia 2010), which suggests their social prominence was not universally acknowledged and/or materialized.

To the west, representations of warriors reemerged. A rich corpus of small lost-wax bronzetti from Sardinia includes—alongside a variety of other subjects such as animals and ships—frequent representations of warriors endowed with weapons and shields (Vella Gregory 2017). Although the chronology of these objects has been highly debated, recent discoveries seem to confirm their beginning toward the end of the LBA (see Araque Gonzalez 2018, pp. 68–72). Similarly, at the beginning of the FBA, but maybe a bit earlier, armed statue-menhirs appeared in southern Corsica (D’Anna et al. 2007), sometimes combined in alignments (e.g., I Stantari, Pallenghu), which represents both a spectacular display of artistic knowledge and the rise of the warrior’s status (Cesari and Leandri 2007). In the northern valleys, contemporary statue-menhirs usually do not carry weapons.

Analogous phenomena also can be recognized in Iberia, where a new esthetic of power was expressed by the “stele of the southwest” (like that of Ategua, Fig. 12), on which heroic individuals are depicted next to exotic and sumptuous objects, such as fibulae, weapons, and carts (Celestino 2001; Galán 1993). These stelae have been interpreted as territorial demarcations/signs of local rulers who lived in



the periphery of the then-emerging Tartessos territory (Celestino and López-Ruiz 2006). The warrior-like character of these dominant groups is underlined by the development of increasingly sophisticated and complex weaponry, as seen in helmets, shields, swords, and spears, such as those found in the well-known deposit of Ría de Huelva (Fernández 2014).

In this context, the change of use of the Cova des Càrritx and the Cova des Musol caves on Menorca is notable. Such ritual spaces began around 1600 BC, and in both caves a series of human, faunal, and artifactual remains have been found that relate to the worshipping of an anonymous and underground entity of feminine character, a cult that changed c. 1200 BC with the emergence of a male-centered ideology (Lull et al. 1999; Micó 2005). Whether these trends relate to an actual role of warriors “on the move” or the representation of a constellation of social roles through the lens of a theme widely shared in Mediterranean iconography of the time is difficult to say, and both hypotheses have been put forward (Araque Gonzalez 2018; Kristiansen and Larsson 2005)

## Human Mobility

Until about 40 years ago, the reconstruction of what happened in Mediterranean Europe during the LBA relied largely on material culture to describe past population life histories and human behavior. Since the 1980s, and with specific momentum over the last decade, biogeochemical and biomolecular analyses of archaeological human skeletal remains have generated substantial new data, offering unprecedented insights into the lives of past people and their patterns of mobility. While methodological limitations and problems in straightforward interpretation remain, considerable amount of work has been accomplished in these fields, so that the integration of individual stories revealed by bioarchaeology with the broad patterns recognized in the archaeological record has become imperative.

In the central and western Mediterranean, research conducted over the last decade has proved that human mobility played a decisive role in determining the historical trajectories of the Bronze Age. Recent advances in ancient DNA and isotope analysis have revived the interpretative tensions between the paradigms of migration and local development and have induced a reconsideration of the forces that drove cultural and sociopolitical changes in the large Bronze Age network made of sophisticated, hierarchical, interconnected societies, as well as of local groups still tied to tribal tradition and territorial institutions (Cardarelli 2015).

The extensive genetic transect of ancient Iberia and the Balearic Islands documents two major gene flows throughout the peninsula between the late third and early first millennium BC (Olalde et al. 2019). The first is related to the introgression of the steppe ancestry dated to 2500–2000 BC, for which evidence has also been recently identified in Sicily, that followed dynamics partially similar to other parts of the continent, such as Ireland and Great Britain (Cassidy et al. 2016; Fernandes et al. 2020; Olalde et al. 2018). Genetic evidence points to a sex-biased migration, with a greater contribution of males (see Goldberg et al. 2017). The impact of incoming males on the local genetic landscape is confirmed by the

almost complete replacement of the former Y-chromosome haplogroups with the typical steppe lineage, namely R1b-M269. The second genetic shift, less substantial but equally important, occurred at the Bronze Age–Iron Age transition, when the significant increase of ancestry related to northern and central European populations has been associated with the introduction of the urnfield custom (Olalde et al. 2019, p. 1233).

While mainland Italy still lacks a detailed aDNA landscape, work done in Sardinia shows a conservative genetic pool from the Neolithic onward (Marcus et al. 2019). The introgression of the steppe component identified in other parts of Europe is absent among Nuragic Sardinians, although moderate gene flow seems to have amplified Sardinian genetic diversity from the end of the Bronze Age (Marcus et al. 2019, p. 15).

Considering that the widespread adoption of cremation during the MBA and LBA inhibits the preservation of aDNA, we need to rely on isotope studies for analyzing human mobility in this phase. Extensive strontium and oxygen isotope analyses have been carried out for several LBA key sites in northern Italy, such as Casinalbo, Fondo Paviani, and Frattesina, which provide solid strontium baselines for future mobility studies in the region (Cavazzuti et al. 2019b). The results document that mobility and permeability of outsiders changed in relation to the size, role, and function of the site in the polity. Small terramare of 2 ha, such as Casinalbo, integrated outsiders (mainly women) from the hinterland, while large terramare of 15–20 ha, such as Fondo Paviani, attracted individuals and goods from the broader hinterland, as well as from far beyond regional boundaries. At Scalvinetto (the necropolis of Fondo Paviani), almost 50% of the individuals were nonlocal, with a significant contribution from warmer areas (higher  $\delta^{18}\text{O}$  values), possibly southern Italy or perhaps the eastern Mediterranean (Cavazzuti 2020). The isotopic evidence matches with the discovery of locally produced Aegean and Cypriot type material (Bettelli et al. 2015), which implies the movement of artisans from remote Mediterranean regions.

Since the MBA, as a consequence of the stabilization of settlements in the territory, mobility became part of sociopolitical negotiations in a system that undoubtedly was patrilocal (Cavazzuti et al. 2019b). After the mid-12th century BC crisis of the Terramare, the results of strontium isotope analyses show significant migration to the central place of Frattesina, but mostly from within a 50-km radius (Cavazzuti et al. 2019a). Notably, elites were more mobile than commoners.

The comparison between Fondo Paviani and Frattesina suggests that a significant quantity of imported goods does not necessarily reflect a high degree of permeability to integrate individuals from outside. Imports and immigration seem to be directly correlated in phases of economic prosperity (MBA–RBA, e.g., Fondo Paviani/Scalvinetto), but they probably tend to split in phases of instability and territorial reorganization (FBA, e.g., Frattesina). This might be connected to the fact that nodal centers, such as Frattesina, had to reestablish control over their territories in order to appear as reliable partners in the wider exchange network.

Immigration continued to be a common experience in Menorca and Mallorca until the Iron Age, when both islands probably reached ~20,000 inhabitants. The arrival of raw materials, finished goods, and population in the islands did not alter

the specific economic and social dynamics of the Balearic Islands, in sharp contrast with situations on the continent.

To the east in the Aegean, genetic research has mainly focused on the origins of the Early Neolithic farmers in relation to the spread of farming, on population history and structure in the Aegean, and on the genetic relationship between the Bronze Age populations of Crete and the Mainland and between these and modern Greek populations (Haak et al 2015; Hofmanová et al 2016). This work documented mobility and showed that the ancient Anatolian and Aegean genomes are the two principal contributors to the genetic ancestry of the Early Neolithic genomes from central European countries. Research also provided evidence for high genetic affinity shared between the MBA/LBA Aegean populations from Crete and the mainland (Lazaridis et al. 2017), as well as between ancient and modern populations on the island (Hughey et al. 2013). Although a more comprehensive sampling, also including regions around modern Greece, could considerably deepen our understanding by consolidating and/or revising the trends described above, present results are compatible with continuity, but by no means isolation in the population history of the Aegean.

Complementary evidence comes from biogeochemical research. In the LBA Aegean context, strontium isotope applications revolutionized and fertilized archaeological research on cultural change and discontinuity. Nafplioti (2007, 2008, 2011) has so far generated over 450 strontium isotope signatures. She was also the first to integrate strontium with biodistance (cranial and dental metrics and nonmetrics) analyses in the Aegean; the research showed continuity in the biological history of the MBA to LBA Knossos population and offered evidence against the presence at Knossos of newcomers from Mycenae or the Argolid region more broadly following the destructions on Crete c. 1490/1470 BC.

Similarly, in the period following the fall of the Mycenaean palaces (see below), strontium isotope research did not support the presence of mainland refugee elites on the island of Naxos (Nafplioti 2018). Despite the low sample size, however, mobility was documented from more ordinary burials in the same context. Such evidence (somewhat in contrast with the pattern in the central Mediterranean) is in line with non-status-specific movements in the Aegean in the LH IIIC and is linked to the freer communication, contacts, and trade between Attica, the Cyclades and the Dodecanese in the Aegean, Cyprus, and the Near East as result of the demise of the mainland palatial system.

In contrast to the rest of the Mediterranean, publication of the first map of systematic bioavailable strontium isotope signatures in the Aegean (Nafplioti 2011), and later contributions of relevant data, have set the scene for further advances in the field. Nearly ten years after the first ever publication or dissemination of strontium isotope data on mobility in the Aegean (Nafplioti 2007, 2008; Richards et al. 2008), and the LBA in particular (Nafplioti 2009, 2018), more human strontium studies also from teams new to this context have started to appear (e.g., Panagiotopoulou et al., 2018; Triantaphyllou et al. 2015; Whelton et al. 2018)

Although the potential of strontium analysis to track mobility in the Aegean has been adequately described in relation to the geographical patterning of strontium isotopic signatures (Nafplioti 2011), a common pitfall in research of this kind, not

only in the Aegean but also generally, concerns the interpretation of what appear to be “local” strontium values as evidence of the absence of mobility. Nevertheless, unless there is a clearly defined question in which the specific individuals tested are thought to be nonlocals, based, for instance, on material culture, mortuary architecture, etc., and the regions involved in the study also are known to separate clearly in terms of bioavailable strontium isotope ratio variation, showing that the human signatures are compatible with a local origin does not say anything conclusive about the origins and/or the lack of mobility of the group(s) these people represent. It is equally possible that they may have come from a different region/site of similar geology. Sample size is critical and often overlooked in data interpretation. For instance, samples of a few dozens are simply not large enough to characterize mobility from mortuary contexts that were used for a few hundred or even 1,000 years, not to mention that statistics may be unable to adequately describe differences in such contexts. Commingled assemblages are even more problematic, as it is difficult to confidently identify and sample individuals that may represent first generation immigrants. Lack of consistency in sampling the same element from all individuals also may result in the duplication of certain people in the analyses.

From the above, we conclude that mobility patterns varied considerably throughout the second millennium and across the different regions of the Mediterranean. The permeability to outsiders depended on a wide spectrum of variables, among which social and political organization were the most important.

## The Collapse of Bronze Age Societies in the Mediterranean

The end of the Bronze Age has arguably been one of the most discussed and heavily researched themes of the LBA. Theoretical considerations of collapse commonly focus on complex urban civilizations as case studies, yet boom-and-bust cycles occurred more widely in prehistoric societies (Bevan et al. 2017; Duffy et al. 2019; Middleton 2017a). For clarity, we define collapse as a social disjuncture marked by the dramatic reduction or disappearance of key institutions, material traditions, and practice routines used by archaeologists to define a society. Collapse usually unfolds over the course of a few decades or potentially less. One might call this rapid transition rather than collapse, but if we remove the apocalyptic undertones of the latter and view it as partial and contextually contingent, it possesses analytic value (Johnson 2017; Middleton 2017b, 2020a; Risch and Meller 2015). Middleton (2017b, 2020a) usefully reviews recent debates over precise definitions and their implementation. In Mediterranean Europe, collapse may be recognized through a combination of demographic decline, widespread and near-contemporary settlement destruction or abandonment, the reduction or termination of long-distance networks that fueled political economies, or even sharp changes in religious or mortuary practice: essentially it is a rapid, archaeologically observable, and detrimental transformation of lifeways at elite and/or whole societal scales.

In the Mediterranean LBA, the collapse of Minoan palatial societies in Crete c. 1450 BC was essentially a local phenomenon, as was probably that of the Argaric world, which occurred at broadly the same time at the other end of the basin in

Iberia (Driessen and MacDonald 1997; Lull et al. 2013; Risch and Meller 2015). However, c. 1200 BC, a widespread horizon of change in the eastern Mediterranean effectively ended the many kingdoms and empires that participated in economic and political networks (Cline 2014, 2020; Knapp and Manning 2016; Middleton 2017c, pp. 109–128). At the interface between Mediterranean Europe and the eastern Mediterranean, physically and politically, the Mycenaean kingdoms of Greece experienced violent destructions at palatial centers c. 1200 BC, bringing to an end the complex administrative and political systems that had fueled the very character of LBA societies of southern Greece (Middleton 2020b; Mühlenbruch 2020).

In the wider Aegean, Knossos in Crete had potentially served as the dominant power in the 14th century, but by the 13th century, the focus of power had undoubtedly shifted to the southern Greek mainland centers with the elaboration of fortifications and palatial complexes there (Langohr 2020; Maran 2015, p. 280). Hints of troubled times in texts from Pylos foreshadow destruction and abandonment of that site and its wider hinterlands (Shelmerdine 1999). A tightly bracketed series of destructions at this and all other palatial centers, apart perhaps from Athens and the abandoned site of Orchomenos, occurred c. 1200 BC (Hruby 2020; Maggidis 2020; Mühlenbruch 2020; Osborne 2020). While destruction horizons are known from the mid-13th century, the lack of rebuilding at most sites after the destruction events of c. 1200 BC is marked. Mycenae and Tiryns were reoccupied, albeit under a new regime, and integrated new architectural, mortuary, and material culture traditions alongside older ones (Hinzen et al. 2018, p. 1047; Maran 2015, pp. 283–285; Mühlenbruch 2020).

Many formerly prosperous areas were depopulated, although there is a risk of low visibility of EIA ceramics for some areas at least (Hruby 2020). Several other previously non-palatial areas thrived, such as Achaea and the Euboean gulf (Kramer Hajos 2015, 2020; Middleton 2010). Craft traditions, such as potting and metalworking, show continuity across this palatial–post palatial divide, indicating that collapse most dramatically affected elite infrastructures, though the overall decline in population indicates it was not limited to this social stratum. Influence from European Urnfield groups can be recognized leading up to this crisis, and it increased notably immediately before and after the collapse of the palatial systems, suggesting the presence of new (if minority) groups in Greece (Molloy 2018a; Palaiologou 2013).

Old arguments for earthquakes or earthquake storms bringing down the palaces in Greece and other parts of the eastern Mediterranean are rarely endorsed today, and they would have little relevance in the central and western Mediterranean (Hinzen et al. 2018). The role of climate change in disrupting everything from agriculture to sailing calendars remains a possibility at this wide scale (Finné et al. 2017; Roberts et al. 2019). Unfortunately, the chronological resolution of climate change evidence makes it difficult to link broader trends to the specific collapses of societies at c. 1200 BC (Knapp and Manning 2016; Roberts et al. 2019). At this point, clearer data on local environmental changes in the myriad landscapes of the Mediterranean are needed if we are to consider the interplay between natural and anthropogenic effects on subsistence regimes relative to the climate and how these may or may not relate to collapse (Bevan et al. 2017, p. E10527; Roberts et al. 2019, p. 923). Therefore, straightforward correlations between climate and social change remain problematic,

though it is recognized that changing the balance between predictable conditions for primary producers and social infrastructures exploiting them may undermine the specific conditions that supported specific social infrastructures (Johnson 2017; Middleton 2017c, pp. 134–137), even if this unfolded over decades. Also impactful at this large scale, pandemic disease or plague could have played a role, though we must await the results of new bioarchaeological work and aDNA studies of pathogens to explore this possibility systematically (Margaryan et al. 2018). The most common, and convincing, explanation for collapse in Greece is that environmental stressors and contracting economic networks presented challenges to established political and economic systems, which were exacerbated by increased levels of violent conflict.

In the central Mediterranean, important links between groups in Apulia, Basilicata, and Calabria in southern Italy and parts of southern Greece, particularly Achaia, are visible in the exchange and local emulation of Mycenaean ceramics from the 14th to the 12th century in particular. By the 12th century, whatever mechanism was in place, it had all but collapsed as locally made Mycenaean-style ceramics came to dominate the record in the south and presumably down-the-line recipients to the north, such as the emporium at Frattesina (Iacono 2019). Interaction between groups in northern and southern Italy with groups in the Carpathian–Balkan ambit had long been visible in metalwork traditions, and this increased in intensity by the 12th century, a phenomenon visible in both pottery and metalwork (Giardino 2016; Iacono 2019).

The continued, if not intense, contact between Cyprus and Sardinia, and to a small extent with southern Italy, is indicative of sustained international links. It certainly appears that southern Italy suffered at least some of the effects of the collapse to the east, although the impact was less severe, and there are clear signs of resilience in material culture and settlement data. Indeed, indications of an Italian presence in Greece following the Mycenaean collapse, visible in metalwork and pottery assemblages, suggest that some took advantage of the new political landscape through more direct involvement with groups in Greece, bringing both materials and ideologies (Iacono 2019; Molloy 2018a). Moreover, a consequence of palatial collapse may well have been a period of greater cultural mobility, integration, and experimentation involving groups throughout the Apennine Peninsula, the Carpathian–Balkan area, and Greece.

The story in northern Italy around the Po Valley is different, as groups there appear to have been more directly affected by failing long-distance networks in eastern continental Europe and the eastern Mediterranean. There was a collapse in settlement numbers of Terramare groups, most strongly felt in the south of the previously prosperous Po Valley, but depopulation and site abandonment are apparent across the wider landscape (Cardarelli 2010; Cavazzuti et al. 2019b). While some sites prospered in the wake of this, notably Frattesina, it is clear that the preceding Terramare social system collapsed along with settlement numbers. Preliminary dating evidence of major fortified sites suggests closely linked groups of the southern Carpathian basin also experienced collapse in the 13th to early 12th centuries BC, which is suggestive of a wider phenomenon, pending further research (Sava et al. 2019; Sava and Ignat 2016). These links emphasize



the importance of looking beyond Italian or Mediterranean explanations alone for changes in the Po Valley.

It remains unclear if the neighboring Castellieri groups of the Caput Adriae and Dalmatia were affected, due to a dearth of absolute dating of the many LBA and EIA sites there (Hänsel et al. 2015; Novaković 2001). Similarly, in present Albania, fortified sites of the same broad date range are known, and interaction with Aegean societies is clearly in the metalwork assemblages of the region, yet there is insufficient dating to discuss the pace or character of social change there at the end of the Bronze Age (Galaty 2009; Lima 2016).

MBA centers in Sicily, including Thapsos and Cannatello, were abandoned and in some cases destroyed, and a general reduction in settlement numbers accompanied a fragmentation of long-distance contacts, with an increasing reliance on connections with southern Italy (Dawson 2016, pp. 331–332). In Sardinia, Nuragic groups experienced a moment of crisis but were able to identify strategies to cope with it (Ialongo 2018). Their links with the eastern Mediterranean began to dwindle in the 12th century, despite continued contact with economic centers such as Cyprus. Indeed, Cyprus was one of the more resilient areas of the Mediterranean, where, despite the destruction and abandonment of several major settlements c. 1200 BC, more diverse and competitive smaller-scale political units had emerged by 1100 BC, so that the island retained important external trade links into the first millennium BC (Knapp and Manning 2016, p. 133; Knapp and Meyer 2020; Wallace 2018, p. 334). The argument for newcomers to Cyprus from the west is compelling, though this was clearly not a wave of migration and was more probably a result of participants in new networks that linked a variety of nonlocal groups with local communities, at settlements such as Pyla Kokkinokremos, Maa-Palaeokastro, and Hala Sultan Tekke (Gradoli et al. 2020; Wallace 2018, pp. 344–345).

After a period of decreasing population density, the end of the 13th and beginning of the 12th century in Crete heralded a certain degree of recovery of (re-?) settlement (Brogan 2019; Nowicki 2018). A characteristic of most sites was their defensible location, though retaining access to the coast was important for many of these sites (Nowicki 2011). This mode of inhabiting the land and utilizing maritime resources/links continued to thrive into the eighth century BC, indicating relative prosperity compared to the 13th century there, even if this was a stark contrast to the Cretan palatial periods (Wallace 2018). Arguably, even though the data are meager, a similar continuity of prosperity was experienced in northern Greece across this collapse horizon (Andreou et al. 1996).

To the west, in Mediterranean France and Iberia, after the fall of the Argaric system in the mid-second millennium BC, there are no indicators of major social upheavals. The environmental evidence indicates that the decline in tree cover in western Iberia and southern France is in contrast to the increase in the eastern Mediterranean, hinting at increased anthropogenic landscape changes, and there appears to be demographic stability in the later second millennium BC in those areas, with a possibly slight but brief drop in southern France, based on radiocarbon proxies (Roberts et al. 2019, figs. 2, 3 and 4a). Looking to western Mediterranean islands,

particularly Sardinia, Menorca, and Mallorca, there appears to have been substantial demographic and economic growth.

The role of human agency in the collapse of distinct societies around 1200 BC is clear. While such crisis-driven change is not universally applicable, it is certainly an indicator of how human actions, potentially fueled by or capitalizing on natural disasters, led to cycles of rapid change and systems collapse in Bronze Age networks affecting much of Mediterranean Europe (Cline 2014; Drews 1993, pp. 85–90).

## Conclusions

The review offered here has allowed us to highlight the complex dynamics involving societies around the Middle Sea during the second half of the second millennium BC. Demographic trends are obviously far from synchronized, but in general, the LBA and particularly the post-collapse period is characterized by general growth in the western portion and decrease in the eastern portion of the sea, although naturally enough this consideration, based on the summed probability distribution of radiocarbon dates and various paleoenvironmental factors, has to be taken with caution (Roberts et al. 2019). In the realm of social organization, we have seen how during the period under scrutiny, a sheer variability of social configurations was present, and these were paired with equally variable trends of occupation of different kinds of landscape, technology, and means of production. There is no unique model of LBA civilization with noncivilized outliers, but rather a variety of locally inflected models more or less able to survive at the scalar threshold between the Braudelian medium and long term.

Yet, despite this diversity, again, some macroscopic trends can be recognized. The one most readily accepted by most scholars is the considerable growth of interconnections in the second half of the second millennium BC. This interconnectedness, a phenomenon that also involved people on the move, as indicated by bioarchaeological evidence, was truly an innovative historical force that effectively and deeply merged worlds that had been relatively apart for at least a millennium, that is, since the third millennium BC (Broodbank 2013; Iacono 2019). Epiphenomena of this global network were broad transcultural patterns that involved aspects as diverse as burial ritual, symbolism/cosmological beliefs, and, somewhat ineluctably, a greater presence of violence and the related need for security, which translated in some areas to an increase in the perception of the social importance of warriors.

What we have described in this paper are undoubtedly fragmented lines that fail to compose a unique tapestry. No unilinear evolution that led to increasingly complex realities can be discerned and linked to contemporary well-known trajectories of emergence, growth, and collapse of palatial state societies; other more fragmented (but no less effective in their ability to transform the life of people involved) dynamics unfolded in communities in the central and western parts of the Middle Sea at different points in time. Through the last centuries of the second millennium BC, the multiple connections and trajectories summarized here finally and completely transformed the Mediterranean basin from a boundary set in water to the inner sea of the people inhabiting its shores.

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