

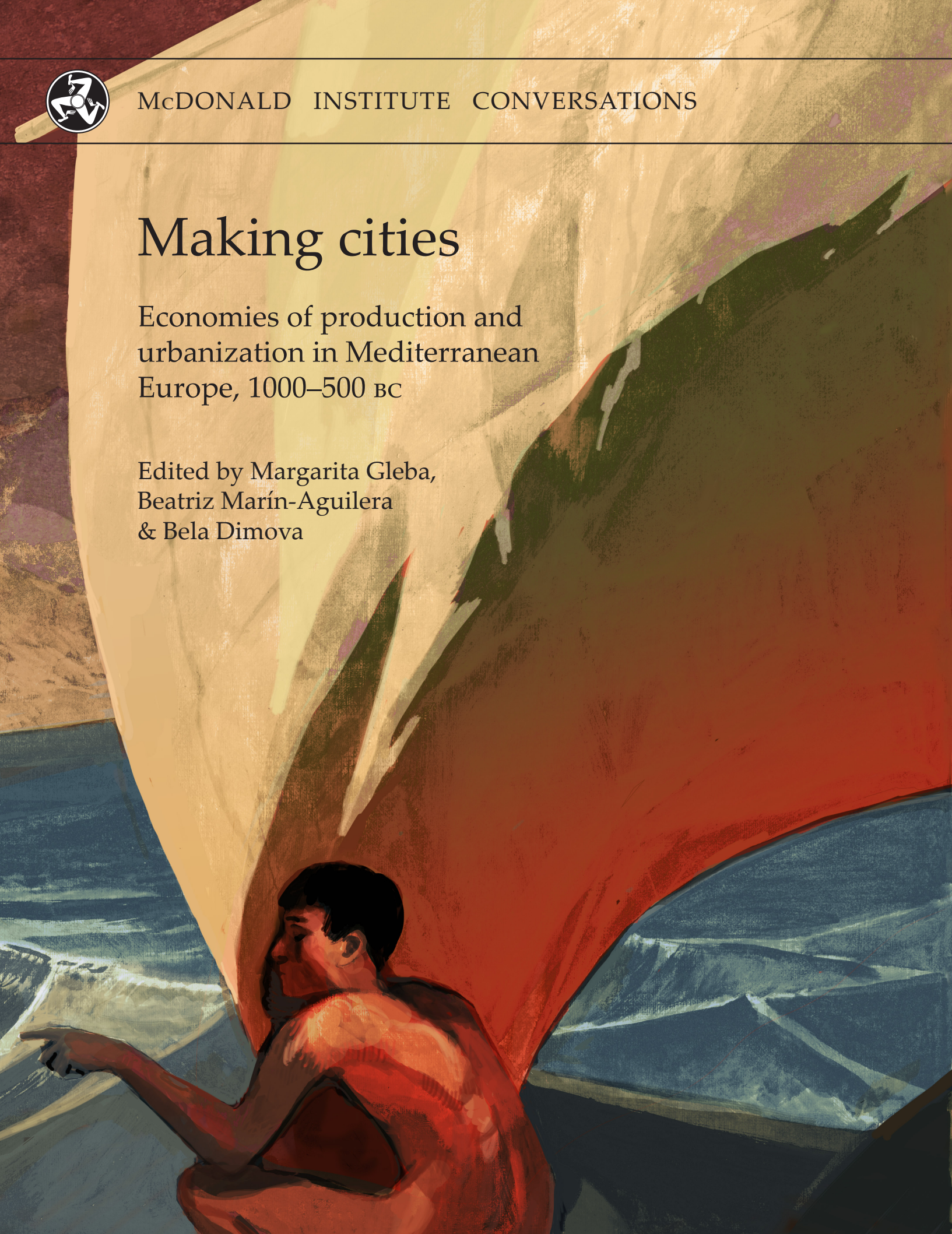


McDONALD INSTITUTE CONVERSATIONS

Making cities

Economies of production and
urbanization in Mediterranean
Europe, 1000–500 BC

Edited by Margarita Gleba,
Beatriz Marín-Aguilera
& Bela Dimova



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Chapter 20

Colonial production and urbanization in Iron Age to early Punic Sardinia (eighth–fifth century BC)

Andrea Roppa & Emanuele Madrigali

Traditionally, the study of Greek and Phoenician colonial enterprises in the western Mediterranean has been framed within grand narratives in which motherland's demographic pressure and arising overseas trade opportunities were the main factors that triggered unprecedented large-scale movements of people and goods from the late ninth century BC onwards. As a result, the newly established settlements that fringed the shores of the central and western Mediterranean have been functionally divided into settler colonies and commercial establishments. Because of both the millennia-old urban tradition in the Levant which informed the background of Phoenician merchants and sailors, and the urban nature *par excellence* of the Greek (colonial) *poleis*, the role of the newcomers in introducing forms of urbanism among the local societies of the western Mediterranean has been widely acknowledged. Although local, independent trajectories of urbanization processes have been convincingly explained at least for some indigenous cultures, particularly in central and southern Italy (e.g. Vanzetti 2004), and in the Iberian Peninsula (e.g. Cunliffe & Fernández Castro 1999), the rough binary division of colonial settlements into commercial and settler establishments has somewhat remained unchallenged. To be sure, the status of some colonial sites as urban foundations has been questioned by a number of scholars (e.g. van Dommelen 2005), who have rightly pointed out that, for several of these settlements, the lack of relationship with their immediate hinterland for a long period of time is a crucial shortcoming of any urbanization process. Also, the commercial nature of some sites – particularly Phoenician settlements (e.g. Niemeyer 1990) – has been often taken for granted and their establishment has been explicitly related to trade with local communities.

In this paper, we tackle issues of urbanization and colonial production in Iron Age to early Punic Sardinia

(eighth to fifth century BC), by focusing on colonial and indigenous sites to explore the development of economies of colonial production and the relationships of colonial sites with local communities and wider transmarine networks. Traditionally, the establishment of Phoenician settlements on the island of Sardinia has been related to the quest for raw resources – metals in particular – and explained as a convenient stop-over in the sea route connecting the Levant to the farther western Mediterranean and beyond. Our aim is to diachronically define the role and character of these colonial sites between their establishment during the eighth and seventh centuries BC, and the early Punic period in the fifth century BC, at the time when Carthage had gradually imposed its hegemony on the island.

To do so, we focus on the two case-studies of Nora and *nuraghe S'Urachi*, respectively a Phoenician and an indigenous settlement located in southern and west-central Sardinia (Fig. 20.1). At these sites, recent and ongoing excavations and research have brought to light strong material evidence dated to the Iron Age through the early Punic period, and large assemblages of pottery which shed light on a range of aspects of daily life and productive activities carried out at these settlements. Also, because the site of S'Urachi is located only some 15 km inland from the Phoenician colonial coastal settlement of Tharros, the study of ceramic evidence from S'Urachi will allow for an assessment of the relationships between that Phoenician centre and its hinterland.

Colonial production and *amphora* distribution in Iron Age Sardinia

To explore economies of colonial production we focus on one specific piece of ceramic material culture, which has been eminently connected to productive activities and trade, namely the *amphora*. As well illustrated by

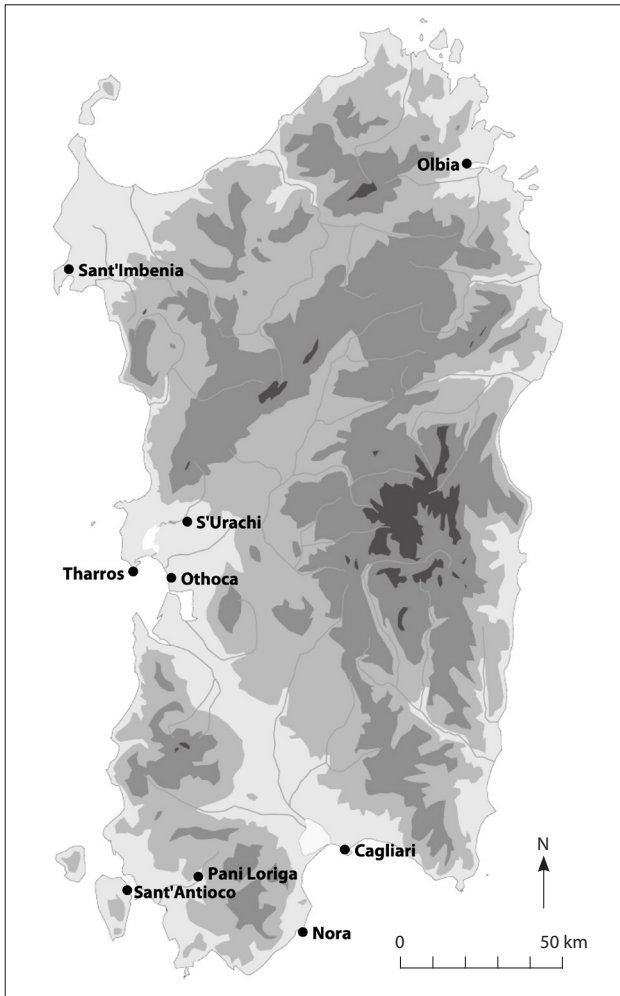


Figure 20.1. Map of Sardinia showing sites mentioned in the text.

Knapp and Demesticha (2017) in their recent study of maritime transport containers in the Bronze through early Iron Age Mediterranean, by roughly 850–800 BC, ‘a system of supply and demand was in place for maritime transport and export on a bulk scale, involving apparently standardized containers of sophisticated manufacture’ (Martin 2017, 129). More specifically, in this case the apparently standardized containers were Phoenician *amphorae* as documented by the about 400 vessels which made up each of the main cargoes of two shipwrecks that sank in the open sea off the coast of modern-day Gaza Strip around the second half of the eighth century BC (Ballard *et al.* 2002, 158). Because of the – more or less direct – Levantine descent of the Phoenician newcomers who sailed and traded in the western Mediterranean, and settled on the island of Sardinia, there is little doubt that western Phoenician *amphorae* also performed the same function. Early Iron

Age contexts in Phoenician sites along the western Mediterranean coasts dating from the late ninth century BC onwards, as well as local settlements, provide plenty of evidence that staples and a wide range of commodities were traded in these containers, both within the intra-colonial Phoenician maritime network and with indigenous communities in exchange for local products (e.g. see Oggiano 2000 for the Iron Age site of Sant’Imbenia on Sardinia).

Different, and much more challenging tasks are to try to correlate the *amphora* evidence with specific types of production activities to discover what kind of products were traded in the *amphorae* and to investigate the social, economic and spatial organization of the settlements where commodities and staples were produced. Ideally, to effectively investigate such a complex research question, a range of data should be utilized, for instance a solid dataset of organic residue analysis of maritime transport containers and robust archaeological evidence concerning the spatial fabric and functional organization of Phoenician colonies. However, the former set of data is not available at present – with the exception of recent research carried out on *amphorae* from the Phoenician and Punic site of Pani Loriga in southern Sardinia (Botto & Oggiano 2012, 157–65; Botto *et al.* in press). Furthermore, there are only a handful of Phoenician sites which have been extensively excavated, and only in one case – the site of Sant’Antioco in southwestern Sardinia (for an overview, Bernardini 2006) – have yielded proof of the existence of an elaborate urban fabric in the eighth to sixth century BC. Therefore, we turn to the *amphora* evidence alone to investigate the questions at stake in this volume.

Our basic methodological assumptions are:

- 1) *Amphorae* were produced to trade foodstuffs and commodities, although we recognize that *amphorae* were multipurpose containers, also used to store products (e.g. Botto & Oggiano 2012, 162–3), and in productive activities like wine making (e.g. Gómez Bellard *et al.* 1993). However, for the sake of our analysis in this paper, we assume that these latter functions were secondary and that *amphorae* were primarily used for trade purposes. Also, we acknowledge that part of the products traded via *amphorae* could have been consumed locally within the same production site, but we take the view that a substantial number of *amphorae* were exported for exchange.
- 2) If trade with local communities was one of the main factors triggering Phoenician maritime expansion, then it follows that *amphorae* – i.e. the containers eminently and purposely made and

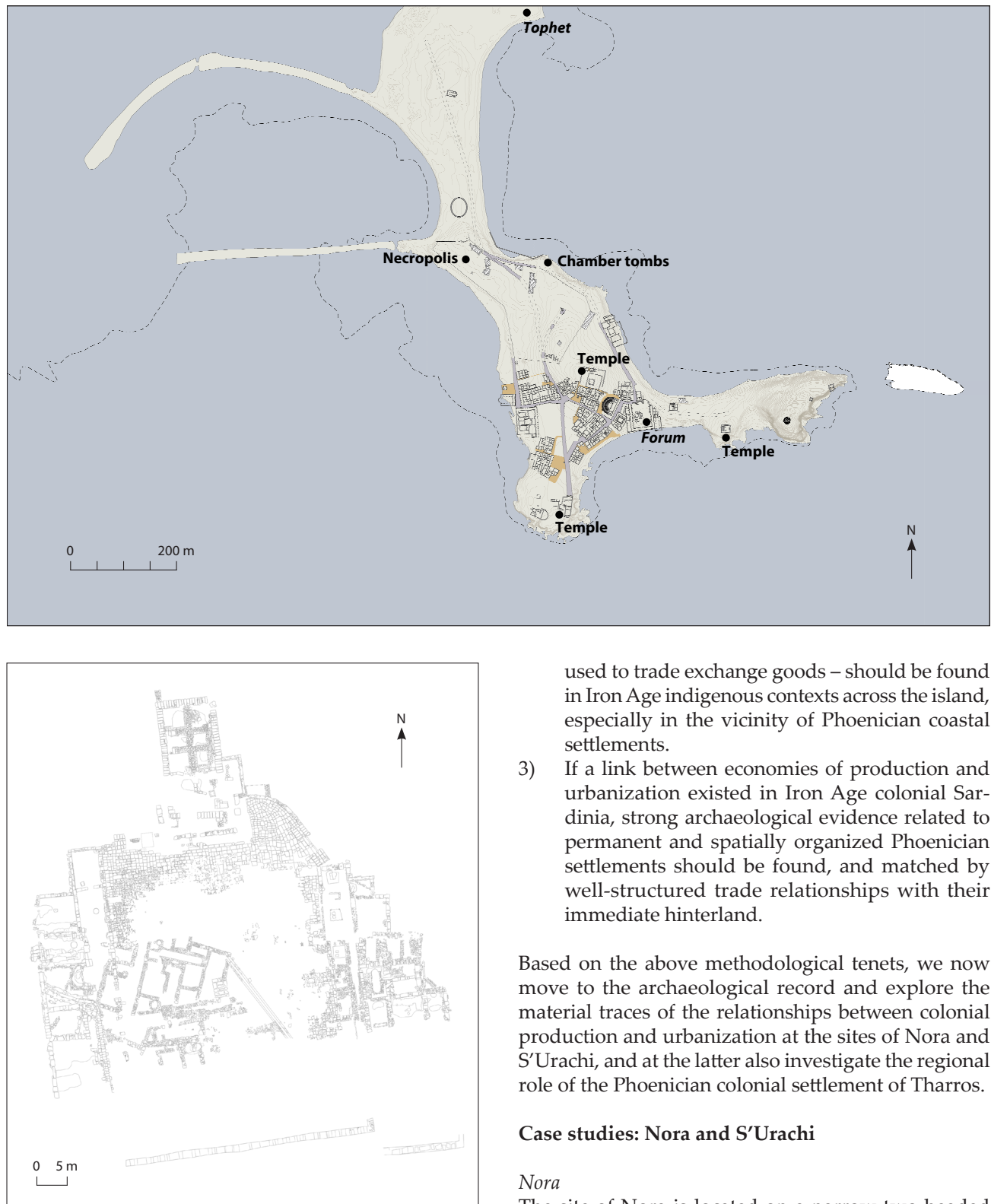


Figure 20.2. Top: plan of Nora (after Bonetto et al. 2018). Above: plan of the Punic quarter under the forum (after Bonetto 2009).

used to trade exchange goods – should be found in Iron Age indigenous contexts across the island, especially in the vicinity of Phoenician coastal settlements.

- 3) If a link between economies of production and urbanization existed in Iron Age colonial Sardinia, strong archaeological evidence related to permanent and spatially organized Phoenician settlements should be found, and matched by well-structured trade relationships with their immediate hinterland.

Based on the above methodological tenets, we now move to the archaeological record and explore the material traces of the relationships between colonial production and urbanization at the sites of Nora and S'Urachi, and at the latter also investigate the regional role of the Phoenician colonial settlement of Tharros.

Case studies: Nora and S'Urachi

Nora

The site of Nora is located on a narrow two-headed peninsula that stretches south and east into the Tyrrhenian Sea (Fig. 20.2). Ongoing excavations, which have been almost continuously carried out since the 1950s, have brought to light a large settlement and

material dating between the eighth century BC and the early Medieval period. Although large amounts of pottery date between the eighth and seventh century BC (see Fig. 20.7), and an early Iron Age chronology has been proposed for sporadic finds such as the famous Nora stele, debatably dated to between the ninth and eighth century BC, this early chronology is only partially matched by settlement contexts, which are only documented by postholes probably related to huts built in perishable material between the seventh and sixth century BC (Bonetto 2014a, 174–7). More abundant and earlier evidence comes from burial data, in particular from a recently excavated cremation grave dating as early as the first half of the seventh century BC (Bonetto & Botto 2017). The appearance of a permanent and structurally elaborated settlement on the peninsula dates only from the very late sixth–early fifth century BC, when a carefully laid-out quarter was built and kept in use until the end of the first century BC (Bonetto 2009). At that time, the whole area was demolished to build the town's new square, in the form of a Roman *forum* (Ghiotto 2009). In this area, private houses, wells and

semi-public store-rooms served by a paved street have been identified. Further evidence of Nora's urban status from the fifth century BC (Bonetto 2021) is provided by at least three sanctuaries (Oggiano 2005), and by elite stone-cut burial chambers containing rich grave goods (Bartoloni & Tronchetti 1981). The *tophet*, a sanctuary/cemetery for infants, which is a typical feature of central Mediterranean Phoenician settlements, and often associated with urban status and the self-identification of the local (urban) community (Bondi 1979; Bonnet 2011; Quinn 2011), also dates from the same period.

The amphora evidence from Nora

A total of 1119 *amphora* individuals¹ typologically dating between the eighth and fifth century BC make up the material sample to explore colonial production and urbanization at Nora (Fig. 20.3). *Amphorae* have been selected from two completely distinct sampling sources, the University of Padova excavations under the city's *forum* (n=1086) carried out between 1997 and 2006 (Finocchi 2009), which yielded ceramic material dated between the Iron Age and the first century BC;

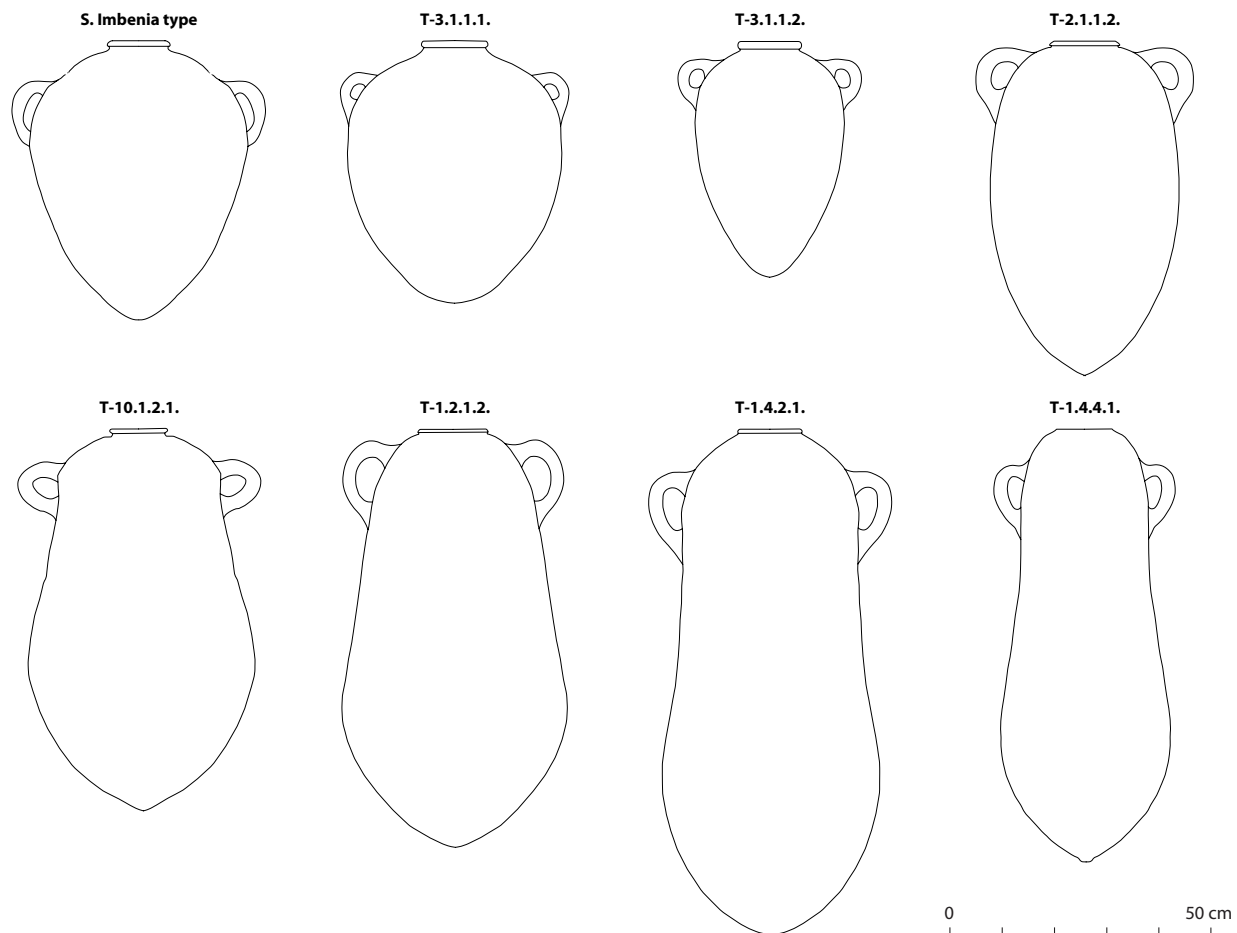


Figure 20.3. *Main amphora types discussed.*

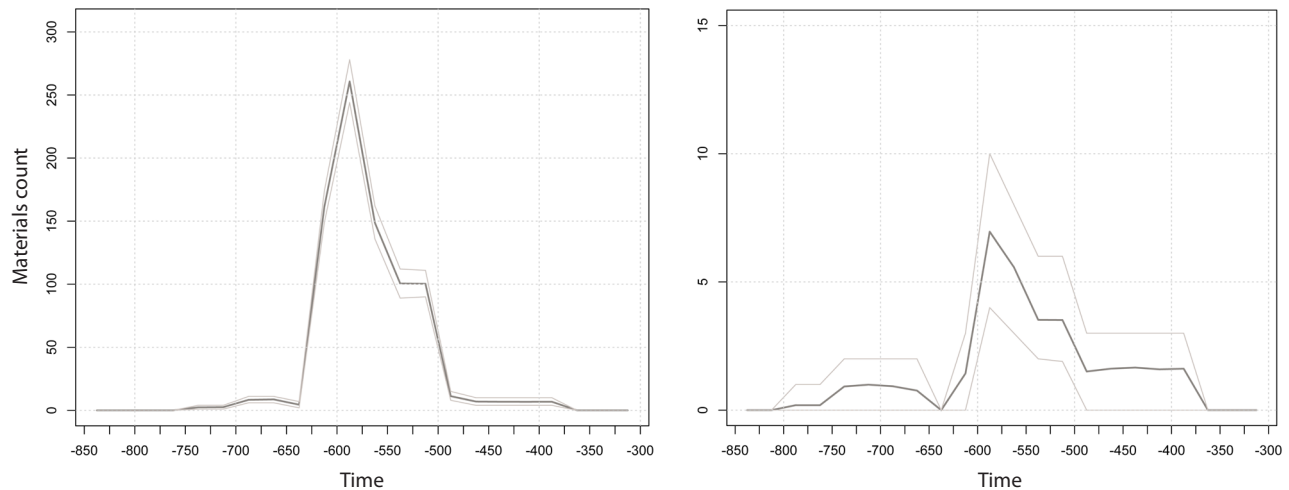


Figure 20.4. Dating profiles of amphora types from the Padova excavations (left) and underwater recoveries (right) (G. Furlan).

and underwater recoveries made just off the coast of the Nora peninsula ($n=33$) between 1978 and 1984 by a team of divers led by Michel Cassien under the aegis of the *Touring Club de France* (Bonetto 2014b), of which Phoenician and Punic finds have been recently studied by Emanuele Madrigali (2020; 2021).

The earliest *amphora* type in our sample, from underwater recoveries (Madrigali 2020, 302, fig. 3), is the so-called ‘Sant’Imbenia type’ *amphora* ($n=1$), which is a local, Nuragic elaboration of Phoenician prototypes, generally dating between the very late ninth, eighth and early seventh century BC. Roughly chronologically contemporary are the earliest typologically Phoenician *amphorae* of Ramon (1995) types T-3.1.1.1./3.1.1.2./2.1.1.1. ($n=29$: 26 from Padova excavations – from now on PE, and 3 from underwater recoveries – from now on UR), produced and distributed in the western Mediterranean between the eighth and mid-to-late seventh century BC. Quantitatively much more abundant is type T-2.1.1.2. ($n=346$: 343 PE, 3 UR), dating to the mid-seventh–early sixth century BC. Less represented, but attested in a good number are types T-1.2.1.1./1.2.1.2. ($n=163$: 160 PE, 3 UR), and type T-10.1.2.1. ($n=5$: PE), whose chronologies span between the mid-to-late seventh and the first half of the sixth century BC, while the most recurrent *amphora* type in our sample is type T-1.4.2.1. ($n=536$: 522 PE, 14 UR), dating to the sixth–early fifth century BC. The most recent type included in our sample is type T-1.4.4.1. ($n=43$: 35 PE, 8 UR), which is dated to the fifth–early fourth century BC.

The dating profiles (Fig. 20.4) – based on the ‘Monte Carlo method’, a statistical simulation which recognizes and visually provides a higher degree of

chronological uncertainty than the more traditional, and more frequently used in archaeology, method of the ‘weighted means sum’ (Crema 2012; Furlan 2017, 326–8)² – of the chronological distribution of *amphora* types from each sample between the eighth and fifth century BC makes it clear in both cases that the large majority of *amphorae* date between the late seventh and the middle of the sixth century BC. We shall connect this result with the broader archaeological evidence at Nora in the next section, and now move to the next case study of *nuraghe* S’Urachi.

S’Urachi

The large multi-towered indigenous site of *nuraghe* S’Urachi is located in an alluvial plain north of the Gulf of Oristano in west-central Sardinia, at some 15 km to the east of the Sardinian Sea and about 20 km from the Phoenician sites of Othoca and Tharros, respectively situated on the northwestern and northern shores of the Gulf of Oristano (Fig. 20.5). Research at the site, which has been intermittently carried out since the late 1940s, and rescue excavations and survey in the adjacent village area at Su Padrigheddu (Madrigali *et al.* 2019) had already documented the presence of imported material at both settlements from the early Iron Age, particularly a (typologically) Cypriot torch holder dating to the eighth century BC (Stiglitz 2007; 2014), and Phoenician pottery dating from the seventh century BC (Roppa 2012; 2015). Current excavations – ongoing since 2013 and co-directed by the Joukowsky Institute for Archaeology and the Ancient World at Brown University and San Vero Milis City Council – have focused on three areas outside the *nuraghe*, two of which are contiguous to the external defensive wall,

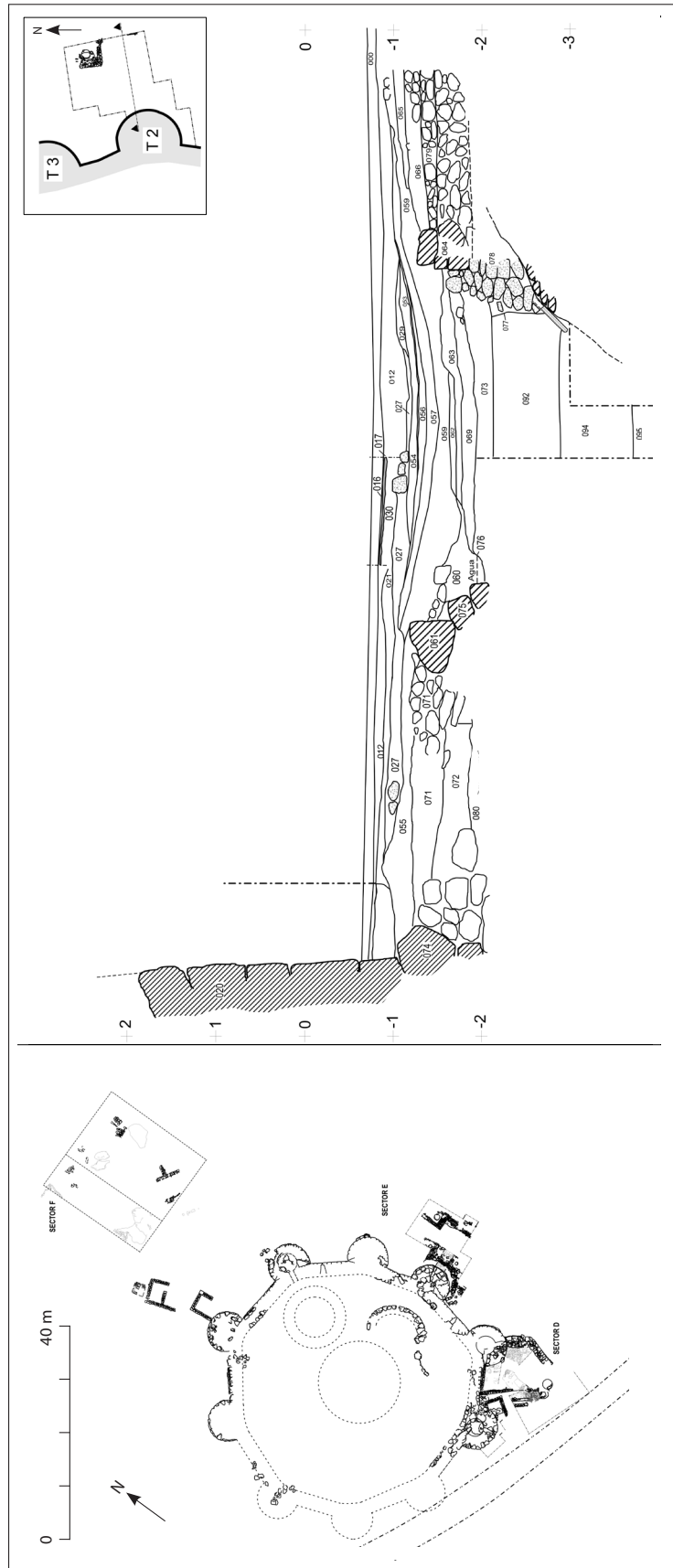


Figure 20.5. Plan of nuraghe S'Urachi and cross-section of the ditch in area E (E. Dies Cusi).

respectively to the east and south. Contexts dating between the Iron Age and the second century BC have been brought to light from these two areas, which have yielded associated imported Phoenician and locally made Nuragic ceramic material. An important Iron Age building phase has been identified in the eastern sector – area E in Figure 20.5 – and dated to around the seventh century BC, when a ditch flanking the *nuraghe* was dug. It was about 4 m wide and defined by two parallel masonry embankments. Material from the fill of the ditch, which was completely backfilled by the fifth–early fourth century BC – when a sequence of mortar floors were laid out all over this area – is predominantly Phoenician and points to a dramatic change in the material culture in use at the site from the late seventh century BC (Stiglitz *et al.* 2015; van Dommelen *et al.* 2018).

The amphora evidence from nuraghe S'Urachi

From excavation area E at *nuraghe* S'Urachi, and more precisely from the layers that gradually filled the ditch, 92 rim fragments of *amphorae*, typologically dating between the mid-eighth and the early fourth century BC, have been selected for our study. All the typologies previously presented in the Nora case study are also attested here, although quantitatively much less abundant, with the exception of the so-called 'Sant'Imbenia type' *amphora*, whose presence at the site has been documented among the ceramic archaeological record from the adjacent Su Padriggheddu village area (Stiglitz 2007; Roppa 2012, 10). As evident from the dating profile (Fig. 20.6), and similarly to Nora, the bulk of *amphorae* dates to the late seventh–mid-sixth century BC. The most recurrent types which fall into

that chronological span are types T-2.1.1.2. (n=18), T-1.2.1.1./1.2.1.2. (n=21) and T-1.4.2.1. (n=24). Also broadly falling in that period, but in smaller numbers, are types T-10.1.2.1. (n=2), while types T-3.1.1.1. (n=1) and T-2.1.1.1. (n=1) are earlier. Well attested is also type T-1.4.4.1. (n=25), dating through the fifth until the early fourth century BC.

Discussion

Amphora chronology and provenance

As evident from the two groups of dating profiles, at both Nora and S'Urachi the peak of *amphora* distribution falls between the late seventh and the mid-sixth century BC. Methodologically, it should be noted that the peaks do not necessarily relate to periods of increased circulation of *amphorae*, because they may be at least partially explained by the overlapping chronologies of some *amphora* types: the early sixth century peak is a case in point, as it is created by the conventional dating of types T-2.1.1.2., T-1.2.1.1./1.2.1.2. and T-1.4.2.1. However, it is clear that at both sites, a substantial portion of the *amphora* assemblages dates between the late seventh and mid-sixth century. At Nora, this peak in the *amphora* distribution is also matched by the overall chronology of all the remaining Phoenician ceramic functional categories (Fig. 20.7).

Most *amphora* types are not specifically related to well-defined production centres or areas, with the exception of the 'Sant'Imbenia type' *amphora*, whose production in several centres on Sardinia – including S'Urachi (Roppa 2014) – has been ascertained on the basis of solid archaeometric arguments (Napoli & Aurisicchio 2009; De Rosa 2014). Also, a quite likely production outside the island, more precisely in the Phoenician centres of the southern Iberian Peninsula, has been proposed for type T-10.1.2.1., on the basis of both specific typological features and the distinctive fabrics associated with this *amphora* type (Ramon 1995, 256–7).

The remaining *amphora* types, which make up the bulk of our sample, were commonly produced in most Phoenician centres of the central Mediterranean throughout the Archaic and Classical period, including Motya in Sicily (Toti 2002) and Carthage in north Africa (Bechtold & Docter 2010). Regarding the north African centre, research on material from excavations has made it possible to identify on archaeometric bases, and provide the macroscopic description of, the local ceramic fabrics (Briese & Peserico 2007, 268–71; Bechtold 2012), which has now been increasingly used to trace the distribution patterns of ceramic material from that important Phoenician settlement across the Mediterranean. Concerning our *amphora* sample

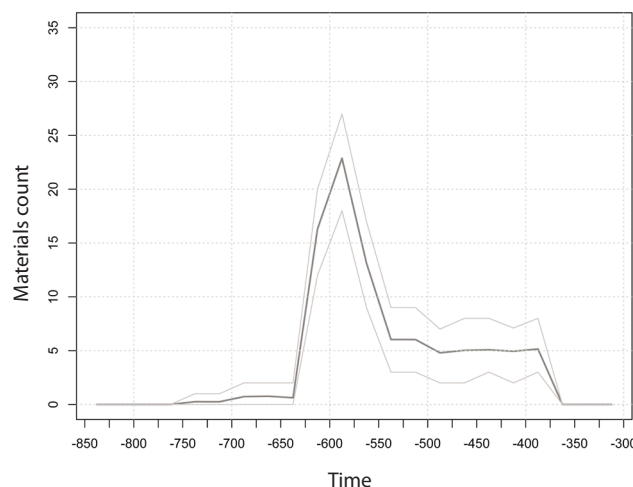


Figure 20.6. Dating profile of the amphora types from the case study at *nuraghe* S'Urachi (G. Furlan).

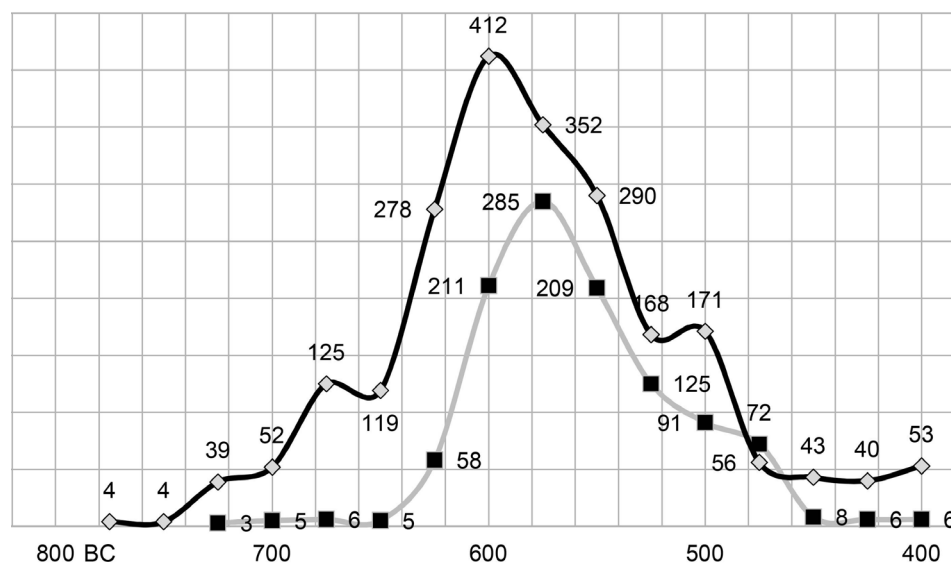


Figure 20.7. Dating profiles – elaborated according to the ‘weighted means sum’ method, based on a 25-year chronological reference unit – of Phoenician amphora types (grey line) and all remaining typologically Phoenician material (black line).

from the Padova excavations at Nora, macroscopic observations of ceramic fabrics have been carried out on all material, which have allowed the identification of 12 groups, four of which may be consistent with a local/regional (south Sardinia) production, while three present the distinctive features of the typical Carthaginian/north African fabrics (Finocchi 2009, 461–7). While research to single out ceramic fabrics of local production and identify areas of clay procurement at Nora is still ongoing, it is highly significant that out of 1037 *amphora* fragments dating up to the sixth century BC, around 840 have been associated with the three fabrics of likely north African production (Finocchi 2009, 463–4). Also, most of these fragments pertain to types dating between the mid-seventh and mid-sixth century BC. A similar picture has emerged from fabric analysis of material from underwater recoveries, with a high percentage of fabrics that may be related to north African provenance (Madrigali 2021, 278).

In the *amphora* repertoire from area E at S’Urachi, some interesting insights into the provenance of *amphorae* are suggested by associations between early typologies and fabrics, such as types T-2.1.1.2. and T-1.2.1.1./1.2.1.2. In west-central Sardinia, long term research on material from regional survey and excavations has made it possible to identify one regional group of fabrics most likely associated with production at the Phoenician site of Tharros (van Dommelen & Traplicher 2011). Regarding *amphora* type T-2.1.1.2., the ceramic fabrics of nine out of 18 fragments have been identified. Four of them point to a possibly north

African production, while five fragments are consistent with production in the Tharros area. Of the 21 fragments pertaining to *amphora* types T-1.2.1.1./1.2.1.2., nine may be associated with the Tharros area, while a Carthaginian provenance may be assigned to two fragments.

Amphora content and colonial production

While we lament the lack of organic residue analysis on *amphorae* from Iron Age Sardinia, another problem affects the common perception of the function of these artefacts throughout antiquity, which is the frequently alleged association of *amphorae* with wine and oil transport. This association especially with wine trade clearly reflects much later and better-known Roman period and economy. Nonetheless, wine trade is often the commonest explanation for the presence of Phoenician *amphorae* in Etruscan contexts (Botto 2005; 2007). Also, the increasing identification of ‘Sant’Imbenia type’ *amphorae* in early Archaic contexts in Carthage and Phoenician sites in the Iberian Peninsula has been connected to the trade of Sardinian wine, because of the association of this type of *amphora* with Nuragic askoid jugs, a ceramic shape which has been usually related to wine consumption (Botto 2015). As the current state of the art concerning *amphora* contents in the Iron Age western Mediterranean does not allow stating with absolute certainty that wine was the product most frequently transported in *amphorae*, we rely on the existing evidence to investigate *amphora* distribution and colonial production. In fact, the earliest *amphora* type

included in our analysis, i.e. the ‘Sant’Imbenia type’ *amphora*, has been shown in two cases to have been used to store – evidence from the site of Sant’Imbenia itself (Oggiano 2000) – and transport – from an underwater recovery off Sardinia’s east coast (Sanciu 2010, 4–5) – metals, copper in particular.

It is indeed underwater finds that can provide substantial data to help understand which kinds of products were traded in *amphorae*. From our sample of *amphorae* recovered off the coast of Nora, in fact, some yielded well-preserved evidence related to *amphora* contents (Madrighali & Zara 2018). In particular, 18 *amphorae* in which bovine and ovine meat was transported have been identified, as well as six spots where bones were recovered just outside the containers (Poplin 1980, 2014). In five *amphorae*, namely one *amphora* type T-3.1.1.2., two *amphorae* type T-2.1.1.2. and two type T-1.4.2.1., bovine meat has been found. All of them date to the Archaic period. Despite the minor presence (25 per cent) of bovine meat in the *amphorae* from Nora compared to the total amount of bones, one finding is notable: according to the analysis, likely identification of faunal remains contained in one *amphora* is zebu (*Bos taurus indicus*), a bovine species which is endemic to north Africa (Poplin 1980, 90, 95; Poplin 2014, 563–5). These archaeozoological data provide substantial indications about the origin of the transported contents and can be sometimes related to the ceramic fabrics of the transport containers. For example, one sixth-century BC *amphora* of the type T-1.4.2.1., which transported bovine meat, was likely produced in the Carthage area on the basis of fabric analysis (Madrighali 2020, 302, fig. 4).

In some cases, bones were found in association with seeds, particularly with grape seeds (*Vitis vinifera* subsp. *vinifera*) (Marinval & Cassien 2001), an association which has been related to a specific practice of meat preservation during maritime transport (Del Vais & Sanna 2012, 215). This practice was passed on through centuries, as shown by the same association of meat with seeds found in later *amphorae* from underwater recoveries off Nora, specifically fifth–early fourth century BC type T-1.4.2.1. and fourth century BC type T-4.1.1.4. (Marinval & Cassien 2001, 125, fig. 2), and other Sardinian coastal settlements, such as in the harbour of Olbia (Pallarés 1975–81, 252–3), the Santa Gilla lagoon at Cagliari (Fonzo 2005) and Santa Giusta near the Phoenician site of Othoca (Del Vais & Sanna 2009, 132–3; Del Vais & Sanna 2012, 215–17).

Colonial production and urbanization

From our analysis of *amphora* provenance, chronology and content from case studies at Nora and S’Urachi, one common trend emerges, which is the sharp increase in

amphora distribution between the late seventh and the mid-sixth century BC. This chronological pattern, which is also matched at Nora by the overall chronology of Phoenician ceramic material (see Fig. 20.7), and finds a comparison at S’Urachi from the analysis of Phoenician material from old excavations (Roppa 2015, 142–3), may be best explained within the wider framework of Phoenician expansion on the island. On Sardinia, most Phoenician settlements were in fact permanently established in the second half of the seventh century BC, with the notable exception of the settlement on the island of Sant’Antioco, just off the southwestern Sardinian coast, whose establishment dates to shortly before the mid-eighth century BC (Madrighali 2014).

In the case of Nora, the chronological peak of *amphora* – and generally ceramic – distribution pre-dates by at least one century the urban development and building activities which substantially changed the site’s appearance in the late sixth–early fifth century BC. To understand the nature and role of the settlement of Nora between the mid-seventh and the late sixth century BC, useful insights may be provided by focusing on three bodies of evidence, namely: 1) relationships with the immediate hinterland; 2) *amphora* provenance; and 3) non-Phoenician ceramic imports at the site.

First, intensive survey carried out over the 1990s in the plain surrounded by hills that stretches about 40 sq. km inland from the Nora peninsula, has yielded very little Phoenician – or imported – material throughout the whole Archaic period. It is only from the late fifth to fourth century BC onwards that a substantial number of newly established small-to-medium-sized settlements dotted Nora’s countryside. Earlier evidence appears to be limited to an area at a distance of about 1 km from Nora, with the exception of a handful of Phoenician *amphora* fragments which have been collected at two pre-existing Nuragic sites about 4–5 km farther away on the hills that fringe the plain to the north (Botto 2011, 61–70). Likewise, ceramic assemblages from Nora do not point to sustained interaction with local communities throughout the Archaic period. Nuragic pottery from the Padova excavations is present in very limited amounts, and quantitatively irrelevant (Bonetto 2014), with the exception of one typological group of handmade cooking ware. This is the so-called ‘S-shape rimmed’ cooking pot type that cannot entirely be placed in the Nuragic ceramic tradition, but does not belong to the Phoenician repertoire either (Botto 2009; Tronchetti 2010, 126–9), although similar shapes of handmade cooking ware are a distinctive feature of eighth to seventh century BC contexts at Phoenician sites in north Africa (Mansel 2007, 444) and the Iberian Peninsula (Delgado & Ferrer 2007), which are generally interpreted in very broad terms as an outcome

of colonial interaction between Phoenician settlers and local communities of the western Mediterranean (Botto 2009, 359–60).

Second, it is significant that more than three quarters ($n=c. 840$) of the entire *amphora* sample dating up to the fifth century BC ($n=1086$) have been associated with a provenance from the Carthage area. While this may reflect a bias in fabric studies since fabrics of likely Carthaginian production are relatively well studied and known (Bechtold *et al.* 2011), and show quite distinctive features, easily recognizable through macroscopic observations, it is nonetheless remarkable that the bulk of goods traded via *amphorae* came from the southern shores of the central Mediterranean. The limited data available on *amphora* contents from underwater recoveries show that, at least in some cases, foodstuffs, more specifically meat, were shipped.

Third, the Padova excavations have yielded a substantial amount of Greek and Etruscan ceramic imports (diagnostic fragments: $n=423$), whose chronology mostly ranges between the late seventh–sixth century BC (Rendeli 2009). Functionally, the majority of this group of ceramics falls within the tableware category, chiefly forms for serving and consuming, a pattern that suggests the existence of a well-structured network between north Africa and Sicily, on the one hand, and the coasts of the Italian Peninsula, on the other (Botto & Madrigali 2016). Through this network, food supplies – shipped in typologically Phoenician *amphorae* – and Greek tableware were imported to Nora from the south, while Etruscan tableware came from the Italian Tyrrhenian coast. A further argument in support of the existence of strong links with central Italy comes from the recent finding of a small imported jar/*anforetta* among the grave goods of an early seventh-century BC Phoenician cremation grave, which finds a close typological match in material from sites such as Osteria dell’Osa and Veii (Bonetto & Botto 2017, 201).

The evidence discussed so far for Nora points to the specific role of the settlement in a well-structured Phoenician colonial network throughout the Archaic period. The interaction with nearby local indigenous communities appears very limited, especially in comparison with other contemporary Phoenician sites on Sardinia, for instance Sant’Antioco (Pompianu 2010). Much more substantial appear to be the relationships with the Phoenician settlements of the southern Mediterranean, Carthage *in primis*, but probably also Motya, and the coasts of the Italian Peninsula. The morphology of the site itself, which provides shelter to ships and anchorage in two distinct bays, makes it a convenient stop-over on the sea-route connecting north Africa and Sicily to the Italian coasts. Data such

as the high percentage of *amphorae* from the Carthage area, along with weak interaction with Nuragic communities, might also be interpreted as the evidence of direct food supply from Carthage to a site that played an important role in a trade network in which the north African city was already a key actor. In the early Punic period, when Carthage imposed its hegemony over Sardinia and the western Mediterranean, the nature of the site shifted to a larger, permanent urban centre displaying elaborate architecture in burial and settlement contexts by the early fifth century BC. The fifth century decrease of *amphora* imports is probably related to forms of subsistence now more substantially based on agricultural production in Nora’s immediate hinterland, although it was only one century later that the appearance of a significant number of small-to-medium-sized rural sites documents the intensive agricultural exploitation of the countryside.

The *amphora* evidence from *nuraghe* S’Urachi shows, on the other hand, that the establishment of strong relationships between the Phoenician settlement of Tharros and its hinterland – at least with *nuraghe* S’Urachi – took place from the late seventh century BC onwards. Although the archaeological evidence from excavations on site is very limited for the Archaic period, this chronological pattern is matched by the contemporary development of Tharros into a larger, elaborate settlement, as shown by burial data, two cremation cemeteries, respectively to the south and north of the site dating from the seventh century BC (Del Vais & Fariselli 2010), and more importantly by the appearance of the *tophet* sanctuary in the late decades of the same century (Bartoloni 2005, 944–5). The links between urbanization, Tharros’ role in regional dynamics, and (colonial) production and trade, as witnessed by the *amphora* evidence from S’Urachi, can be argued both on the basis of the overall chronology of Phoenician imports and the likely provenance of *amphorae*. Chronologically, in fact, it is hardly a coincidence that the increase of Phoenician imports at the indigenous site is contemporary with the urban growth of Tharros, and it seems reasonable that it was through the Phoenician coastal settlement that material found its way to S’Urachi. Also, not only pottery and goods transported in *amphorae* moved inland, but also people, as shown by recent research on ceramic practices which has demonstrated that a group of people with a Phoenician background lived among the local community at S’Urachi from the late seventh century BC (Roppa 2012; 2014). The likely production of a substantial number of maritime transport containers in the Tharros area and Carthage region through the late seventh–mid-sixth century BC, as shown by fabric analysis on material

from S'Urachi, attests the role of the Phoenician centre both in the production and distribution of goods towards its hinterland.

Colonial economies and urbanization

The archaeological evidence discussed in the previous sections helps us to define the connections between forms of production and trade, and related forms of settlement in Iron Age to early Punic Sardinia. While we believe that urbanization was a complex process involving substantial changes across a broad economic, social and cultural spectrum, which developed at a wider regional level (see for instance Foxhall 2003; Osborne 2005; van Dommelen 2005; and discussion in Roppa 2013, 159–60), our case studies through the late seventh to sixth century BC appear to be related to two distinct forms of settlement, both associated with specific types of wider productive/trade systems. In the case of Nora, the predominance of imported *amphorae* and weak relationships with the immediate hinterland clearly project the site as a stop-over/maritime base in a larger trade network which formed part and parcel of the Phoenician colonial enterprise in the central Mediterranean. Because it is likely that Nora's supply was largely dependent on overseas provision, as shown by the large quantity of *amphorae* from the Carthage area, once the role of Sardinia in the trade network with the coasts of the Italian Peninsula substantially diminished by the late sixth century BC (Tronchetti 2010, 123), the site gradually changed its function and layout. As evident from the overall archaeological documentation (Tronchetti 2014), particularly the appearance of elite rock-cut burial chambers, links with Carthage became stronger, so that a substantial influx of people from north Africa has been proposed (Botto 2011, 73–5). A primary role of the north African centre in the urbanization process which involved the systematic exploitation of the hinterland has also been suggested (Bonetto 2009, 182–97). In contrast, the site of Tharros, as shown by the S'Urachi evidence, had established its regional role from the late seventh century BC, and while there is little doubt that the site was involved in the wider Phoenician colonial network (van Dommelen 2005, 148–51), it developed forms of urban economy through the establishment of strong relationships with the inland indigenous communities much earlier than Nora. In both cases, however, by the end of the fifth century BC the two settlements were cities, which relied for their subsistence on agricultural production in their respective hinterlands, and at the same time were connected to larger economic systems through the trade network managed by Carthage in the western Mediterranean.

Notes

- 1 When *amphorae* are not entirely preserved, we consider only rim fragments and assume that one rim = one individual. We can exclude methodological problems such as an inflated quantity for fragments, as joining rims or rims pertaining to the same amphora based on fabric similarities have always been counted as one rim, which therefore corresponds to one amphora individual.
- 2 We thank our friend and colleague G. Furlan for elaborating the graphs based on the Monte Carlo method.

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Making cities

Large and complex settlements appeared across the north Mediterranean during the period 1000–500 BC, from the Aegean basin to Iberia, as well as north of the Alps. The region also became considerably more interconnected. Urban life and networks fostered new consumption practices, requiring different economic and social structures to sustain them. This book considers the emergence of cities in Mediterranean Europe, with a focus on the economy. What was distinctive about urban lifeways across the Mediterranean? How did different economic activities interact, and how did they transform power hierarchies? How was urbanism sustained by economic structures, social relations and mobility? The authors bring to the debate recently excavated sites and regions that may be unfamiliar to wider (especially Anglophone) scholarship, alongside fresh reappraisals of well-known cities. The variety of urban life, economy and local dynamics prompts us to reconsider ancient urbanism through a comparative perspective.

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