

Production and Trade in pre-Roman Sardinia. An Introduction

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Located centrally in the western Mediterranean Sea, Sardinia has long been an obligatory crossroad of all routes passing through the west Mediterranean and connecting the eastern and western basins (fig. 1).¹

At the height of the Nuragic Civilization, which coincides with the Late Bronze Age, there are long-distance seafaring routes that merchants from Mycenaean Greece took to southern Italy and Sicily and from there to Sardinia and Spain, mainly looking for metals.² Sardinia, during this time, was fully incorporated in this trade because of its mineral wealth and because it lay on route to the Spanish and Etruscan coasts, which were also very rich in metals.³ Increased contacts between Sardinia and these areas during the transition from the Late Bronze Age to the Early Iron Age is documented by finds of Sardinian objects, both pottery and bronzes including figurines, on the coasts of the Italian peninsula, Sicily, Crete, Cyprus, North Africa, Spain, Corsica and France. This Sardinian material was traded by merchants from Sardinia, Cyprus and the Levant, who took over after the collapse of the Mycenaean world.

By the second half of the 9th century BC Phoenician merchants had become the dominate group of merchants who moved from the east to the west, still mainly searching for metals. Between the 8th and 7th century BC the Phoenicians also establish themselves on the coasts of Sardinia – like Phoenician foundations in western Sicily, North Africa and southern Spain – with the foundation of a series of settlements such as Sulky (S. Antioco), Karaly (Cagliari), Tharros, Nora and Bithia.⁴

With regard to the oldest phase of the Phoenician colonization the most interesting data comes from Sant’Imbenia, which is situated on the west coast of Sardinia near Alghero. The results of the settlement excavation seem to indicate the existence of a hybrid culture, as in its layers Phoenician as well as indigenous materials were found. The analysis of the settlement provides a rare opportunity to trace the early steps of the colonization process. At the very early stage a mix of Phoenician and indigenous people seems very probable. This is also observable in other Phoenician settlements, where indigenous artifacts were found together with Phoenician materials of the first half of the 8th century BC.⁵ The foundation layers of domestic contexts in Sulcy may serve as an example here.

In fact, Sant’Imbenia shows an indigenous society open to Levantine influence during the 9th century BC, but especially during the following 8th century BC. Numerous objects from Euboea show a connection with Euboea as well, which is comparable to phenomena occurring at Al Mina, the mouth of the Orontes, Pithekoussai, Carthage and Huelva (Tartessos) in Andalusia.

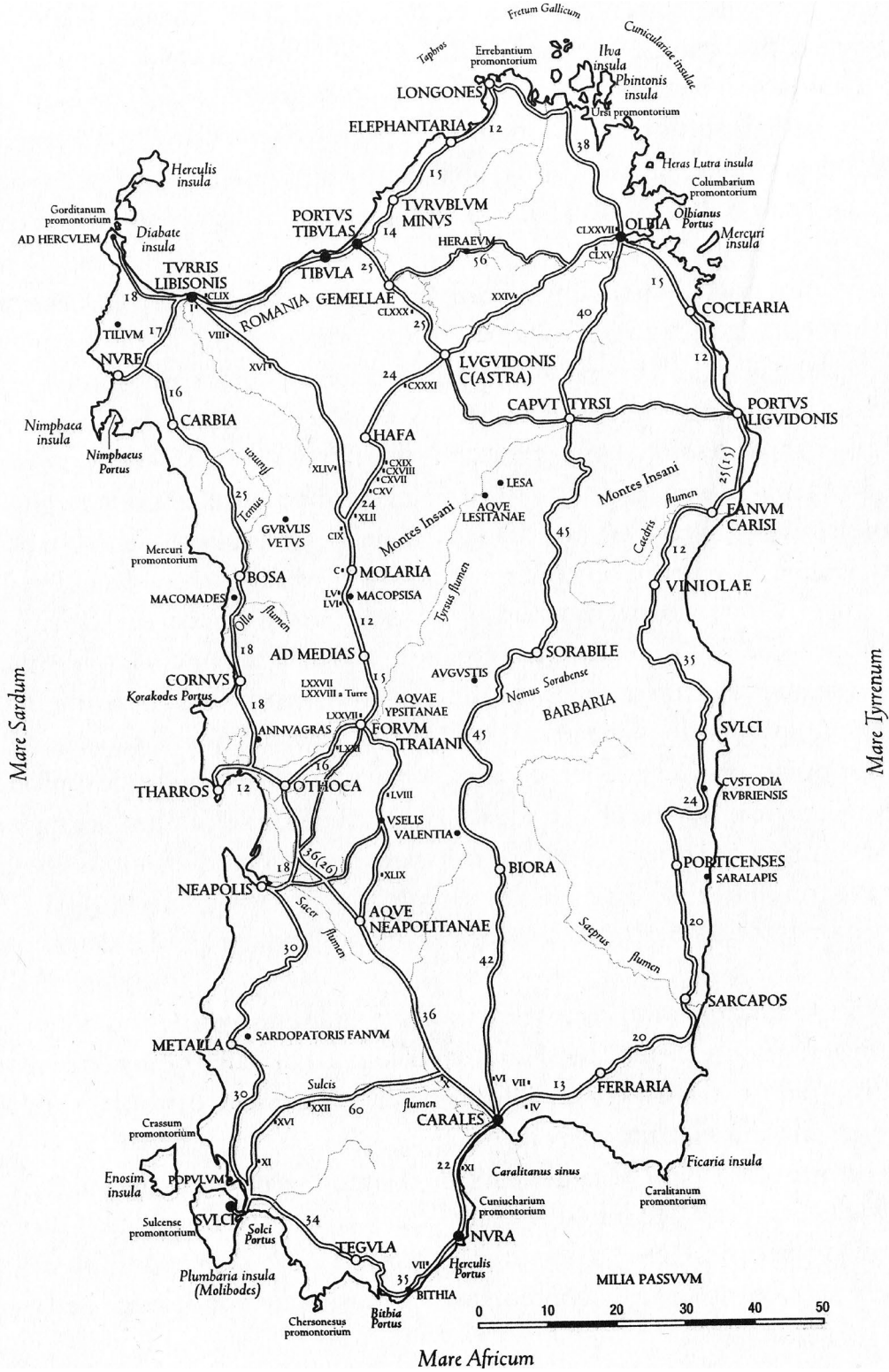


Fig. 1: Map of ancient Sardinia.

Direct relationships are also documented between Sardinia and the Villanovian communities of the Tuscan-Lazio area and, perhaps Campania (Pontecagnano and Sala Consilina) during the 9th and 8th century BC. Bronze objects from the Villanovian communities reached Sardinia, and especially the centres of central-northern Sardinia. They are dated to the early Iron Age.

The maritime connection between Sardinia and the ports of northern Etruria, therefore, is already evident in the first half of the 9th century BC, suggesting on the one hand a Tyrrhenian route along the eastern coast of Corsica and the Tuscan archipelago and on the other hand the role of Sardinians in the development of metallurgy in the mining areas of Etruria. It is thus no coincidence that the Sardinian materials in the vicinity of both Populonia and Vetulonia and in general in the mining areas of Etruria represent about two thirds of the total of the Sardinian indigenous artifacts distributed across the Italian peninsula.

As indicated by this early Sardinian evidence in Populonia and Vetulonia, it is clear that the Phoenicians tapped into this already existing special trading relationship between Sardinia and the mining areas of Etruria.

The Phoenician centres of Sardinia are, therefore, interested in the exchange relations between North Africa, the Tyrrhenian coast of mainland Italy and, by way of the Balearic Islands, the extreme western Mediterranean and Atlantic coasts. The colony of Sulci, the main trading port for the metal extracted from the mountains of the Iglesiente, participated in this network between 750 and 650 BC. Phoenician artifacts arrived via the Carthage and Andalusian-Mauritanian routes. In addition to Phoenician pottery there is a minor but relevant presence of Late-Geometric Euboean ceramics of both the east Mediterranean (Euboea-Cycladic) and Pithekoussai, as well as Protocorinthian and Corinthian pottery, indicating the existence of complex and diverse exchange relations during the Archaic period.⁶

Imported Etruscan and Greek objects that have been found in both the Phoenician and indigenous centres of Sardinia must be examined in the context of the exchange relations during the Archaic period.⁷

Current research rejects the concept of “Etruscan trade”. As Michel Gras has pointed out, «la question du «commerce étrusque» ne se résume donc pas à la recherche des importations mais à leur place dans les sociétés».⁸

The role of Etruscan but also Greek imports in the Phoenician and Sardinian societies of Archaic Sardinia has been examined by various scholars, who noted the importance of “taste” to justify the selective choices made by the inhabitants of the various Phoenician settlements in Sardinia. Similar phenomena have been observed in Carthage, Ibiza, Malaga and in the region of Liguria and the Provence, where a large diffusion of Greek and Etruscan amphorae and Etruscan *bucchero* is found from the end of the 7th century BC onward.

Etruscan amphorae are also present in Carthage, Malaga and Sardinia, in particular in Sarcapos, Nora, Bithia, Neapolis, Korakodes and Ittireddu, however the quantities are

much smaller compared to those of the region of Liguria and the Provence. Etruscan-Corinthian aryballoi and alabastra are widely attested in Phoenician contexts (Mozia, Palermo, Carthage, Ibiza) but are absent in southern France.⁹

Most bucchero in Sardinia is dated between 600/590 BC and 560 BC, but it can be found during the entire 6th century and the first half of the 5th century BC, as in Nora, where smooth forms of *bucchero* have been discovered that can be related to symposia and that cannot easily be assigned to a workshop.

The Phoenician ports of Sardinia mainly received Etruscan pottery that was produced in the *poleis* of southern Etruria. Especially the Etruscan-Corinthian pottery, dated between 580 and 540/530 BC, can be ascribed to workshops in Tarquinia, Vulci, which are prevalent, and Cerveteri, which are dated later.

Attic black glazed, black-figure pottery as well as “Ionic cups”, mainly produced in western ateliers, are only documented in the Phoenician centres of Sardinia and not in other sites on the island. Athenian amphorae à la brosse, Corinthian A, Chiote, Milesian or Samian, “Ionian-Massaliote” vessels of Magna Graecia and rare Massaliote amphorae with micaceous paste have been attested in Sardinia as well. The chronological scope of this pottery ranges between 620 and the end of the 6th century BC, although the greatest concentration is dated to the third and fourth quarter of the 6th century BC. The number of documented examples, however, is very limited, even if the ones discovered on indigenous sites are taken into account.¹⁰

It is clear that during the first half of the 6th century BC Greek imports arrived in Sardinia Etrurian ports, while this might have changed in the second half of this century, when a reduction of Etruscan imports is visible. The Phocaeen *apoikia* of Alalia and the subsequent battle of Alalia unmistakably had an impact on traffic in the western Mediterranean.¹¹ Before the defeat of Alalia, there may have been a Phocaeen *emporium* in the port of Olbia, situated on the north-eastern coast of the island.¹²

During the 6th century BC Carthaginian authority was established in Sardinia without a sharp break with the previous Phoenician phase and this brought about a reorganization of trade in the centres of Sardinia.¹³ Large areas of the island became dedicated to growing grain and the exploitation of lead, iron and copper mines led to an increase of the island’s export.¹⁴ This explains the enormous production of Sardinian amphorae, evidenced by the “a sacco” and “a siluro” types, dated to especially the late 5th and 4th century BC. They mainly contained Sardinian grain for export.

The imported amphorae from the Aegean area, Magna Graecia, Etruria and Massalia in particular contained wine. Sardinian wheat is assumed to have arrived in Sardinian amphorae in the port of Neapolis in Campania before it was further distributed across Magna Graecia, as this port played an important role for the grain supply of Athens. Attic red and black-figure pottery dating to the 5th and 4th century BC and widespread in the Punic cities and their hinterland of Sardinia, especially south east of the Gulf of Oristano at Neapolis (Oristano), must have come from this port in return.

This hypothesis seems to be confirmed by the increased number of amphorae from Magna Graecia. It cannot be excluded that these arrived in Sardinia through Carthaginian intermediaries, especially when the spread of Attic pottery in Carthage, Ibiza and the south of the Iberian Peninsula is taken into consideration. The cargo of a shipwreck, dated to 350 BC, discovered off the island of Sec, in the bay of Palma de Mallorca, was made up of a vast assortment of goods, including red-figure Attic pottery, black-glazed wares with both Greek and Punic commercial graffiti, Greek and Punic amphorae from the central Mediterranean and trachyte millstones either from Pantelleria or Mulargia. The diverse origin of this cargo demonstrates how difficult it is to identify the route by which the Attic imports arrived in Punic Sardinia.¹⁵

Carthage lost control of Sardinia at the end of the First Punic War (237 BC) and in 227 BC the Roman provincia of Sardinia was established.¹⁶ This, however, did not stop the Sardinians from revolting. The battle of Cornus in 215 BC is well known but there is also the triumph celebrated by Tiberius Gracchus in 175 BC for his successes against the Ilienses and the Balari. To commemorate his triumph, the consul dedicated a bronze tablet (*tabula*) with the map of the island and the campaigns he fought in Sardinia in the temple of Mater Matuta in Rome. The last known triumph, celebrated because of military success in Sardinia, is of *M. Cecilius Metellus* and dates to 111 BC. This does not mean that disturbances in Sardinia had come to an end, as is well known from literary and epigraphic evidence, in particular in the interior of the island.

Archaeological data and literary sources provide reliable knowledge of the system of ports and landings in Sardinia during the Roman period. First of all, this system is described in the *Itinerarium Antonini* and the *Geography of Claudius Ptolemy*. The older pre-existing coastal cities, Tharros, Karaly, Sulky, Olbia, etc., newly founded centres such as the colony of *Turris Libisonis* (Porto Torres) and natural landings now equipped with suitable infrastructures are all part of this system. The main ports during the Roman period are Longone (Santa Teresa Gallura), Portus Tibulas (Castelsardo), *Turris Libisonis*, Porto Conte, Bosa, Cala su Pallosu, Tharros, Othoca (Santa Giusta), Neapolis (Santa Maria de Nabui), Sulci (Phoenician Sulky), Bithia, Nora, Karales (Phoenician Karaly), Sarcapos (Santa Maria di Villaputzu), Sulci (Tortoli), Portus Liguionis (Posada?) and Olbia.¹⁷

Some ports, like Olbia and Karales, were equipped with typical facilities such as shipyards for repairs if not construction and sanctuaries for the worshipping of deities, among others Venus, who protected sea voyages. Not only cargo ships were docked in the ports but also warships. In 215 BC, for example, Titus Manlius Torquatus set off from Karales to Cornus to fight Ampsicora and his son Hostus, *duces Sardorum* and troops from the main military basis of Miseno in Campania from where the western Mediterranean was controlled, were detached in Olbia and Karales.¹⁸

Regarding trade goods, as is known in general only non-perishable materials (pottery, glass, metal, bone, stone) survive on the seabed and in the subsoil, while the bulk of the trade in antiquity consisted of grain, fruit and vegetables, cheese, timber, salt and spices,

textiles, slaves, dyes, raw clay, livestock, animal hides etc.) which were transported in perishable containers or otherwise loaded onto the ship. To identify the Sardinian export goods, therefore, the support of literary and epigraphic sources is necessary.

Sardinia was primarily, as during the Punic period, an important source for the supply of grain, not only for Rome itself, but also for Greece and Asia Minor as reported in literary sources.¹⁹

Moreover, during the Phoenician, Punic and even Roman period, Sardinia assumably produced salt in the many lagoons that not by chance are situated very close to important inhabited centres such as Olbia, Othoca, Neapolis, Sulky, Karaly, Nora and Bithia.²⁰

Meat and other animal products like cheese and hides were an important export product for Sardinia as well as livestock, such as horse breeds. Leather processing is closely linked to the presence of alum in Sardinia, which is an optimal mineral for the tanning but is also used in glass production. Its scarcity in the western Mediterranean made it an important export good for the few areas where it is present, among which the mountains of the Nuorese in Sardinia can be counted.²¹

A purple dye workshop, just several meters from the port of Olbia may indicate that this precious product was produced for oversea trade.²²

The granite of Santa Teresa Gallura, Olbia and perhaps of the Isola di Cavallo (part of the La Maddalena archipelago) was certainly exported, not only to Rome but also Spain, North Africa and Sicily.²³ Sardinian granite was used in the construction of, for example, the Colosseum, the church of San Giovanni in Laterano, the church of Santa Maria sopra Minerva and the basilica of Saints Cosma and Damiano in Rome.

When the map of the Roman road network of Sardinia is compared with maps that display the island's Roman productions (grain, minerals, etc.) it becomes clear how the road system was organised to enable the transport of resources to the main ports, above all Karales, Olbia and Turris Libisonis, where the *annonae* were operating.

With regards to imports, the range of known materials is notably extensive. The bulk of the import consists, naturally, of west Mediterranean products: oil, wine, fish sauce, bricks, fine pottery, coarse wares and lamps, glass, metals and perfumes, arriving from the entire coastal and sub-coastal circuit comprising the Italian Peninsula, Sicily, North Africa, Spain and France.

The production and export of metals deserves a more in-depth analysis (copper, lead, silver, iron, especially from Sulcis and Alghero) as these had been a primary resource, exploited since the Nuragic period.

Sardinia's mining and metallurgy are, generally, equally important as those of Populonia and Vetulonia in Etruria.²⁴ Sardinia, in fact, was named *Argyròphleps nésos*, the "island of the silver veins", by the scholiast of Plato's *Timaeus* (p. 25, B), certainly because of its metal resources, which made the island one of the most privileged destinations among the western Mediterranean commercial routes.²⁵ Study of iron objects from the Nuragic period demonstrate that iron use started in the Late Bronze Age. The indigenous Nuragic people knew iron and its characteristics well, probably

introduced by and learned from Cypriot ironsmiths. According to another theory, the production of iron started in Sardinia during the final part of the Bronze Age and was later diffused to the rest of Italy.

In regard to urban areas, fragments of tannur, metal fragments and slags have been found in several Phoenician, Carthaginian, and Roman contexts in Sardinia.

In the northern part of Tharros, situated on the Gulf of Oristano, a pottery and iron production site has been identified that can be dated between the 5th and 4th century BC.²⁶ The site yielded several pottery fragments characterised by considerable signs of burning and vitrification and interpreted as furnace or pyro-metallurgical remains and iron scums. The discovery of an extensive variety of tools indicates the existence of metallurgical artisanal workshops.

In Neapolis, located in Gulf of Oristano like Tharros, the presence of iron in the urban area suggest the existence of metallurgical workshops, even though at present the available data does not permit the identification of any specific location or chronology.²⁷

Other important artisanal workshops have been identified in Carthaginian and Roman settlements in the southern part of Sardinia. In Sulcis, for example, situated on the southwestern coast, an iron refining and production workshop has been discovered.²⁸ Recent investigations in Nora brought to light elements connected to artisanal workshops found both in urban and extra-urban areas. In the northern part of the city, iron and copper fragments, *tannur* platforms and fragments, and small basins for forging and cooling have been documented, indicating a possible (s)melting installation, dating between the 3rd and 1st century BC.

Long-term investigations in the hinterland of Nora²⁹ discovered open-air copper, iron, and silver-bearing galena mines, probably exploited for local demand and in order to trade with foreigners. Sant'Imbenia, situated on the coast of north-western Sardinia, is one of the most important excavated sites: the excavation provided evidence of early contact between indigenous people and Phoenicians. Sant'Imbenia's territory is rich in pastures and agricultural and mineral resources. In particular, silver mines are located in the Argentiera area, iron mines in Canaglia area, and copper mines in Calabona area.³⁰

Along the northern coast (Olbia) artisanal areas have been identified and – near the presumed ancient port – pottery and metallurgical workshops have been discovered.

Another area of particular interest is that of iron mining in the mountains of the Montiferru massif.³¹ The mines are located about 2,5 km east of Cornus. Some tunnels drilled in the side of the mountain are still visible. Micro-chemical analyses carried out on iron samples from the Montiferru confirmed the presence of iron from Montiferru in the metallurgical workshops of Tharros. The presence of mineral resources surely played an important role for the foundation of Cornus, as it is located along the south-western part of the Montiferru. Moreover, Nuragic Iron Age villages such as S'Urachi seem to be located along the natural communication route between the Gulf

of Oristano and the Montiferru. Not far from Tharros, in the indigenous centre of Nuraxinieddu, considerable evidence for iron production has been discovered: a Punic circular (s)melting furnace, cylindrical mouths, and iron fragments.

Notes

¹ Tronchetti 1988; Bernardini 1997; Lo Schiavo 1997a–b; van Dommelen 1998; Usai 2007; De Vincenzo 2015a–b; D’Oriano 2017b; Mastino 2017.

² Lo Schiavo 1997b; Mastino et al. 2005, 77–91; Bernardini 2017a; Zucca 2017.

³ Usai – Zucca 2011; Rendeli 2017a.

⁴ Barreca 1986; Lilliu et al. 1988; Bernardini et al. 2000; Bernardini 2009; Blasetti Fantauzzi 2012; Ead. 2015; Botto 2017. The only Greek settlement in Sardinia is assumed was that of Olbia, at least between the end of the 7th and the end of the 6th century BC: D’Oriano 2017b.

⁵ Mastino et al. 2005, 91–103.

⁶ Ugas – Zucca 1984; Tronchetti 2017.

⁷ Rendeli 2017a; Bernardini 2017b; Tronchetti 2017, 177–214.

⁸ Gras 2004, 229.

⁹ Mastino et al. 2005, 100 f.

¹⁰ Tronchetti 2003; Del Vais 2006b; Guirguis 2007.

¹¹ Bernardini et al. 2000; Bernardini 2017b.

¹² D’Oriano 2017a.

¹³ Mastino et al. 2005, 103–107. About the chronology of the installation of the Carthage domain in Sardinia s. Blasetti Fantauzzi 2015, 20–22.

¹⁴ van Dommelen et al. 2010; van Dommelen et al. 2012; Roppa 2013.

¹⁵ Del Vais 1997; Ead. 2006b; Mastino et al. 2005, 105 f.; Tronchetti 2008.

¹⁶ Meloni 1990; Mastino 2005. About the Roman provincia of Sardinia s. also De Vincenzo – Blasetti Fantauzzi 2016; Bonetto – Ghiotto 2017; Pianu 2017; Sechi 2017.

¹⁷ Mastino 2005, 165–172; Mastino et al. 2005, 161–206; Mastino et al. 2006; Bartoloni 2009; Spanu – Zucca 2009; D’Oriano 2017b, 35.

¹⁸ Mastino 2016.

¹⁹ Rowland 1994.

²⁰ Mastino 2005, 184; Fariselli 2006a; Stiglitz 2006; D’Oriano 2017b, 35 f.

²¹ D’Oriano 2017b, 36.

²² Fariselli 2006b.

²³ Angiolillo 2005, 210; D’Oriano 2017b, 36 f.

²⁴ Zifferero 2002.

²⁵ Bernardini 2001; Id. 2010.

²⁶ Emporikòs Kòlpos 2005; Ingo et al. 1997.

²⁷ Zucca 2005, 159.

²⁸ Pompianu 2010.

²⁹ Finocchi 2002.

³⁰ Rendeli 2017b.

³¹ Blasetti Fantauzzi – De Vincenzo 2016; Blasetti Fantauzzi 2019.

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Fig. 1: Mastino 2005, 340 fig. 37.

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