Was there an Etruscan Ritual Economy? Tracing the Organization of Production and Crafts in Etruscan Sanctuaries (8th–5th Centuries BC)[1]

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In Classical Antiquity, sanctuaries and cult places were important economic nexuses and covered important economic fields, such as: (1) storage of commodities and resources, objects of value or money (*thesauroi*, in some cases even proper temple banks);[2] (2) religious services, e.g. healing, oracles, and sale of priesthoods; (3) land property and livestock;[3] (4) market places and harbors for long distance trade, especially as *emporia* or 'ports of trade');[4] (5) production of goods and crafts.

The terms 'ritual economy' or 'temple economy' (in analogy to the term 'palace economy') have been coined to describe these religious-economic functions, and have been studied quite profoundly in the context of the Ancient Greek world.[5] However, there is a still a lack of analyses for ritual economies in Etruscan sanctuaries, and the Etruscan religion.[6] This paper shall tackle important aspects of production and crafts, and offer a reconstruction regarding the organization of possible Etruscan ritual economies. I am going to discuss three economic activities before outlining some principles of the Etruscan ritual economy: (1) metal processing; (2) textile production; and (3) trade and the standardization of weights in sanctuaries.

Metal Processing

Metal processing is a significant craft to be discussed here since metal in itself had a high economic value and was frequently dedicated or hoarded in cult places. There are many sanctuaries in Greece known to have attested places for metal processing (e.g. Samos, Delphi, Olympia, Nemea, Kalapodi, Eretria and in Athens at the Hephaisteion and south of the Acropolis)[7]. However, there is only scarce evidence of sacred, embedded metalworking in the sanctuaries of Etruria and *Latium vetus*.

In Satricum, almost no metal finds are known from the settlement, while on the other hand a noticeable number of metal finds are attested for the northwestern necropolis and the sanctuary. The Archaic votive deposit I in the sanctuary contains so many metal objects among the numerous findings that it has been interpreted as a ceremonial metal hoard.[8] Slag finds on the Acropolis of Satricum are mainly concentrated in three locations in direct proximity to the sanctuary: thus it may be assumed that during the 8th–7th century BC high-quality objects of bronze and iron were processed under the supervision of a *princeps* or an exclusive elite in the sacred context. These objects were probably used in representative banquets, in the regional and Mediterranean gift exchange, as dedications in sanctuaries, and as burial gifts in rich tombs.[9]

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Very few cases of metalworking are known for cult places in Etruria during the 8th–5th centuries BC. Two of these examples can be found in the territory of Tarquinia: in the 'Monumental Complex' on the settlement plateau and in the *emporion* Gravisca. In the 'Monumental Complex' of Tarquinia, immediately north of the building β, the remains of a furnace that probably facilitated metallurgical activities are attested. 48 clay finds were made in the area, containing mostly gray internal colorations due to the high heat and contact with metal to which they had been subjected. These clay finds were identified by the excavators as parts of matrices. In a few cases, traces of bronze have also been found, so that the furnace of the 'Monumental Complex' can be interpreted as the remains of a bronze foundry. Some clay elements and 'matrices' seem to belong to the furnace itself, others to tools for bronze casting and further processing.[10]

Many furnaces, water basins, tools, slags, and traces of reddish colored earth indicate the performance of metallurgical activities on a large scale in the *emporion* of Gravisca between the first and third building phase around 580–480 BC. Metal and slag findings suggest the processing of iron, copper, bronze and lead, and at least partial reuse and smelting of metal objects, such as sheets, bars, fibulae, and even twelve iron ploughshares. Most furnaces were distributed in the eastern part of the sanctuary, right around the shrine of Aphrodite, the oldest temple in Gravisca. The connection between Aphrodite, the *Aphrodision*, and metal processing at Gravisca has existed since the foundation of this cult place, and is very noticeable: it reminds us directly of parallels with metalworking in Cyprus, the mythical birthplace of Aphrodite.[11] The *emporion* of Gravisca played an important role in the Archaic period not only in Mediterranean long distance-trade, but especially in the production and distribution of metal.[12]

Both Etruscan examples of metalworking in sacred contexts are from the city-state of Tarquinia. It seems plausible to assume that the ore came from the Tolfa Mountains in the hinterland of Tarquinia and was a crucial commodity under the control of the socio-political elites of the Orientalizing and Archaic period (similar to Satricum, see above). The many indications for metal processing in the *emporion* of Gravisca suggest that metal was an important main export good and economic factor for Tarquinia in the 6th century BC. The ore was mined in the Tolfa Mountains, possibly worked and stored under sacred protection in the sanctuary, and then sold to Ionian Greeks in the *emporion*. At the same time (from ca. 630 BC onwards), the Ionian *naukleroi* (traders) accessed the rich metal deposits in Tartessos on the southern Iberian Peninsula, and imported many kinds of resources from the entire Mediterranean to the Ionian city-states via a vast trading network.[13]

A very close parallel to this type of organization applied to metallurgical activities may be found in Cyprus, where large quantities of copper were mined and traded in ports to the Mediterranean. There is an intense debate concerning the scale and function of possible metal manufacture in Cypriot sanctuaries, but scholars tend to reconstruct the organization of at least some metallurgical activities from the late Bronze Age (at least since the 12th century BC) until the end of the city-kingdoms as "the 'triptych'

par excellence of the Cypriot politico-economic activity":[14] the copper was mined in the Troodos Mountains, processed in metal workshops within urban sanctuaries under divine protection (especially in Kition and Palaipaphos), and exported via the harbors.[15] Here, I propose a very similar model for the metalworking in the city-state of Tarquinia and suggest that the similarities in the organization of metalworking are not random. Besides the organizational patterns of Cypriot and Tarquinian metallurgical activities, some aspects indicate close contacts between the city-kingdoms (*basileia*) in Cyprus (mainly Kition and Palaipaphos) and Tarquinia in the late 7th/6th century BC that may help to explain the similar organization of metallurgical activities in both regions:

(1) Aphrodite/Astarte/the 'Ingot Goddess'/the 'Cypriot Goddess' served as a main deity and divine protector of metal workshops in Cyprus and in Tarquinia.[16]

(2) The building techniques and architecture of building β in the 'Monumental Complex' of Tarquinia share so many characteristics to the architecture of the eastern Mediterranean, and especially of the Levant, that the excavator Maria Bonghi Jovino suggests building β might have been built by a Levantine architect.[17]

(3) At the back wall of building β was an altar, which is not attested anywhere else in Etruria. According to Sophie Helas, it could instead be interpreted as a Phoenician sacrificial podium. Helas believes the sacrificial pits at the entrance may be compared to those of the sanctuary in Kition. She also assumes the presence of visitors from the eastern Mediterranean, probably from the Levant, in the 'Monumental Complex', and proposes that these visitors were intentionally addressed with this unique building.[18]

(4) Around the middle of the 6th century BC an anchor with the Cypro-Syllabic inscription *a-sa-ta* entered the 'Monumental Complex' of Tarquinia. According to the analysis of Giulio Mauro Facchetti, this inscription could mean either *ánstā* – 'rise up!', or (less likely) *As(e)tártāi* – 'for Astarte'.[19]

(5) The monumental tumuli of Tarquinia, with their wide, theatrical spaces ('piazzaletti') and stairways in the entrance area, share a specific – and for Etruria unique – architecture, that can otherwise only be found in Cyprus (especially in Salamis).[20]

In my opinion, the abovementioned archaeological data suggests a strong and special connection between Cyprus and Tarquinia. Cypriot and Phoenician specialists (the famous term 'Cypro-Phoenician' may apply here) could have had helped to organize metalworking in the city-state of Tarquinia as part of intense cultural contacts.

Textile Production

Textiles provide crucial information on the 'ritual economy' of Etruscan sanctuaries. There are already some fruitful studies on the role of textiles in Etruscan sanctuaries, and the research of Margarita Gleba, Sanna Lipkin and Gretchen Meyers is especially important in this context.[21] Loom weights, bobbins, spindle whorls and *epinetra* are typical tools for textile production that can frequently be found in sacred contexts

from classical antiquity. A fundamental and general problem is deciding whether the function of such textile tools was (1) as a votive offering from a dedicant, or (2) as part of textile production in sanctuaries. In general, both possibilities are equally plausible and evidenced in the archaeological record.[22]

Examining the distribution of textile tools within a sanctuary is a strategy for identifying the possible existence and sites of textile production within that sanctuary. If a large amount of textile tools cluster in one room or a single location within a sanctuary, this might indicate the existence of a loom or similar installations for the production of textiles. Unfortunately, there is little data to support such identifications. However, the cult place of Poggio Colla in Vicchio is an exceptional example of a spatial cluster of textile tools in just a few areas of a sanctuary.[23] Another strategy is the quantification of textile tools found at a site in order to identify at least the possible, or even probable, places of textile production. If a sanctuary contains many textile tools, textile production is probable, even though some of the textile tools might also have been dedications. Some scholars have collected quantitative data for textile tools in Etruscan sanctuaries and identified certain cult places as possible places of textile productions. These include Poggio Colla (Vicchio), the Portonaccio sanctuary of Veii, Vigna Parrocchiale in Caere, the 'Monumental Complex' of Veii, and Cetamura in Chianti.[24] I collected quantitative data for textile tools found in 23 Etruscan and seven Latial cult places (see table 1 below).[25] The Etruscan sanctuaries can be divided into three groups: 20 or less findings

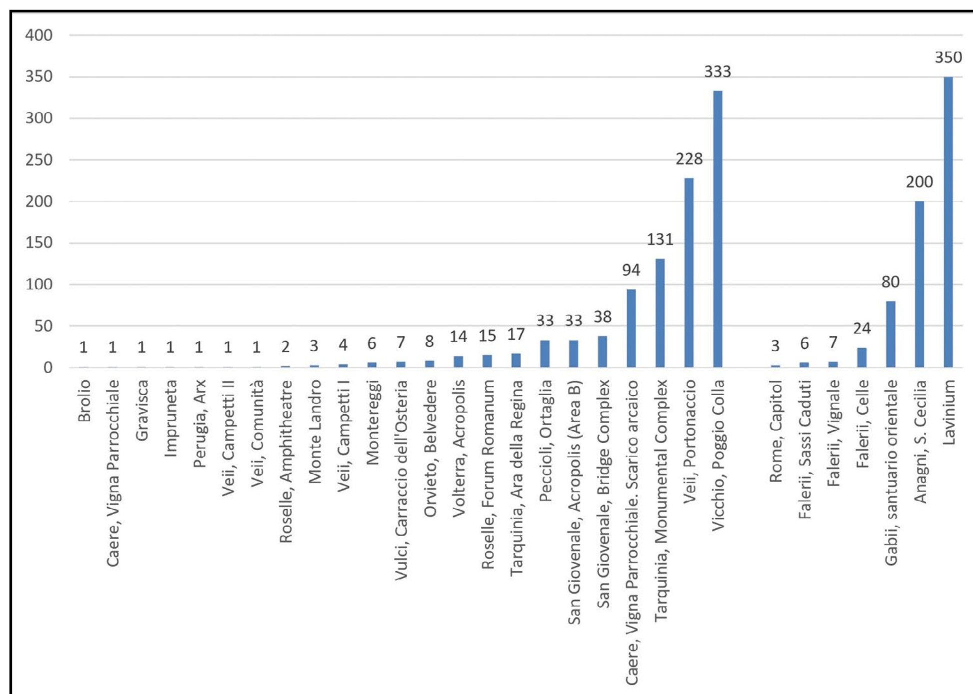

Table 1: Number of textile tool findings in Etruscan (left) and Latial (right) sacred contexts.

are attested for 16 of the 23 sites, 30–40 findings are attested for three sites, while only four contexts contain more than 90 findings of textile tools. On the basis of data from Etruscan sanctuaries, textile production is very likely to have taken place in Vigna Parrocchiale in Caere, the monumental complex of Tarquinia, Portonaccio in Veii, and Poggio Colla (Vicchio). There is also a limited possibility that textile manufacture took place in Ortaglia (Peccioli), and area B of the acropolis of San Giovenale.

Now that some possible textile production sites have been identified, a central question emerges: which cult recipients were venerated in these sanctuaries? Table 2 below shows the few deities attested for these cult places. All of them are female, which should not come as a surprise nor be treated as a coincidence, since the deities of Greek sanctuaries with attested textile productions were almost exclusively female, and textiles as well as textile tools were often considered as part of the 'female sphere' (*mundus muliebris*). In addition, Margarita Gleba and Gabriel Zuchtriegel's lists of Italic sanctuaries with textile tool finds contain almost exclusively female deities.[26]

Archaeological and anthropological studies have shown that textile production in pre-modern times was extremely labor-intensive and time-consuming, and could take

Site, context	**loom weights**	**spindle whorls**	**bobbins**	**total no. of textile tools**	**attested deities**
ETRURIA					
Caere, Vigna Parrocchiale. Scarico arcaico (*)	77	2	15	94	– (Vei)
Murlo, Poggio Civitate (*)	113	581	875	1569	–
Tarquinia, Monumental Complex	62	34	35	131	Artumes, Uni, Thesan, Turan, potnia theron?
Veii, Portonaccio	26	197	5	228	Menerva, Aritimi/ Artumes, Turan, Vena(i), Rath
Vicchio, Poggio Colla	97 (hellen.?)	153 (hellen.?)	83 (hellen.?)	333	Uni
LATIUM VETUS					
Anagni, S. Cecilia	attested	more than 200	0	more than 200	?
Gabii, santuario orientale	3	71	6	80	?
Lavinium, 13 Altars	350	many	0	min. 350	?

Table 2: Etruscan and Latial contexts with a probable textile production (* = probably not a sanctuary).

up even more hours of labor than food production and all other trades combined.[27] The study of the organization of such a demanding craft – especially in sanctuaries – is therefore as important as it is interesting. Eva Andersson Strand and Karina Grömer have defined four contexts for textile production: (1) Household production, (2) Household industry, (3) Attached specialist production, and (4) Workshop production for trade.[28] A textile production integrated into a sanctuary and the cult practice corresponds to the third type of 'attached specialist production'. Characteristic for this form of textile production is the manufacture of remarkably high quality products by specialists with particular craftsmanship skills. These craftspeople, and their training, would have been under the control of a patron.[29] If Etruscan sanctuaries display attached textile workshops, we should expect similar characteristics to those defined by Eva Andersson Strand and Karina Grömer.

We can only speculate as to which products were manufactured in Etruscan sanctuaries. In analogy to Greek sanctuaries, cult garments for deities (‚ἱερά ἱμάτια') are the most likely products of textile production. Ancient authors mention two examples of productions of cult garments for statues in Rome as well.[30] In general, scholars propose ritual garments for priests, cult staff and participants, wall decorations, and ritual clothing for cult statues as typical textile products manufactured in Etruscan and Latial sanctuaries.[31] Linen books (*libri lintei*), in which rituals and sacrifices, but also chronicles and magistrate lists were recorded, are mentioned less frequently as a possible manufactured textile product. Such books, made from folded linen strips and inscribed using ink, are exclusively attested for Italic cultures, and are especially well-evidenced for the Etruscans, Romans and Samnites from at least the second half of the 5th century BC on.[32]

The only preserved example of a *liber linteus* is the 'mummy bandage of Zagreb' (*'liber linteus zagrabiensis*'), a ritual text probably written around 200–150 BC near Perugia. In this case, ritual instructions were written down with black ink in 12 columns on a fine rectangular linen cloth (originally ca. 340 × 45 cm). The mummy bandage is the longest preserved Etruscan text with ca. 1330 words (about 60% of the original text).[33]

Since the approximate dimensions and structure of the 'mummy bandage of Zagreb' are known, it can be used as a representative example of the construction of *libri lintei*, so that it is possible to calculate the invested labor for the production of these ritual texts and to postulate an organizational structure for the production process.[34] In total, the production of the Zagreb mummy bandage, without the procurement of the raw material (cultivation and harvest of the flax, and production of the ink), from spinning the yarn to weaving the linen cloth and inscribing it with the ritual text, probably took between 183-499 working hours. In my opinion, due to the quality of this example, about 400-500 working hours are probable, which with great caution could also be regarded as a general guideline for the production of *libri lintei*.

The work invested in the production of *libri lintei* within the Etruscan economy is enormous compared to other activities. The high quality of the products, as well as

the specialization of the craftspeople in particular skills, testifies to production in the context of the sanctuary, and in my opinion manifests the sense of an 'attached specialist production' as defined by Eva Andersson Strand and Karina Grömer. A *liber linteus* was a high-quality product requiring a high degree of specialization, not only for the manufacture of the fine linen fabric, but also in terms of the reading and writing skills required for the inscription, and the ritual knowledge, to which only the priesthoods in their sanctuaries would have had access. Due to the control of knowledge exercised by the priests, the labor-intensive production, and the necessary crafts specializations, it may be assumed that *libri lintei* were produced directly and exclusively in shrines. The thesis of textile production in Etruscan shrines in the sense of an 'attached specialist production' can therefore be considered as highly probable.

Sanctuaries, Trade and the Standardization of Weights

Markets can be defined as an evident economic function of sanctuaries. Here, I do not discuss the role of sanctuaries as *emporia* for long-distance trade,[35] but instead their role as *agorai* for local and regional trade. In general, markets and trading activities can be assumed to be an integral part of the 'ritual economy' for Etruscan sanctuaries of supra-regional importance, which drew numerous visitors in the context of regular festivals and meetings.

Two sanctuaries might help to determine the function of sanctuaries as regional markets. Armando Cherici discussed the *Fanum Foltumnae* and its possible function as a market place for Volsinii and its hinterland (especially in the sense of a regular fair for farmers and herdsmen).[36] Similarly, the Forum Boarium and its sanctuary of Sant'Omobono certainly served as an important supra-regional market place with one key function: cattle were bred by herdsmen under seasonal transhumance in the Latin and Sabine mountains, and then brought by the *via salaria* ('salt road') to the Forum Boarium ('cattle market'). There, the cattle were traded along with cheese and milk. The salt extracted from the saltworks at the Tiber mouth and on the Tyrrhenian coast was also brought via the Tiber to the Forum Boarium and sold there.[37] Salt was certainly not only interesting for the inhabitants of Rome, but above all for the cattle herdsmen, who needed it not only for the preservation of meat, but also as a nutritional supplement for their cattle.[38] The Forum Boarium attached to the sanctuary of Sant'Omobono was therefore used as a platform for business to exchange salt from the coast and the Tiber, as well as cattle, meat, and milk products from the mountains.[39]

Additionally, Dionysius of Halicarnassus and Livy name markets with merchants, farmers, artists and craftsmen, as well as ceremonial games, at the *Lucus Feroniae* under Servius Tullius (672–640 BC)[40], and at the *Fanum Voltumnae* in 403 BC.[41] In Etruscan and Latin sanctuaries, therefore, regular theater performances and *ludi sacri* with fairs and markets may also have been common.[42] However, it is extremely difficult to identify

such market and fair events, since they may have taken place outside the sanctuary in temporary stands and tents.

In Olympia, the accommodation and provision for visitors to the sanctuary (possibly in a dedicated festive and dining house) could be demonstrated by archaeological findings of locally produced pottery and fountains,[43] while trade between traders and visitors may be traced by the discovery of official, standardized and calibrated bronze weights. The merchants in Olympia probably had to pay a fee to the sanctuary for the use of the official weights, similar to the fee documented in other Greek sanctuaries.[44] Scales and weights are attested for sanctuaries in Etruria and central Italy as well, but they seem to have had an entirely different function from those found in Greek sanctuaries. Three Etruscan sanctuaries are known to have contained weights:[45] Caere, Sant'Antonio with two weights from the 6th and 4th centuries BC,[46] Fucoli near Chianciano Terme with two weights from the 4th century BC,[47] and Tarquinia, Ara della Regina with 15 weights of undetermined period.[48]

Since only few weights are attested for each Etruscan sanctuary, it cannot be assumed that they served as official weights for the use of visitors and traders as in Greek sanctuaries. Instead, Etruscan sanctuaries could have stored a single set of one or more standardized and calibrated weight systems for the city-state and its surroundings. The weights would then take on similar functions as reference systems as the International Prototype of the Kilogram ('kilogramme des Archives') and the International Prototype Meter ('mètre des Archives') in modern times. Such a location, which functioned as storage and control center for calibrated measures and weights, was called a *ponderarium* in the Roman society[49], and the existence of such a facility in the sanctuary of Sant'Antonio in Caere during the 6th century BC has already been postulated by Adriano Maggiani.[50]

The sanctuary of Satricum, where two weights and two scales from the 7th/6th century BC were found, might have similarly served as an early *ponderarium*, as is argued by Albert Nijboer. One weight can be dated to the second half of the 7th century BC and, according to Albert Nijboer, probably corresponds in its strongly corroded state of 267 grams to a Roman-Oscan pound (273 grams). The second weight from the Archaic votive depot 1, under temple 1 (late 9th – middle of the 6th century BC), corresponds in its corroded state of 340 grams almost exactly to a Campanian pound (341 grams). The Archaic votive depot 1 also contains the remains of two scales dating from before the middle of the 6th century BC.[51] As Satricum featured a striking amount of findings and features related to metal processing, the two different weight standards (Campanian and Roman-Oscan) in this sanctuary may also be related to the mining, distribution, and trade of metal. There is a known parallel in Pithekoussai, where ore was mined and an Euboian weight from the early 7th century BC was found.[52]

Against this background it seems plausible to postulate that some sanctuaries in Etruria and *Latium vetus* probably served key functions regarding the calibration,

standardization and internationalization of weight systems in the sense of *ponderaria* from the late 7th/6th century BC on. Sanctuaries with such weight standards might have functioned not only as markets, but also as institutions that offered unification and reliability of scales, measures, and prices, as well as economic safety and a 'sacred security' for visitors and traders alike.

In terms of the New Institutional Economics (NIE), trade is expensive and the determination of products, amounts, and prices, as well as the definition and enforcement of exchange agreements, all cost resources: these are the 'transaction costs'.[53] With more technologies, increasing specialization and division of labor, as well as longer trade distances, larger market sizes and networks of consumers and trading partners, transaction costs rise and more resources must be invested to measure and enforce exchange agreements. At this point, 'institutions' help to lower transaction costs, determine prices, and enforce exchange agreements.[54] New Institutional Economics helps to determine the central role that sanctuaries in Etruria and *Latium vetus* might have played since the late 7th and 6th centuries BC not only in long-distance trade, but also for regional markets and the economies of city-states and their hinterlands. Sanctuaries seem to have been important depositories for weight standards and could have operated as *ponderaria* and markets, thus providing socio-economic safety and lowering transaction costs for trade.[55]

Conclusion: A Reconstruction of the Etruscan Ritual Economy (8th–5th centuries BC)

The analysis of metal processing, textile production, and the standardization of weights may provide evidence that economic activities actually took place in Etruscan sanctuaries. But can this then be defined as a ritual economy? How were production and trade integrated into sacred contexts?

Cathy Lynne Costin intensively analyzed the general organizational forms and characteristics of production sites.[56] In a central contribution from 1991, she defined organizational forms for the various production locations on the basis of four parameters, each defined by two opposing characteristics. The parameters are the following: (1) Context (independent – attached); (2) Concentration (dispersed – nucleated); (3) Scale (small, kin-based – factory); (4) Intensity (part-time – full-time).[57]

Based on the composition of these parameters and properties, Costin postulated eight basic types of organizational forms and specializations for production sites: "(1) *Individual specialization*: autonomous individuals or households producing for unrestricted local consumption; (2) *Dispersed workshop*: larger workshops producing for unrestricted local consumption; (3) *Community specialization*: autonomous individual or household-based production units, aggregated within a single community, producing for unrestricted regional consumption; (4) *Nucleated workshops*: larger workshops aggregated within

a single community, producing for unrestricted regional consumption; (5) *Dispersed corvée*: part-time labor producing for elite or government institutions within a household or local community setting; (6) *Individual retainers*: individual artisans, usually working full-time, producing for elite patrons or government institutions within an elite (e. g., a palace) or administered setting; (7) *Nucleated corvée*: part-time labor recruited by a government institution, working in a special-purpose, elite, or administered setting or facility; (8) *Retainer workshop*: large-scale operation with full-time artisans working for an elite patron or government institution within a segregated, highly specialized setting or facility"[58].

If one classifies the productions and crafts in Etruscan sanctuaries into this system, one can observe strongly embedded and dependent structures ('attached specialists'). These are generally typical for the temple and palace economy, as well as for the production of luxury goods and weapons. In particular, the workshops for metal processing and textile productions point to crafts that were embedded in sanctuaries. At the same time, these embedded workshops were often 'nucleated' and located in the immediate proximity of sacred contexts.[59]

The exact scale of production can hardly be determined (especially for textile production), but seems to have been rather small. Some skills, such as the processing of metal and precious materials, as well as literacy, and assets such as ritual knowledge, were certainly strongly controlled and regulated, so that they were only available to a limited group of people. Likewise, the intensity of commercial production fluctuated strongly between part-time and full-time production. Cult garments and *libri lintei* may have been produced less frequently, while metal processing may, in at least some places, have been a full-time (or seasonal) occupation.

Based on these parameters of organizational forms and specializations, I reconstruct productions and trades in Etruscan sanctuaries of the 8th–5th century BC according to Cathy Lynne Costin as 'Nucleated corvée' or 'Retainer workshops', which exhibit a high level of organization, embedding, and centralization, and were strongly controlled by the sacred institutions for the manufacture of at least some products. The intensity of production is difficult to determine, and must remain partly open. In summary, production and crafts in Etruscan sanctuaries therefore tended to be highly centralized and embedded economic structures, some of which were highly specialized.

Notes

[1] This contribution is a small excerpt from one chapter of my PhD thesis (Krämer in press), which was funded by the German Academic Exchange Service (DAAD; 2013) and the DFG Research Training Group 1878 'Archaeology of Pre-Modern Economies' (2013–2016).

[2] Silver 1995, 23–25; Davies 2001a; Shaya 2005; Sassu 2010; Sassu 2014; Hamilton 2015.

[3] Horster 2004. Papazarkadas 2011.

[4] For the extensively studied phenomenon of emporia or 'ports of trade', see for example Silver 1995, 18–23; Möller 2000; Möller 2001; Möller 2005; Schweizer 2007; Fantalkin 2014; Ulf 2014; Krämer 2016 (with a New Institutional Economics approach and further bibliography on this matter). The above-mentioned studies share a main economy-trade-perspective, partly based on a Polanyian tradition. More recently, other scholars favor a shift towards a multiethnic polis or settlement community perspective; e.g. Demetriou 2011; Demetriou 2012; Daniels 2018. Of course, these two research perspectives (or priorities) are not mutually exclusive.

[5] See for example: Linders – Alroth 1992; Silver 1995, 3–38 chapter 1; Sinn 1996; Davies 2001; Davies 2001a; Sassu 2010; Sassu 2014.

[6] For initial preliminary studies on this matter by the author of this paper, see: Krämer 2016; Krämer 2017; Krämer 2020; Krämer in press.

[7] Heilmeyer 1969; Zimmer 1990; Risberg 1992; Völling – Zimmer 1995.

[8] Bouma 1996, esp. 54–65. 81–83; Nijboer 1998, 168–184; Nijboer 2001; Waarsenburg – Maas 2001.

[9] Nijboer 1998, 180–184; Nijboer 2001; Waarsenburg – Maas 2001. Stattdessen: See chapter ‚Sanctuaries, Trade and the Standardization of Weights' below on the implications of metal processing for the standardization of weights in Satricum.

[10] Chiaramonte Treré 1997; Geroli 2001.

[11] Fiorini – Torelli 2007, 91–97.

[12] On metal processing in Gravisca, see: Fiorini 2002, esp. 157 f.; Fiorini 2005, 181–185; Fiorini – Torelli 2007; Fiorini – Torelli 2010, 29–32; Fiorini 2014.

[13] Krämer 2016.

[14] Papantoniou 2012, 94.

[15] Kassianidou 2005 (skeptical with an emphasis on the history of the debate); Iacovou 2012; Papantoniou 2012, 94 with notes 120–121 and further reference.

[16] Fiorini – Torelli 2007, 91–97; but see also Kassianidou 2005, 132–135 critical on the 'Ingot deities'. Papantoniou 2016, especially 82–84. 88–97 on the identification of the 'Cypriot Goddess' with Aphrodite, the context of social changes and Mediterranean commerce, and rightly against 'Phoenicianizations' or other colonial interpretations.

[17] Bonghi Jovino 1999.

[18] Helas 2019. I would like to thank Sophie Helas for sharing her unpublished article with me. In my opinion, the architects and cult participants of building β could also have been visitors from Cyprus, since Phoenician elements are also represented in Cyprus. This opinion is also based on the other references I mention here and I find this position convincing, even if there is only limited archaeological evidence to support it.

[19] On the anchor, see: Bagnasco Gianni 2015, passim (for the linguistic analysis: G. M. Facchetti, L'àncora di Tarquinia. L'iscrizione, in: Bagnasco Gianni 2015, 57–64); Bagnasco Gianni et al. 2016, esp. 43 f.

[20] Mandolesi 2012, especially 36–38 with fig. 5–6; Mandolesi – Lucidi 2015/2016, 95 with note 41. Alessandro Mandolesi and Maria Rosa Lucidi consider the idea of craftsmen who were trained by teachers from the Levant ("La manodopera del "piazzaletto", educata agli insegnamenti levantini ..."). However, their comparisons for tumuli come exclusively from Cyprus.

[21] Gleba 2008; Gleba 2009; Lipkin 2012; Lipkin 2012a; Meyers 2013; Gleba 2015.

[22] Gleba 2009; Meyers 2013.

[23] Meyers 2013, 253–263 with fig. 4.

[24] Gleba 2008, 183–187; Gleba 2009, 76–80; Lipkin 2012, 98 f.; Lipkin 2012a, 124–126; Meyers 2013, 263–269; Gleba 2015, 376–379.

[25] A more in-depth analysis of the data with numbers and references will be published in my PhD thesis (Krämer in press).

[26] Gleba 2009, 71 f. Tab. 1; Zuchtriegel 2012, 272–275.

[27] Costin 2013, 181 with further references: "Yet perishables made up the overwhelming bulk of ancient material culture and pre-industrial cloth production likely required more hours of labor than food preparation and other crafting combined."

[28] Andersson 2003; Grömer 2016, 241–261.

[29] Grömer 2016, 252 with reference to Eva Andersson Strand: "The work of the specialist is done on a fulltime basis, and technical skills and knowledge are extended in order to create higher quality products. The persons involved in specialist production are often dependent on a patron, who feeds and supplies them. Goods produced in this way can now also serve as precious gifts for exchange. A further feature of this production level is the complete control and authority over the craftsmen the patron exercises, including their expertise and the training of further specialists working for him."

[30] The Statue of Hercules Triumphalis on the Forum Romanum was wrapped in special robes in the case of a Triumph (Plin. nat. 34, 33). According to Silius Italicus, during the Second Punic War Roman matrons formed a procession and consecrated a Palla with woven-in golden threads to Juno. They made the Palla with their own hands, and it was apparently intended for the cult image (Sil. 7, 74–85).

[31] Bonfante 2009; Gleba 2009, 80 f.; Lipkin 2012a, 126 f.; Gleba 2015, 376–381.

[32] According to Livy, the Romans used linen books (*libri lintei*) during the period of 444–434 BC for chronicles and lists of magistrates, which were archived in the temple of Iuno Moneta on the Aventine (Liv. 4, 7, 12; 4, 13, 7; 4, 20, 8; 4, 23, 2–3.). In the year 293 B.C. the old Samnite priest Ovius Paccius carried out sacrifices in Aquilonia according to the instructions of an ancient linen book. The ritual would go back to an ancient ceremony of the Samnites, who used it when they conquered Capua from the Etruscans in 423 BC (Liv. 10, 38, 5–6). Thus the venerable *liber linteus* of the priest Ovius Paccius would have been in use for at least 130 years.

[33] Roncalli 1980; Van der Meer 2007; Belfiore 2010.

[34] The exact steps of the calculation and analysis will be published in my PhD thesis (Krämer in press).

[35] See above footnote 4.

[36] Cherici 2012.

[37] Saltworks are not only attested by literary sources for the early Roman period (Liv. 1, 33, 9; Plin. nat. 31, 89; Plut. Romulus 25, 4), but also by archaeological finds and contexts from the Villanova period (Mandolesi 2014).

[38] Plin. nat. 31, 88: "Quin et pecudes armentaque et iumenta sale maxime sollicitantur ad pastus, multo tum largiore lacte multoque gratiore etiam in caseo dote.". See also Cifani 2016, 166.

[39] Viglietti 2011, 231–233. On Archaic and early Republican salt trade in Rome, *Latium vetus*, and Etruria, see Cifani 2016, 166–169.

[40] Dion. Hal. ant. 3, 32, 1–3; Liv. 1, 30, 4–7.

[41] Liv. 5, 1, 1–7.

[42] On the few indications of *ludi sacri* and theatre performances in Etruscan sanctuaries, see Colonna 1993, 343–347; Camporeale 2010; Thuillier 2011.
[43] Bentz 2012; Bentz 2012a; Gauer 2012; Bentz 2013.
[44] Hitzl 1996, especially 101–104.
[45] On weight systems and the standardization of weights in Etruria and *Latium vetus*, see: Nijboer 1994; Nijboer 1998, 207–237 chapter 4; Maggiani 2002; Maggiani 2007; Maggiani 2012.
[46] Maggiani 2002, 167–169 Nr. 5. 7; Pl. 28 c. e; Maras 2009, 277–279 Cr do.7; Maggiani 2012, 403–405; L. Haumesser in: Maggiani 2014, 280 Nr. 332.
[47] Maggiani 2002, 165 f. Nr. 2–3; Pl. 27 b–d.
[48] Romanelli 1948, 266 Nr. 82; 270; Maggiani 2012, 394 with note 11.
[49] Schneider 1952. Schulzki 2001. Sanctuaries in Ancient Israel and the Iron Age Levant could have had similar functions as is attested by the Old Testament (Exodus 30, 13; Numbers 3, 47; see also Silver 1995, 25).
[50] Maggiani 2012, 403–405.
[51] Nijboer 1994, 1–12; Nijboer 1998, 168–184 chapter 3.6.2; 210–223.
[52] On Pithekoussai see: Nijboer 1994, 12–15; Nijboer 1998, 165–168 chapter 3.6.1; 220 f. On metal processing in Satricum, see also above chapter 'Textile Production'.
[53] North 1985, 558: "Transaction costs here are defined as the costs of specifying and enforcing the contracts that underlie all exchange (...). They are the costs involved in capturing the gains from trade. They include a specification of what is exchanged or of the performance of agents and an analysis of the costs of enforcement. The costs of contracting are in general those of searching out who has rights with respect to what is being traded, what rights they have, and what are the attributes of the rights; those of searching for prices associated with the transaction and the predictability of those prices; and those of stipulating contracts and contract performance."
[54] North 1991, 97. 99: "Institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights). Throughout history, institutions have been devised by human beings to create order and reduce uncertainty in exchange. Together with the standard constraints of economics they define the choice set and therefore determine transaction and production costs and hence the profitability and feasibility of engaging in economic activity. [...] In the absence of a state that enforced contracts, religious precepts usually imposed standards of conduct on the players". See also Silver 1995, 18–23 on sanctuaries as guarantors and protectors of Mediterranean trade.
[55] On the concepts of New Institutional Economics mentioned extremely briefly here, see the works of Douglass C. North: North 1977; North 1984; North 1985; North 1987; North 1991. On the application of NIE in Classical Antiquity, see for example: Frier – Kehoe 2007; Bang 2009; von Reden 2015, 102–104 with further references; on Archaic long-distance trade and 'ports of trade' in a NIE perspective, see Krämer 2016.
[56] Costin 1991; see also: Costin 1998; Costin 2005.
[57] Costin 1991, 3–18 with fig. 1.4 and plate 1.1.
[58] Costin 1991, 8 f. with plate 1.1.
[59] See Costin 1991, 11–15.

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Tables 1–2: by author.

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