THE POTTERY TECHNOLOGY OF THE IRON AGE SITE OF CASTION DI ERBÈ (VERONA, NORTH-EASTERN ITALY)

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Introduction

Excavations carried out between 1972 and 1976 in the Iron Age site of Castion di Erbè (Verona, north-eastern Italy)[1] provided a large quantity of ceramic materials available for study. This article presents the results of a Master's Dissertation, recently conducted at the University of Padua under the guidance of Massimo Vidale and Giovanni Leonardi, the aim of which was to understand how pottery was produced throughout the two centuries-long occupation of the site, with special focus on the forming techniques.

Castion di Erbè is situated in the Po plain, next to Verona (north-eastern Italy – Figure 1), and dated between the 8th and the first decades of the 6th century BC. The Iron Age village, *ca.* 4 hectares in area, was settled in a strategic position on the bank of the river Tartaro and was enclosed by a ditch[2].

The site was badly damaged by agricultural works, so that the only preserved features at the time of the rescue excavation were pits filled by secondary deposits[3]. Because of the very disturbed stratigraphical context, the chronology of the site is essentially based on the typo-chronological analysis of the pottery. However, materials recovered in the pits have been a very interesting source of information, showing that many different craft activities used to take place at the site[4], highlighting the strong cultural link that must have connected Castion di Erbè with the other Iron Age sites of Padua and Este, central places of the polity of the ancient Veneto region.

The study of the forming techniques

Out of all the ceramic material recovered on site, 127 sherds were selected for study. The reasons guiding the selection were the following:

1. typo-chronological information: sherds were chosen, which had previously been drawn and studied from a typo-chronological point of view, so that a chronology of the pottery was available[5];
2. technological interest: larger sherds and fragments showing particular diagnostic features were preferred;
3. morphological and chronological issues: sherds were selected from a limited range of shapes[6] (*tazze* or bowls, *coppe* or truncated cone-like restricted bowls, *scodelloni* or large bowls/basins, *olle* or slightly restricted small to medium jars, *situliformi* or inverted-truncated cone-like restricted vessels, similar in shape to bronze buckets, and *dolii* or large coarse ware jars), making sure to take into account sherds dating to the entire occupation period of the site (Figure 2). In accordance to this, materials with imprecise chronology were excluded.

The sherds were analysed in two phases and with two different methods:
1. Direct observation with the naked eye of surfaces and fractures. In this phase the guiding criteria for identifying the forming techniques were based on a summary of the existing literature with special reference to a work by Sara Levi which can be used as good background for the study of the pottery technology in Italy (Levi 2010; Tite 2008; Cuomo di Caprio 2007; Vidale 1992; 2007; Rice 1987; Rye 1981; Vandiver and Wheeler 1991). The critical examination of this archaeological literature resulted in the definition of some diagnostic characteristics of the four main forming techniques, which are summarised in Table 1[7].

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[1] Works were led by Giovanni Leonardi and funded by the local Soprintendenza (Leonardi 1975 a and b; 1976; 1977; 1979; 2002; Capuis *et al.* 1990).

[2] The excavation of the enclosure system revealed the presence of at least two phases of occupation: a first ditch was backfilled and replaced by another larger one, probably as a result of the expansion of the site. Archaeological investigations also suggest that both ditches should not have been used for drainage purposes, but more probably had a defensive function.

[3] Some post-holes could be identified too, which could have represented a wooden and plaster hut. Bettinardi and Leonardi 2002, 287-302.

[4] Pottery making is indicated by the presence of three very worn polishing stone tools (*brunitoi*) and of some half-processed grog (Favero 1994-5).

[5] In the last 20 years two Master's dissertations and a PhD study analysed the typochronology of the pottery of Castion di Erbè (see Toscani 1995-6, Bettinardi 1996-7 and Rossi 2008). The PhD dissertation by Rossi represents the most complete effort to summarise the typochronology of the pottery of the site and was therefore given special attention.

[6] The morphological grouping accords with the above mentioned typo-chronological studies. The seven selected morphological groups do not represent the whole range of shapes identified at the site, but are just the most common ones.

[7] The paddle-and-anvil technique is here considered as a secondary forming technique, and therefore not listed in Table 1. The parameters used in the table (joints, orientation of the fractures, edges, etc.) will mainly depend on the primary forming technique (mostly coiling) associated to the paddle-and-anvil technique. The only parameter which the paddle-and-anvil technique actually seems to have an impact on is the walls thickness. However, this assertion is not based on a summary of existing literature, as all the other information in the table, but on the results of this work, which will be discussed below.

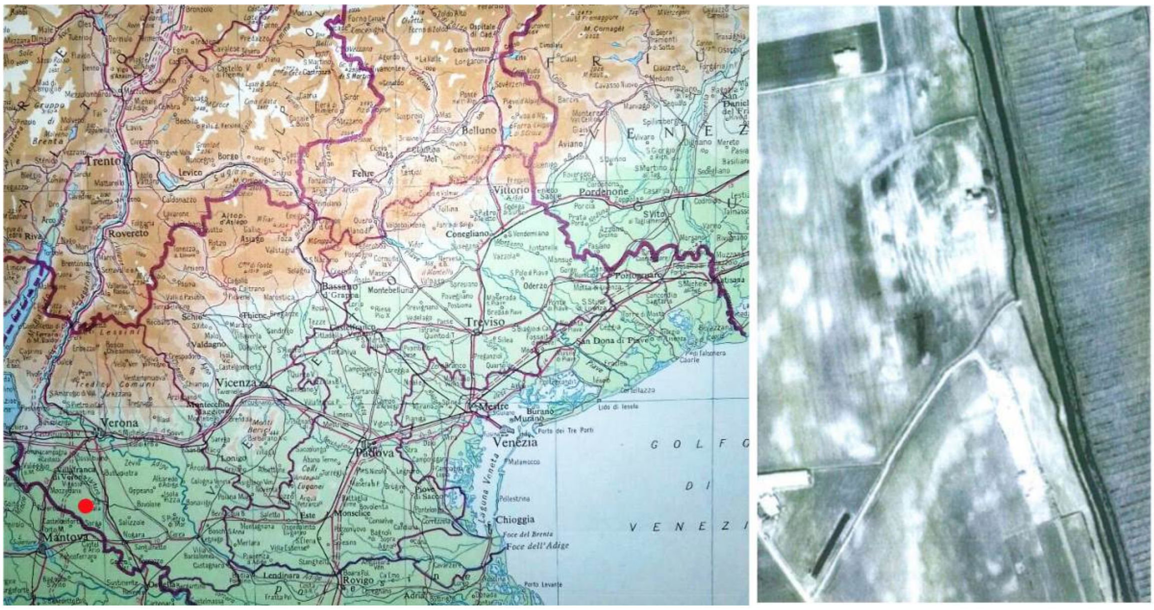

Figure 1. Map showing the location of Castion di Erbè, next to Verona, north-eastern Italy (modified from Atlas Zanichelli 1999). Aerial photo of the site (1985). The trapezoidal enclosure ditch of the settlement is clearly visible (from Bettinardi 1996-7, tav. 3b).

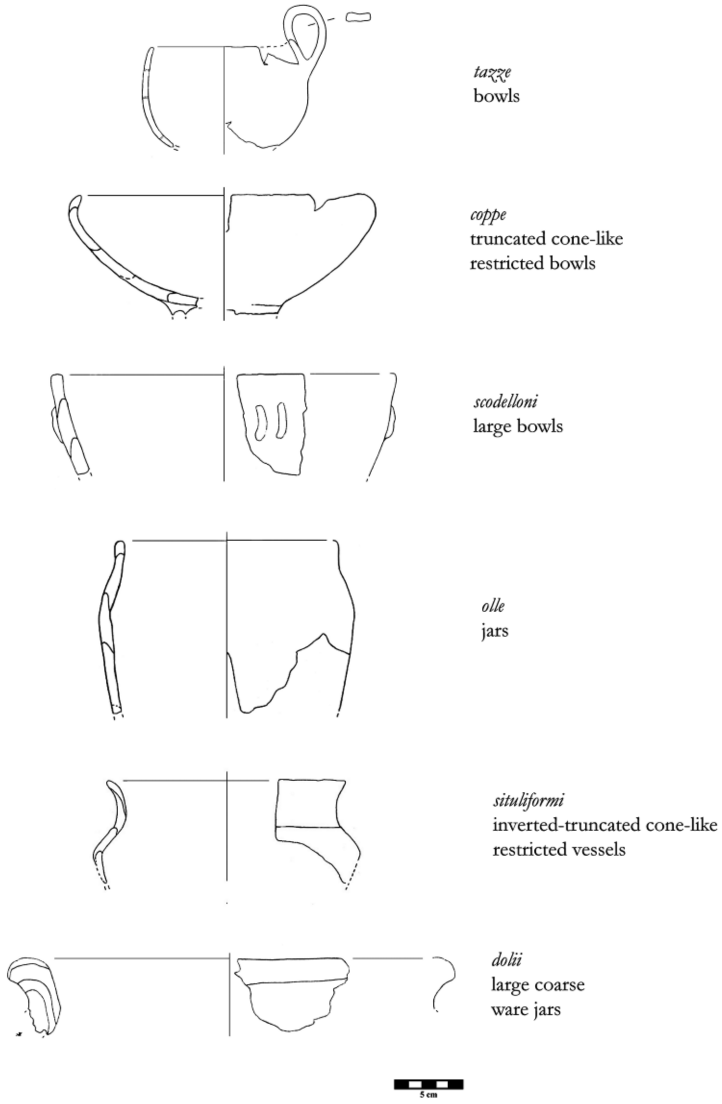

Figure 2. Illustration of the morphological types considered in this study. A drawing for each shape has been selected as an example.

	SLAB BUILDING	MOULDING	COILING	WHEEL-THROWING
Joints visible in sections	Yes	No (or just in the case of added parts)	No	No (or just in the case of added parts)
Orientation of the fractures	Oblique fractures	Oblique fractures	Horizontal fractures	Oblique fractures
Edges	Curved	Curved	Straight	Characteristic "petal"-shaped edges
Thickness of the walls	Great variability	Remarkable variability sometimes with delimited hollows	Slight variations along horizontal patterns. Generally constant thickness	Slight periodic variations. Thickness tends to reduce from the foot to the rim.
Surface traces	Cracks near the joints		Cracks near the joints	Spiral-oriented traces on the inside
Position of the fractures	At the joints		Horizontally along the vessel, at the joints	
Shape		Rigid straight profile		Curvy and continous profile
Symmetry	Sometimes oval-shaped vessels and asymmetry	Depending on the mould	Sometimes oval-shaped vessels and asymmetry	Sometimes oval-shaped vessels but symmetry

Table 1. Summary of the diagnostic characteristics of the four main forming techniques as observable with the naked eye.

By observing each sherd with this method, some first-stage hypotheses about the forming techniques were formulated, which were recorded through a written description and a technological drawing of each sherd[8] (Figure 3).

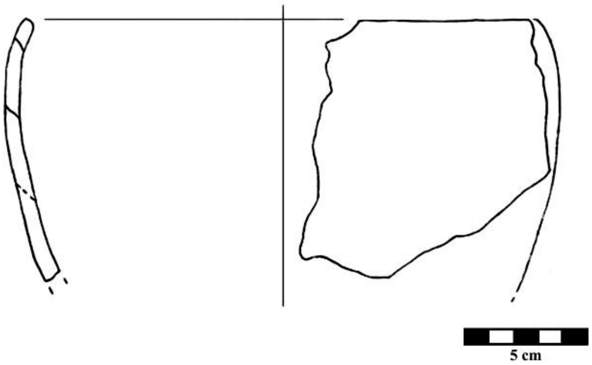

Figure 3. Example of a drawing of a bowl. In the section the joints between coils are shown: clearer joints are indicated through continuous lines, whereas dashed lines have been used when joints were identified with a lower degree of confidence.

2. In a second stage of the research, X-radiography was used as a method of validation to test the hypotheses previously formulated[9], even if it must be stressed that the number of X-radiographed sherds (23 out of 127)[10] cannot be considered statistically significant. The selection of the sherds was based on the following principles:
- the dimension of the sherds: larger sherds were mainly preferred;
- the number of fragments for each vessel;
- specific technological questions arising from the direct observation of the materials.

The disposition of the inclusions and the disposition and the shape of the voids in the ceramic fabric were considered diagnostic elements for the interpretation of the radiographic images (Table 2)[11]. The combination of these two approaches – visual observation and X-radiography – resulted in the

[8] The typological drawings of the sherds, made by Rossi (2008) and Toscani (1995-6), were used as a base, to which the technological information such as the position of the coils in the fractures, wear marks, etc. were added.

[9] The analyses were done at the Radiology Department of the Hospital of Cittadella (Padua); the instrument used was a Philips Digital Diagnost with CR system. The results were processed by the open source software ImageJ (National Institute of Health, USA).

[10] Four bowls, five cone-like truncated bowls, five basins, four jars, four *situliformi* and one large coarse-ware jar were selected for X-ray analysis.

[11] The identification of the diagnostic features for the radiographic analysis was especially based on Berg 2008, 2009, 2011a and 2011b; Levi 2010, Carr 1990 and 1993; Carr and Komorowski 1995; Carr and Riddick 1990; Cazzella *et al.* 1994; Courty and Roux 1995; Ellingson *et al.* 1998; Lang and Middleton 2005; Rye 1977; Mannoni and Giannichedda 1996; Vandiver and Tumosa 1995; Vandiver *et al.* 1991.

identification of the forming techniques, as shown in Figure 4.

It must be noted that the number of different techniques varies in relation to the morphology of the vessels. The large bowls or basins, for example, which would presumably have had a practical function in relation to cooking, were almost exclusively made by coiling, whereas more refined vessels such as bowls were made applying a greater variety of techniques. This is possibly due to the fact that the representative function of the bowls required a greater technological complexity that in the case of the basins was not considered useful. Observation showed that coiling was the most frequently used and the most versatile forming technique, as it was

	Inclusions	Voids
Coiling	Horizontal alignments clustered along the centre of the coils	Horizontal alignments; voids have horizontally elongated and rounded shape
Moulding and slab-building	Random disposition	Random disposition; voids have elongated and rounded shape
Wheel-throwing	Oblique alignments; inclusions aren't usually larger than ¼ of the wall thickness	Little porosity. Oblique alignments; voids have very elongated shape

Table 2. Summary of the diagnostic elements on which the interpretation of the radiographic analysis was based.

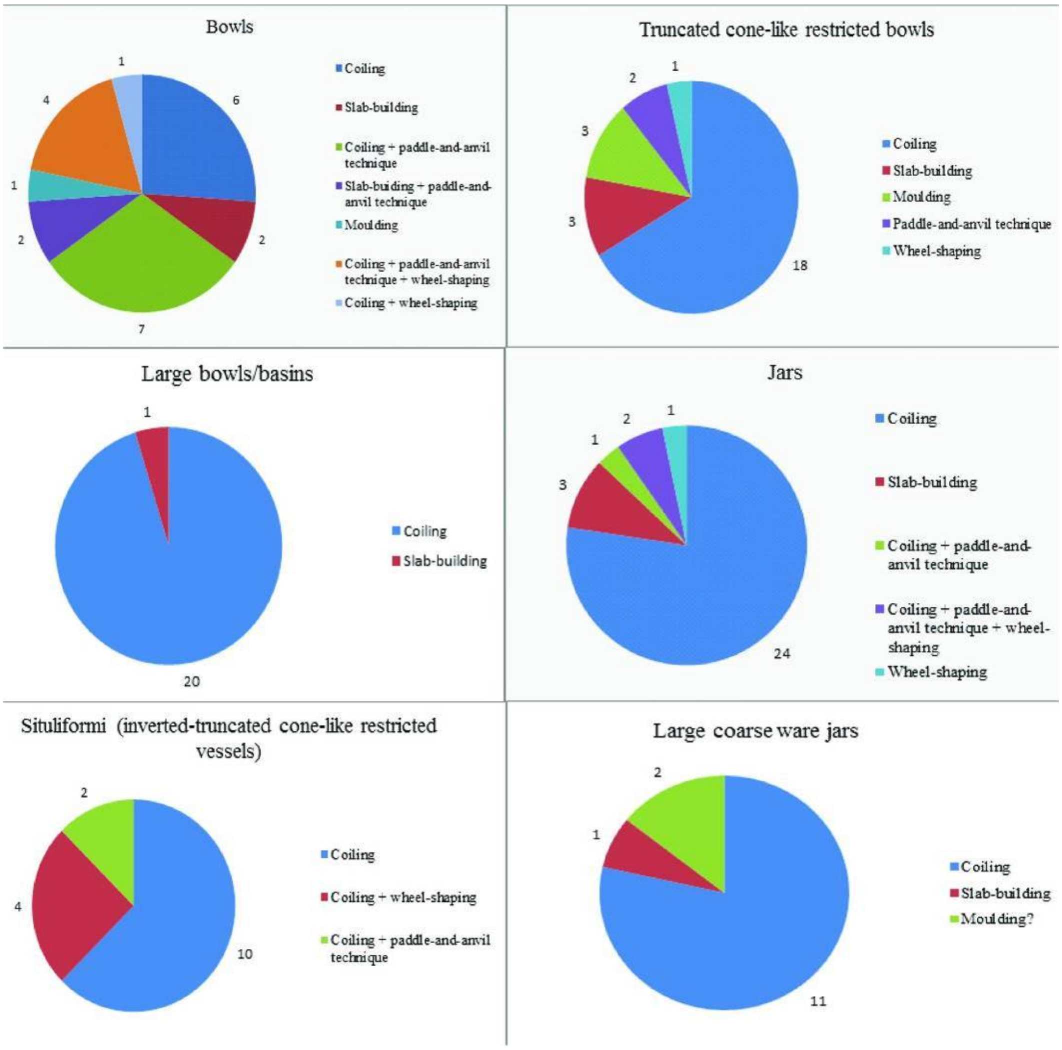

Figure 4. Excel pie charts indicating the percentage presence of the different forming techniques in the different morphological groups. It must be noted that the number of different techniques varies in relation to the morphology of the vessels. The large bowls or basins, for example, which would presumably have had a practical function in relation to cooking, were almost exclusively made by coiling, whereas more refined vessels such as bowls were made applying a greater variety of techniques. This is possibly due to the fact that the representative function of the bowls required a greater technological complexity that in the case of the basins was not considered useful.

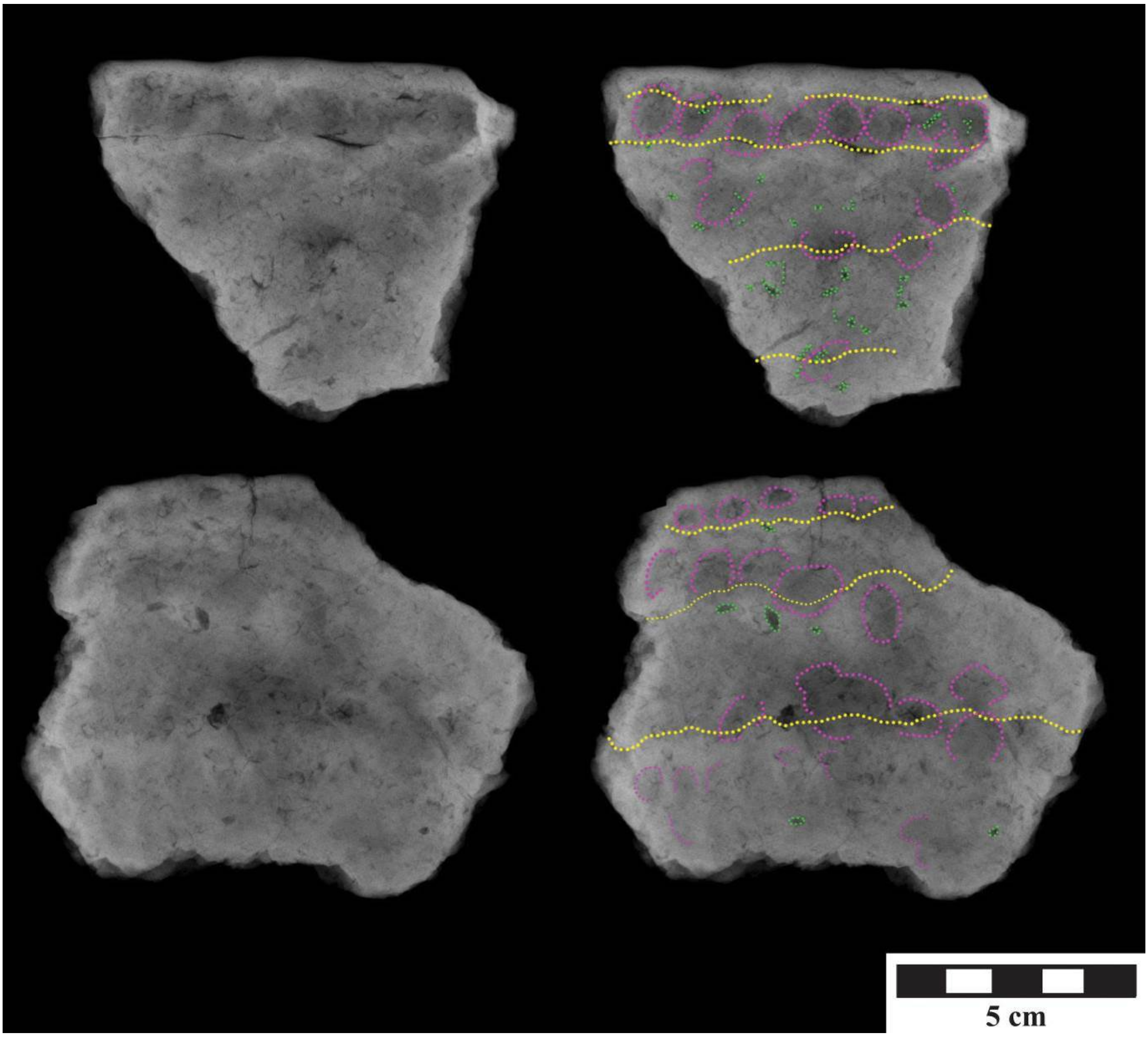

Figure 5. Examples of X-radiographic images of two coarse ware basins made by coiling, showing the specific "motor habit" of serial finger prints (highlighted in pink) approximately aligning with coil-joins (highlighted in yellow).

applied in every different morphological group. X-radiography showed in more detail a particular practice involved in this forming process. In all the X-rayed basins, as well as in one of the truncated cone-like bowls and in two jars, some peculiar depression features were identified, which could be observed in approximately horizontal alignments and in proximity to the coil-joints (Figure 5). They can be interpreted as finger prints left by the potter by pressing the wall of the vessel while fixing one coil to the other; based on their frequency in the analysed sample, these finger marks can possibly be referred to as an example of *kinaesthetic knowledge*[12].

Moreover, the visual observation of the fractures showed that the last coil, namely the one used to form the rim of the vessels, was clearly shorter than the other coils forming the pot. To highlight this trend, some simple Excel line graphs were made (Figure 6): the height of the last coil (rim coil) of each vessel was compared to the height of one coil from the body of the same vessel[13]. As can be observed, a significant difference can be noticed between the body- and the rim-coils. More precisely, the rim-coil is generally in a one third ratio to the body-coil. This can be observed in many sherds, regardless of their shape, so that the use of a smaller coil for the rim of the vessels seems to reflect an important operative habit in the forming process. More interestingly, the rim often seems to have been formed through the addition of a small coil in some vessels made by

[12] In the sense of Wendrich (2006; 2012) and Miller (2007).

[13] In the cases where more than one coil was detected in the body of the vessel, an average value was considered.

moulding or slab-building too[14]. The use of a smaller coil for the rim therefore seems to have been an operative procedure for vessels which were not made by coiling.

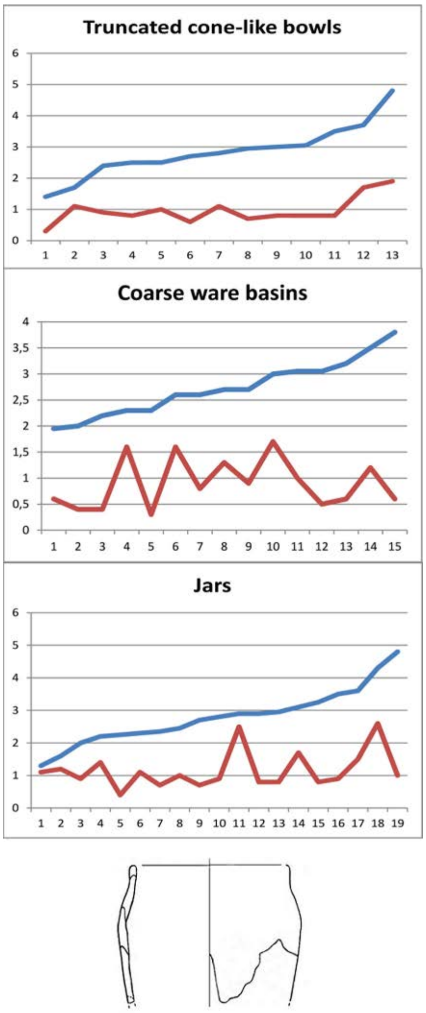

Figure 6. Excel line graphs representing the heights of the coils for the three considered morphological groups. The blue lines represent the heights of the coils of the vessels' body, whereas the red lines represent the heights of the corresponding rim coils. Below, an example of a jar: the coil used to form the rim is very clearly smaller than the others.

The dimensional and statistical study of coiling

The analysis of coiling was extended in order to understand whether the production and the assembly of the coils followed specific operative rules or could alternatively be considered non-standardised operations[15]. To this purpose, the height[16] and the thickness[17] of 116 coils were measured, taking into account the truncated cone-shaped bowls, the large basins, the jars and the large coarse ware jars, considering the results of the visual observation and of the X-radiography. In the first place, these variables were examined in order to understand whether the dimensions of the coils were in any way determined by the shape of the vessel to be formed (Figure 7); secondly, the correlation between the variables themselves (height and thickness) was considered (Figure 8).

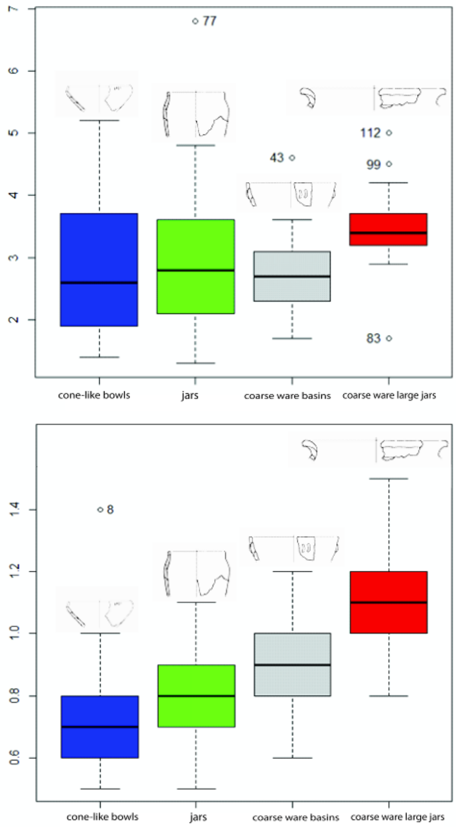

Figure 7. Box-plots describing the height (upper) and thickness (lower) of the coils of the four morphological groups considered for the statistical analysis. The values of the height and of the thickness are expressed in centimetres on the vertical axes. The numbers in the plots are the identification numbers of single sherds whose coils' height and thickness do not fit in the range expressed by the boxes and are thus to be considered exceptions.

[14] This was detected in seven slab-built vessels and in four vessels formed by moulding.

[15] The statistical study was conducted by Luca Bondioli (Pigorini National Museum of Prehistory and Ethnography, Rome).

[16] The height of the coils is referred to as the distance between one joint and the other, after the assembly of the coils and all the transformation processes they undergo in the phases of refining, drying and firing. The coils used for the rims were not considered in the statistical study, because, as shown before, they often are remarkably smaller than all the other ones. Two distortive elements must be mentioned with regard to the measurement conditions: 1) the height of the coils was measured in a straight line and not following the curve profile of the vessels, which can make some bigger coils appear shorter; 2) when the joints between coils were very stretched, a medium point along them was considered the limit of the coil.

[17] The thickness of the coil is referred to as the thickness of the wall of the vessel measured in the range between two joints. In most cases, the thickness does not vary much in the interval of a coil, but in the cases where the variation was more than 2 mm a median value was considered.

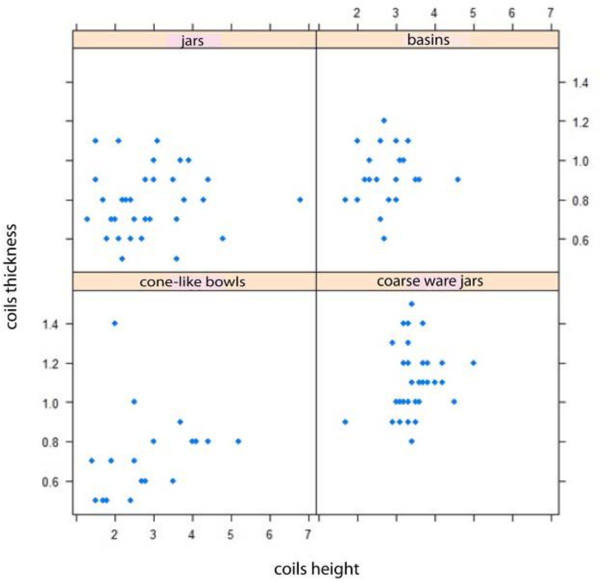

Figure 8. Scatter plots describing the statistical correlation between the height and the thickness (expressed in centimetres) of the coils in the four different morphological groups. As can be observed, the data points show that no correlation is detectable between the two data sets.

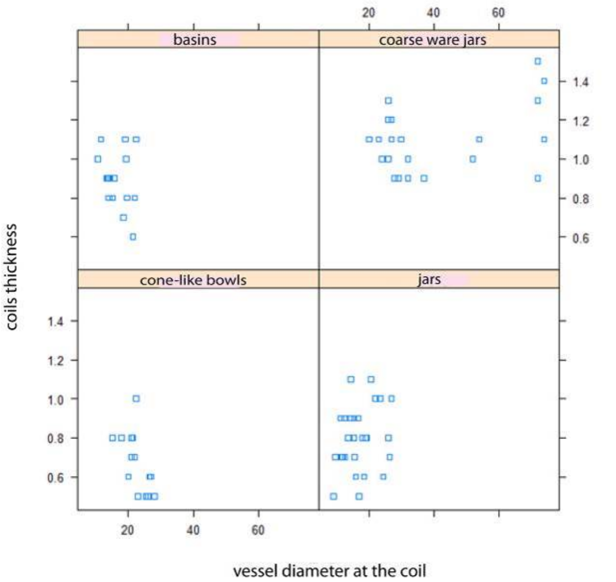

Figure 9. Scatter plot comparing the thickness of the coils to the diameter of the vessels (as defined in the text). No correlation is evident, except in the case of the cone-like bowls, for which the Pearson's R correlation coefficient between the traits is significantly different from zero ($p < 0.01$).

Later on, another variable, the diameter of the vessel measured at the coil[18], was taken into account with the specific purpose of verifying the hypothesis of a possible correlation between the diameter of the vessel and the thickness of the coils (Figure 9). The constant ratio/correlation between the variables possibly reveals the use of some constant guiding criteria in the production of the coils and consequently some degree of standardisation in the production process. More precisely, a direct or inverse proportionality as well as the absence of any correlation between the variables possibly reflects a processual meaning, as is shown in the following hypothetical-deductive diagram (Figure 10).

The results of the statistical analysis show an almost complete lack of correlation between the variables. In other words, the coils seem to have been made with regard neither to the kind of vessel to be formed nor to specific topological considerations. Only one exception needs to be mentioned: in the morphological group of the truncated cone-like bowls an inverse proportionality can be observed between diameter of the vessels and thickness of the coils and of the walls. As thinner walls are generally characteristic of more refined vessels, then this evidence could implicate that largest vessels, namely those with wider diameter, were given greater attention in regard to quality and refinement, possibly because they were used for communal drinking and therefore connected with social practices of status-display.

Identification of the paddle-and-anvil technique

Studying the morphological group of the bowls, it was noticed that in some sherds the thickness of the walls remained nearly constant (which is generally an indicator of the use of coils), whereas in other sherds the thickness of the walls varied remarkably. In particular, the thickness would progressively reduce proceeding from the rim to the foot and in some cases would even get to a minimum of 2 mm at the foot (Figure 11). The hypothesis formulated to explain this evidence was that the vessels with such a variability in the wall thickness had possibly been treated with the paddle-and-anvil technique, and this was actually sustained by the observation of stress lines in the fractures, namely of micro-ridges and micro-depressions visible in lines running parallel to the wall surface. To verify this hypothesis a number of bowls were selected, all having comparable preservation conditions. For each bowl the length of the sherd was divided into 5 equally spaced units[19] and the thickness of the wall was measured in 6 different equally spaced points, namely at the 0%, 20%, 40%, 60%, 80% and 100% of the length of the sherd. In this way it was possible to quantify the variation of the wall thickness in the different sherds

[18] This value is referred to as the diameter of the vessels, measured in the insides and at a medium point along the height of the coils. This was chosen as a more representative value than the diameter of the rims, as this latter often varies in consideration of the shape of the rim itself.

[19] Five measurements is an arbitrary number, chosen to get a sufficient but not unnecessary number of measurements.

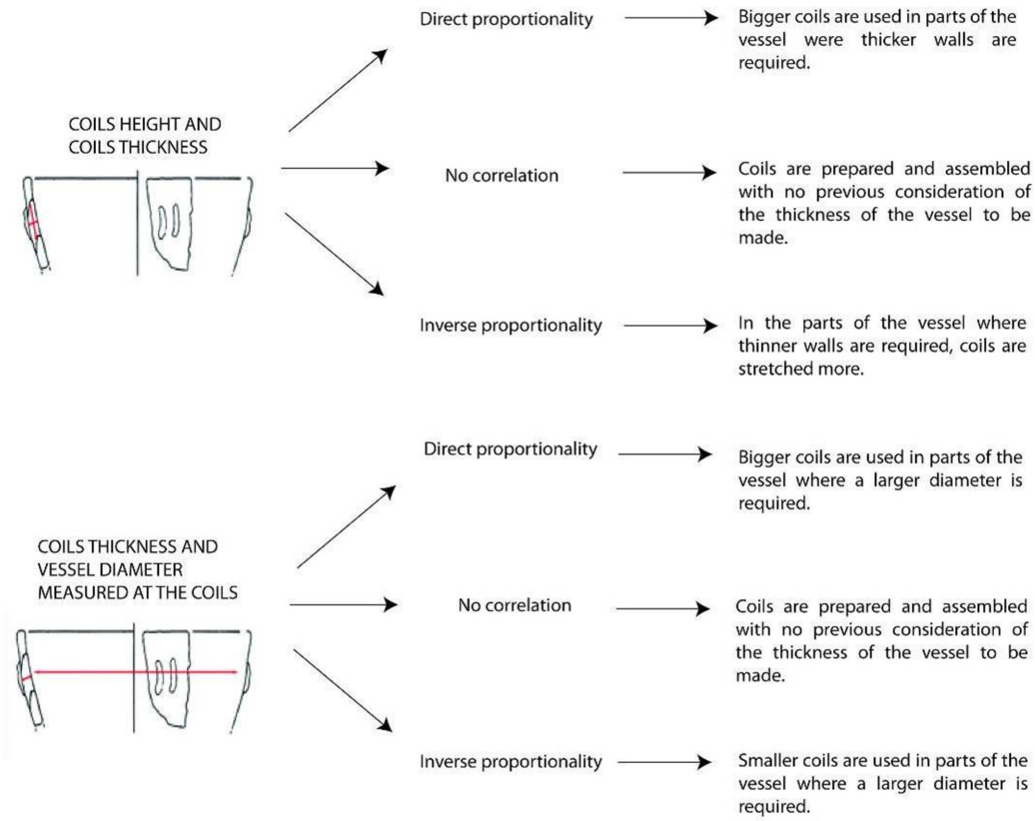

Figure 10. Hypothetical-deductive diagram showing the processual interpretation of the statistical correlation or its absence between the variables.

and to point out two trends: on one hand, the bowls that clearly showed a reduction of the wall thickness also had stress lines in the fractures; on the other hand, bowls whose wall thickness remained constant did not have stress lines in the fractures (Figure 12)[20]. Thus, for the first time in pottery technology studies focusing on Italian Iron Age, the paddle-and-anvil technique could be empirically identified.

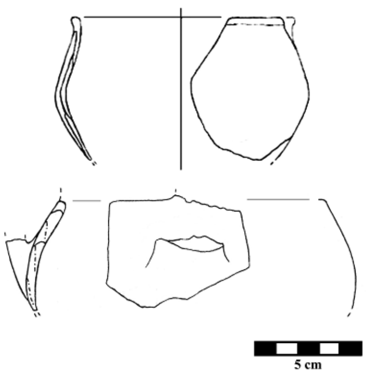

Figure 11. Drawings of two bowls whose wall thickness gradually reduces proceeding from the rim to the foot. The bowl above is formed by slab-building, whereas the one below is formed by coiling, with evidence of stress-lines, indicated by dash-dot lines.

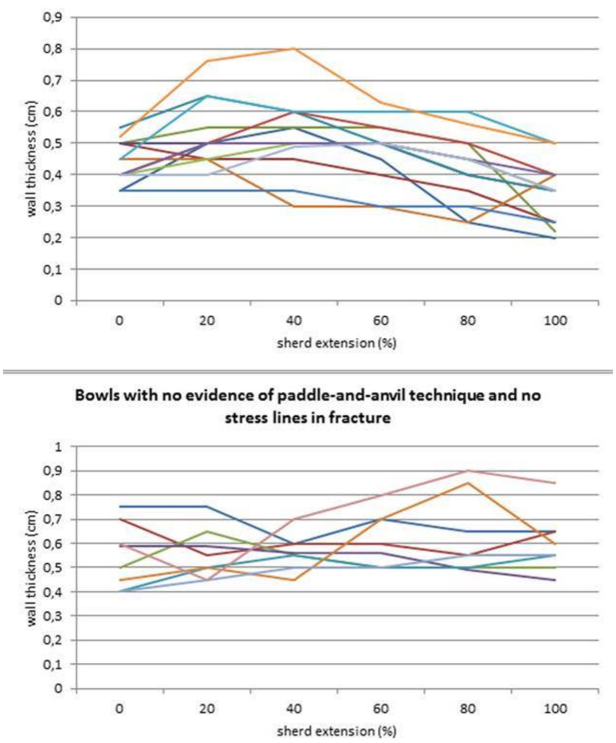

Figure 12. Line chart that shows the variability of the wall thickness of the studied bowls. Upper, bowls for which the use of the paddle-and-anvil technique had been identified; lower, bowls, which are unlikely to have been made by this technique. Each different line in the chart represents a single sherd.

[20] Out of 20 analysed sherds, only three contradict this trend.

In many cases the rim of the bowls was so tiny that the use of a pebble on the inside of the vessel, commonly referred to for describing the paddle-and-anvil technique, would have been impossible. Therefore it seems more likely that the walls would have been made so thin by putting the bowls upside down on a rod-shaped anvil, obliquely fixed in the ground (Figure 13).

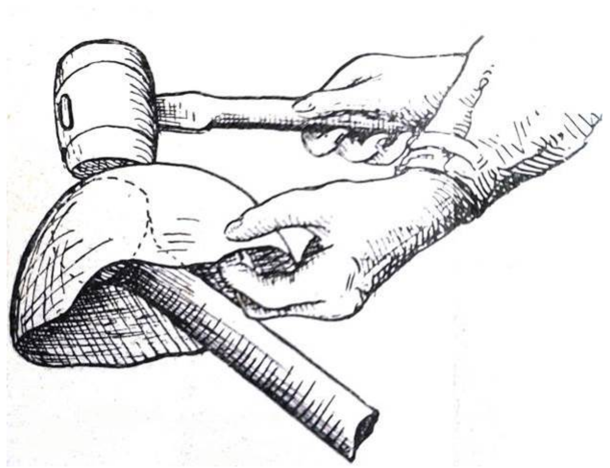

Figure 13. Illustration of the beating procedure of a copper sheet on a rod-shaped anvil to make a bowl. The figure is taken from an Italian 1926 handbook for industrial workers and apprentices (Massenz 1926, 158). Interestingly the illustrated procedure looks very similar to the techniques deployed in ancient Greece (see Figure 14).

This technique is documented for the production of metal bowls and more specifically of bronze helmets in Greece in the archaic and classic period, as shown by a pyxis from the Petit Palais in Paris, Dutuit Collection, and dated to the last two decades of the 6th century BC, and by a bronze figurine from the Metropolitan Museum of Art (1985) (Figure 14).

Figure 14. Upper, bronze figurine dated between the end of the 8th and the beginning of the 7th century BC, of unknown provenance and displayed at the Metropolitan Museum of Art, New York. The right hand the craftsman must have held an instrument that is not preserved, possibly a hammer (from The Metropolitan Museum of Art Bullettin 1985, 43(2)). Lower, Greek pyxis with picture of a young craftsman creating a metal helmet by beating it on an anvil in the shape of a rod, obliquely fixed in the ground (Dutuit Collection, Petit Palais, Paris; from Vidale 2002, 186).

The diachronical study of the techniques

Once the forming techniques were identified (Table 1), a chronological study was undertaken in order to identify any technical change across the *ca.* two centuries long life of the site. As already mentioned, the stratigraphy of the site did not help to provide a chronology of the materials; thus the sherds were dated exclusively on a typochronological basis[21].

As a result of the diachronical study of the techniques, a substantial differentiation can be traced between "functional" vessels on one hand, used in the everyday life for practical purposes, and more elaborate vessels on the other hand. Coiling, slab-building and moulding are techniques that possibly had a much longer life than the site itself: they started to be used long before the 8th century and did not disappear in the Veneto region after Erbè was abandoned. These techniques were present for the entire life period of the site and did not evolve in any way in the site between the 8th and the 6th century BC.

[21] The PhD study by Silvia Rossi (University of Padua) served as the base for the diachronical study of the pottery technology at Erbè. The typochronology elaborated by Rossi (2008) was critically reviewed by checking the most significant works on pottery typochronology of the period (Peroni 1975; Capuis and Chieco Bianchi 1985; Capuis and Chieco Bianchi 2006; De Min *et al.* 2005) and also by taking into account more recent bibliography (Gamba *et al.* 2014; Ruzzante 2016).

The same cannot be said for the paddle-and-anvil technique and for the use of the potter's wheel. The paddle-and-anvil technique was also known in the earliest phases of occupation of the site; however, its frequency changed remarkably with the time. The technique was namely identified in the 33% of the 8th century bowls, whereas its use increased to the 76% in the 7th century[22].

With regard to wheel-throwing, very little is known about its introduction in the Veneto region, which should have occurred during the life period of Erbè[23]. Among the analysed sherds, only 12 could possibly have been refined using a wheel and none of them can be dated to the 8th century. The identification of the technique remains problematic, but it is sure that it was used in Erbè only as a secondary technique, namely for the refinement of the vessels, and not to form them.

Thus, according to the diachronic study of the pottery technology in Erbè, from the 7th century some significant changes seem to have occurred in relation to an intensified need for more refined vessels, beaten through the paddle-and-anvil technique and re-shaped through the use of the wheel.

Discussion and conclusion

First of all, a methodological issue must be addressed. Although only a relatively small number of sherds could be analysed through X-radiography (23 out of 127), the results of the X-ray analysis confirm to a great extent the hypotheses made through visual observation. In fact, the two methods gave contrasting results regarding the forming techniques in only three cases; in 12 other cases, some minor differences were observed, such as the number of coils or the position of the joints. Generally speaking, X-ray analysis seems a more accurate method for the identification of the primary forming techniques, as it often showed a greater number of coils or allowed a more precise identification of the joints. Coiling, in particular, often showed in radiographs through the presence of horizontal stripes, alternatively darker (joints) and brighter (coils). To this respect, we used a yellow line to indicate joints (see Figure 5) even if the joint itself could not really be described as a distinct line but rather as an area or, as said above, a darker stripe. Only in some cases, when the coils were not well joined to each other, the limit between them was more clearly identifiable through a linear void and thus as a line. Conversely, the more accurately the pot was made, the more difficult it is to identify the forming techniques. In the cases when, for example, vessels made by coiling were possibly refined through the use of the potter's wheel, the typical alternation of darker and brighter areas is not clearly visible on radiographs. X-radiography seems in general less reliable (or more difficult to interpret) with regard to the study of secondary forming procedures like the paddle-and-anvil technique, which in our sample has never been identified through X-rays[24]. Stress lines in sections, for example, are not visible in radiographs, even if this may depend on the fact that radiographic images show the front side and not the section of the sherds. Regardless, the match between the two modes of observation was on the whole fairly positive, supporting the validity of visual observation.

Coiling seems to have been the most common and versatile technique. In this regard, the statistical analysis of the coils' dimension suggested an essentially non-standardised production process[25], in which coils should have been prepared and assembled regardless of the shape of the vessel to be formed. However, some kind of operative rules could also be observed, such as the use of a smaller coil for the rim and the habit of shaping and stabilising the vessel walls by regular movements of the fingers. In general, the complexity of the production processes must be emphasised, as different techniques were very often applied together for the production of a single vessel. Even very "simple" basins made by slab-building, for instance, often have their rim made by a single little coil, and it is common to find that different techniques are combined and associated, as in the case of vessels made by coiling and successively wheel-shaped and treated with the paddle-and-anvil technique. In this respect, every technique is much easier to detect when it is the only one to have been used in a vessel; studying experience shows instead that the identification of the forming technique(s) is often rather problematic (see also Berg 2011b).

With regard to the paddle-and-anvil technique in Iron Age northern Italy, this study could contribute to a better definition of its diagnostic characteristics, which can be summarised as follows:

- Tendency of the vessels' wall to get progressively thinner from the rim to the foot. A minimum of 2

[22] The percentage values are calculated on a relatively low number of sherds (22), so that they should not be considered deeply indicative of a trend.

[23] Capuis 1993, 110; Gamba *et al.* 2013, 207; Chieco Bianchi and Tombolani 1988, 72.

[24] Berg (2008, 1184-1185) has addressed the question of the visibility of the secondary modification techniques (like burnishing, polishing and smoothing): none of these seem to be visible radiographically.

[25] Blackman *et al.* 1993.

mm can be achieved in the case of small bowls, which implicates a high degree of technical skills;
- The presence of stress lines in fractures, namely of micro-ridges, and micro-depressions visible in lines running parallel to the wall surface, which can be interpreted as the result of the pressure put on the walls by the technique[26].

The paddle-and-anvil technique being a secondary forming technique, its diagnostic characteristics are going to be observed on sherds together with other features related to the primary forming technique(s) involved. Therefore, an identification of the forming techniques based on the parameters listed in Table 1 is still valid also for vessels that were later treated with the paddle-and-anvil technique. The only parameter that seems to be affected by the paddle-and-anvil technique is the thickness of the walls.

Moreover, the research into the paddle-and-anvil technique highlights the technological proximity between pottery production and metallurgy in Iron Age Veneto. This can be observed from the 9th-8th century BC, when the specific pottery shape of the *situliformi*, or inverted-truncated cone-like restricted vessels, clearly imitating the shape of bronze buckets, appeared in the region[27]. Very often, and particularly from the 8th century, these vessels were decorated by burnishing, with a shiny effect that gives the appearance of metal surfaces. Moreover, the application of metal studs and of tin sheet on the surface of some vessels, which spread across the Veneto region during the 7th and 6th centuries BC, possibly indicates that a real collaboration between potters and smiths was actually put into action. The study of the ceramic sherds from Erbè confirms the existence of a strong relationship between pottery technology and metalworking: in this regard the hypothesis of a beating procedure that clearly imitates the planishing of metal objects matches the general picture of a technical environment characterised by the lack of absolute divisions between technical fields. The concept of *technical continuity*, as expressed by Leroi-Gourhan (1945, 344), shall therefore be considered important for the interpretation of the connection between pottery technology and metalworking: according to this view, no invention is possible *ex-nihilo*, but invention itself is the result of combination and reproduction. In this respect, the idea of technical domains as strictly separated fields reflects a modern way of categorising reality which is probably unsuitable for explaining the dynamicity, the continuity of ancient production systems.

As shown by the diachronical study of the techniques, some significant changes seem to have taken place around the early 7th century BC in Erbè, and probably in the Veneto region as a whole. These changes were the introduction of the wheel for the secondary modification of some vessels (bowls, *situliformi* and small refined jars) and the intensification of the use of the paddle-and-anvil technique for the specific production of refined vessels (especially bowls) with particularly thin walls. Moreover, also some changes regarding the surface treatments must be added, although they are not the focus of this study: the use of burnishing, with an intense shiny effect, and the application of metal studs on the surfaces of some vessels (especially bowls and *situliformi*) visibly increased in the 7th century BC. It must be noted that none of these changes clearly implicated a functional or practical improvement, but all of them required increased skills and energy with the exclusive purpose of producing more refined vessels. In other words, a great surplus of work was apparently demanded, which is characteristic of the production of prestige-objects[28]. This, together with the fact that the new techniques were not applied to all kinds of shapes but only to bowls, *situliformi* and tiny fine ware jars, points to a technological innovation that was mainly pushed by new needs for status-display.

Thus, the technological innovation that took place around the 7th century BC in Erbè (and probably in the whole polity of the ancient Veneto region) possibly reflects the emergence in peripheral centres of social groups which aimed for representing themselves through refined vessels, probably emulating the elìtes of Padua and Este and certainly demanding from craftspeople improved skills and a greater amount of work.

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[26] The other variables to consider to identify the forming techniques, namely the symmetry, the orientation and position of the fractures and so on, will depend on the primary forming technique.
[27] See contribution of Vidale 2013.
[28] Giannichedda 2006.

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