

**ENGLISH TEXT
SUMMARY**

As Barcino was built from new in Augustus's time, residential architecture in the city is completely in keeping with the main trends in urban development during the late Roman Empire. In this city, it is possible to analyse how buildings were erected on virgin land in the 1st and 2nd centuries AD without the need for adaptation to existing edifices or earlier urban planning concepts. The settlement grew without prior elements or determining factors dating from the time of the Republic, which would undoubtedly have influenced the new models of residential architecture. Sadly, however, as the city has been subject to uninterrupted urban development from its founding to the present day, archaeological remains of an entire Roman home are difficult to find during excavations. Indeed, the residential structures excavated in Barcelona have only been documented in part: in none of them has it been possible to obtain all the areas or the rooms in the buildings. In addition, the residential structures erected during late antiquity, when considerable re-use of existing buildings was made, have significantly affected our knowledge of constructions built during the late Roman Empire. Consequently, the best conserved structures in Barcino are those dating from late antiquity, magnificent examples of which include the *domus* on Carrer Sant Honorat and the *domus* of the Administrative Archives. A study of residential architecture needs to take into account the problems that arise in analysing Roman houses in an urban context. In the case of urban residential architecture, most examples discovered in a Roman city constitute a very small proportion of the total number of homes. Our incomplete understanding is a consequence not only of the number of examples but also of the examples themselves. The very fact that we are working in a Roman city that is still occupied today also makes it difficult to unearth the entire floor plan of a home. As a result, interpreting residential architecture in Barcino requires us to observe and analyse the existing types of urban habitat without according excessive importance to the absence of specific models. Furthermore, our fragmentary vision of the structures also

makes it difficult to catalogue the remains as being a particular type of house, not just because we do not always have the basic elements in order to determine the type—such as the entrance, the main room or the circulation space—but also because we are observing only a part of it and hence cannot be certain that others do or do not exist. However, taking these difficulties into account, the remains from the city of Barcelona that have been studied have enabled us to identify two possible types that are analysed in this article. Overall, we can state that few examples of the residential unit have been found in the city, as a result of which it is difficult, as mentioned earlier, to draw comprehensive conclusions regarding the residential architecture in Barcino. Given the archaeological data available to us today, it would be improper to talk of models of houses without qualifying any remarks we might make. Even so, it has been possible to identify the type of some houses as their central circulation and distribution spaces have been preserved. The areas of excavated houses without a defined type have not allowed us to attribute or dismiss with any certainty the layout of a central distribution area. Bearing this in mind, the houses in Barcino can be classified into two types: peristyle houses (Meyer, 1999) and houses with a porticoed courtyard built from the late Roman Empire onwards. There is a third category of house, the type of which remains unknown but which is notable since it is a domestic unit linked to artisanal and industrial spaces. The peristyle houses include the remains found on Plaça Sant Iu and the houses dating from late antiquity on Carrer Bisbe Caçador and Carrer Sant Honorat. These houses have a peristyle as a central circulation and distribution area inside the excavated boundaries of their structures. The only known representative of the porticoed courtyard type is the *domus* on Plaça Sant Miquel, which is unlike the others because the circulation and distribution area of the house is a porticoed courtyard and not a peristyle. Lastly, the other houses in Barcino that it has been possible to excavate to a sufficient degree in order to interpret them as residential build-

ings—among them the *domus* on Carrer Avinyó, the *domus* of the archbishop's palace and possibly the house on Carrer Bisbe Caçador, dating from the late Roman Empire—have also been identified as well-to-do homes but without an attributed type. As stated earlier, some of these houses are connected to a space given over to crafts and industry. A review of all the residential remains in the colony allows us to single out two characteristics from all the other data studied: the first is the exclusive documentation of the peristyle or porticoed courtyard type; the second, that the remains found belong solely to sumptuous houses. While it is true that these two characteristics, which are undoubtedly connected, are subject to change in the light of new archaeological discoveries, they nevertheless suggest a trend in private buildings in the city. It is notable that only these types of home have been found inside the walls. From the perspective of residential architecture, this compels us to reflect on the type and function of the city of Barcino within the area of Laietania. In the period prior to the founding of Barcino, in other words, in Ibero-Roman times, the city of Baetulo was founded and, before that, the Romans occupied Cabrera de Mar and Iluro. However, this is defined as a period of transition due to the lack of an overall restructuring of the land (Palet, 1997: 185-187). The study of the Pla de Barcelona concluded that the founding of Baetulo and Barcino followed clearly different models of establishment in the territory. In Barcino, despite the structural changes identified in the territory and in the patterns of settlement, which reveal an occupation of the land and hence the city's economic and administrative function, it has been observed that this did not entail widespread farming in the Pla de Barcelona during the late Roman Empire (Palet, 1997: 186; Palet/Riera, 2009: 133-136). Consequently, as has already been deduced from the size of the city and its urban characteristics (Guitart, 1993), the colony of Barcino may have had an economic aspect but it was founded above all for a political, administrative and religious function and had a considerable symbolic and ideological dimen-

sion as regards the control and conquest of the territory (Palet, 1997: 186). The residential architecture in the city seems to confirm these political and religious functions. The city is small in size and there are no modest homes that might be occupied by ordinary settlers but only affluent houses that demonstrate the importance of the occupant, houses with a public role in the private space. Public relations was an aspect of the concept of the residential structure and an intrinsic element of the sumptuous Roman *domus* in every city around the Empire. Once again, it should be stressed that we have only found this type of house in Barcino, consequently the percentage of these *domus* in the city must have been relatively high, especially considering the size of the urban area within the walls. In addition, one of these houses, the *domus* on Sant Iu, has been identified as a corporate headquarters, emphasising still further the political and religious character of the city.

To conclude, despite the fact that few houses have been excavated in the city, it can be seen that Barcino followed the trends in private architecture in the Roman Empire in imperial times. We have found peristyle houses and houses with a porticoed courtyard, elegant rooms with beautiful mosaics and paintings, and probably arcaded like the *domus* of the archbishop's palace. Lastly, we have observed the connection between spaces given over to crafts and industry and residential structures. However, we have yet to find more modest homes, as a result of which we must hope that in the coming years a wider body of residential structures is unearthed and that we acquire a broader knowledge of the suburban area that we have begun to document in the eastern area of the old city.

Bathhouses, both public and private, are among the most representative buildings of the Roman world due to their structure and distribution, as well as their significance in social and hygiene terms. It is often said that the presence of *thermae* may indicate the degree of Romanisation of a particular territory. The Roman conquest brought with it not only a new kind of building but also a completely new culture of water, a culture that has continued to evolve to this day.

Balnea are buildings characteristic of every Roman city, both in the public sphere and in the private realm. In Barcino, several private baths have been documented associated with affluent homes, most of them dating from the 4th century AD. Although no private baths from the time of the founding of the colony or the late Roman Empire have so far been excavated, one dating from after the Flavian period has been located.

Another notable characteristic of the *balnea* in Barcelona is that when they were built, they occupied the public space, implying that a change took place in the urban structure and land ownership. In addition, their construction is connected with major alterations to the decoration of the *domus* and with the increasingly monumental character of these houses. The baths of the *domus* on Carrer Bisbe Caçador and at number 3 on Carrer Sant Honorat have splendidly decorated floors, with *opus tessellatum* and marble plates, and walls, on which traces of paintings have survived. A group of four *balnea* have been studied, three of them associated with three known *domus*, whereas in the case of the fourth, in Pati Llimona, the sole documented remains of the domestic structure is a part of some private baths, which were characteristic of sumptuous homes during the time of the late Roman Empire.

With regard to their state of conservation, only in the case of the baths of the *domus* on Carrer Bisbe Caçador has the complete sequence of the areas of the *thermae* survived—an apodyterium, the frigidarium, the tepidarium and the caldarium—together with a series of adjoining rooms, the purposes of which are open to various interpretations. It is

difficult to establish a clear type of *thermae*, given the fact that few remains have survived. However, in those instances where it has been possible to observe a distribution of the space, they correspond to a linear type in its diverse variants, with a retrogressive sequence of rooms that attempts to cover the entire ritual of bathing in Roman times. This model is documented in the Iberian Peninsula from the 1st to the 4th century AD in urban as well as rural areas.

Turning now to chronology, the *balneum* of the house in Plaça Sant Miquel is the oldest of those excavated and can be dated to a time after the Flavian period, although there may have been an earlier phase that it has been impossible to fully document. The other bath complexes can be dated as a group to between the late 3rd and the 4th century AD.

These buildings are of considerable importance and are of significance in their own right, being located in the most representative parts of the *domus*. *Thermae* are an element of the home that was developed late on, around the 1st century BC, becoming more common and established in their configuration over the course of the 2nd century AD. Their importance, however, was such that they were situated among the more significant rooms occupied by the owner of a *domus* and were part of the public area of the house.

It should be noted that most of the baths were built after the house and were constructed at the same time as refurbishment work was conducted when the owners became more wealthy, resulting in a change in the function of some spaces in the *domus* or in the expansion of the house into public land. All the *balnea* in the colony were built as part of the *domus*, not as an adjoining building, and were all incorporated into the structure of the house, a characteristic common to all the private baths in urban areas in Hispania. In the case of Barcino, it is impossible to establish any kind of similarity in the orientation of the baths inside the house: the orientations are diverse and they share no common characteristics whatsoever. The study of the *balnea* confirms the findings of previous research:

**A NEW SETTLEMENT DATING
FROM THE 5th MILLENNIUM
ON THE BARCELONA COAST**

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during the course of the 4th century, Barcino underwent a period of sweeping urban remodelling, a circumstance also documented and studied in Tarraco, the capital of the province. It should be stated that when beginning a study of *thermae* in urban areas, it is important to bear in mind that research of *balnea* cannot begin without framing it within the urban context, the city and the urban fabric, in particular in relation to the water system, in other words, the supply of water and the management of waste and waste water. With regard to the water supply, the Romans designed a system that transported sufficient water to the colony to allow several public and private *balnea* to operate in the city. As for the sewage system, the city had well-planned underground pipework that followed the grid of the streets and was adapted to the natural lie of the land, facilitating drainage. It is also important to note the large number of known *balnea* in Barcino in relation to its overall surface area, though it should be observed that most of them are in the south-east sector of the city, the quadrant closest to the sea. This fact points to the importance of hygiene and the ritual of bathing, at least among the elite classes in the colony, as well as the social aspect of public *thermae* buildings.

Archaeological soundings conducted in 2007 prior to the construction of social housing being developed by the Barcelona Municipal Housing Board at numbers 31-33 on Carrer Reina Amàlia led to a large-scale archaeological intervention between May 2008 and March 2009.

All the structural, material and sediment variables recorded at the site reveal the existence of a large coastal settlement of agriculturalists who raised both crops and animals. This site, together with the site of the Sant Pau del Camp barracks and other sites recorded in the area, could form an extensive and intensive occupation of the Pla de Barcelona and more particularly of the area of El Raval in recent prehistory.

The most important feature of the site at numbers 31-33 on Carrer Reina Amàlia is the documentation of a hut floor with a significant stratigraphic sequence covering a period of the 5th millennium cal BC, an ideal context for understanding the processes of social and economic change that took place between the end of the early Neolithic and the middle or full Neolithic in the western Mediterranean.

The strategy established prior to the start of the excavations and the methodology used to record the data from the site proved crucial in interpreting the occupation and use of the site. This settlement, in particular the hut floor (structure III), covering more than 50 m², is filled by deposition levels of human origin consisting of material from other internal and/or complementary structures of the occupation, notable among which is the presence of two children's burials.

We have been able to determine the structure and type of the most significant levels, different periods of occupation that speak of a relatively important seasonality that has made it possible to establish the sequencing of the settlement.

Notable among the most recent archaeological material found—in other words, from the most significant levels of occupation—and which gives us the greatest insight into the socio-cultural changes is pottery, as the numerous fragments that were discarded when the

hut was abandoned has enabled us to establish defining characteristics of the occupation. These premises are the absence of cardial decoration, the existence of very few pieces with impressed decoration, raised bowed or 'moustache' decorative motifs together with ribbon handles, and the presence of tubular or long, hollow handles, which between them could determine a post-cardial dating, overall a phase of transition from the early to the middle Neolithic.

Distributed around the outside of the habitation structure is a large number of domestic structures (silos, hearths and supporting structures). In the northern part, topographically coinciding with the abandonment level, we found a burial structure of a pit grave type (UF III), the kind of grave that is first found in Catalonia during the transition from the early to the middle Neolithic.

The excavation and studies of the Neolithic settlement on Carrer Reina Amàlia represent an important contribution to our knowledge of Neolithic societies in Catalonia and also in the Mediterranean.

What makes this an extraordinary site is firstly that it is a place of habitat and secondly the complementary and intensive use by humans of the outer space, demonstrated by the structures of a domestic nature and by the strata of occupation.

The time span obtained from three absolute chronologies places the occupation of the site to between 4700-4350 cal BC, a period that overall corresponds, within the cultural horizons defined in Catalonia, to the close of the epicardial and the postcardial, data similar to known datings at other sites in the north-east of the Iberian Peninsula. The technological and typological characteristics recorded indicate a continuity based on the lack of a stratigraphic and cultural break that would provide grounds for arguing that there were separate periods of occupation.

The pottery material is abundant and diverse in terms of decoration and forms, again indicative of a period of cultural cohabitation. The materials reveal the recurrence of certain pottery traditions typical of the cultural horizon

of the impressed pottery of the Mediterranean arc of the early Neolithic, together with the presence of other, more advanced elements characteristic of more recent times, such as the postcardial phase, and others that straddle the middle Neolithic. The Reina Amàlia site is an extraordinary record for interpreting the transformations in the early and middle Neolithic periods, the changes and the cultural, social and economic transformations that took place in Neolithic societies of the 5th millennium in southern Europe.

The Church of Santa Maria del Mar that we see today was built in the 14th century, but it was preceded by another known as Santa Maria de les Arenes, records of which appear in written sources. The Church of Santa Maria has traditionally been associated throughout history with the martyr Eulalia, whose relics were found and moved with due ceremony to Barcelona Cathedral by Bishop Frodoin in 877. Regardless of tradition, the origins of the Church of Santa Maria del Mar must be connected with a basilica containing the relics of a martyr. The remains of this basilica have not been located by archaeologists but it was an important element in the Christianisation of the *suburbium* of *Barcino*.

The excavations conducted in 1966 inside Santa Maria del Mar revealed a crammed necropolis containing 108 burials in amphorae, boxes of *tegulae* with a sloping top, *formae*, wooden boxes or simple pits. The latest study of the amphorae published in this issue suggests a chronological frame of reference spanning from the late 4th century or first half of the 5th century to well into the second half of the 7th century, with most activity occurring in the first half of the 6th century, a period that most of the amphorae date from (Keay 55, Keay 62A, Keay 62R/L and Keay 34). The Keay 58, Keay 60 and LRA4 amphorae and the fragment of a Globular 3 amphora are a little later in date, indicating that the necropolis was in use in the latter half of the 7th century.

In the surroundings of Santa Maria del Mar, the tombs are aligned following thoroughfares or old roads, the courses of which still exist today: Carrer Argenteria (formerly known as *carraria de mari*), Passeig del Born, which archaeologists have documented, and Carrer Montcada, the origins of which seem to date from a division of the land into parcels that took place during the late Empire. In addition, we believe that another path led to Santa Maria del Mar, following a course parallel to the sea that survives to this day in the streets Carrer Josep Anselm Clavé, Carrer Ample and Carrer Àngel Baixeres. This path—defined by some of the graves and the presence of an occasional

uilla—converged with the other three at a particular point, the Church of Santa Maria del Mar, the centre of an active cult of a martyr that gave rise to a crowded burial ground. The supposition that relics were present here is reinforced by the finding that the graves are grouped together more densely the closer they are to the church.

The archaeological excavations also detected structures belonging to successive phases, indicating that the site on which the church was erected was not entirely empty of pre-existing buildings. Large edifices were documented, the masonry from which suggests they date from the late 12th or the 13th century. Walls of similar characteristics also appeared in the Fossar de les Moreres burial ground. Other structures at lower and hence older levels indicate that this site has been continuously occupied above the levels of the necropolis since the 7th century.

At the north-west end of the Passeig del Born thoroughfare (in what is now Plaça Comercial), evidence has been found that shows the burial ground remained in use after the 7th century. Thirty-three inhumations were discovered in the area, most of them simple pits. Only three burials were made inside a box of *tegulae* and one in an amphora. With regard to the orientation and layout of the burials, in 22 of the inhumations, the body was arranged lying on its right side, with the legs tucked up, and aligned south-west to north-east, indicating that these were undoubtedly Muslim burials. The location of this Muslim cemetery on the sands very close to the sea is also seen in Malaga and Almería. The proximity of necropolises to watercourses or the sea has been interpreted as a deliberate search for water, which is associated with Islamic rites of transition.

We must envisage the early church (5th-6th century) as a small basilica that could have been altered or completely renewed in the 10th-11th centuries, although this process is impossible to prove at the present time without an archaeological intervention. We do not know the precise location of the early basilica. However, the data available indicate it was south-east of the church today and there is every reason to think

that it was oriented south-east to north-west, following the same arrangement as the religious buildings in the episcopal complex, the main cathedral and the cruciform church in Plaça del Rei. The use of the area of Santa Maria del Mar and its surroundings for burial purposes extended throughout the 8th century and into the 9th. There are signs in the 9th century of a retraction of the burial plots, in all likelihood due to the urban development of some sectors, which would have led to the necropolis areas being abandoned, as well as the consolidation of the parish churches and the establishment of *sagreres*. Moreover, it is important to remember that most of the parish churches that were regarded as old in the 14th century—Santa Maria del Mar, Sant Just i Pastor, Sant Miquel, Sant Jaume, Sant Pere de les Puel·les, Santa Maria del Pi and Sant Cugat del Rec or del Camí—were preceded by earlier places of worship, as confirmed by archaeological data in the cases of Santa Maria del Mar, Sant Just i Pastor, Sant Miquel, Santa Maria del Pi and Sant Cugat del Rec.

Excavations were carried out inside the Church of Santa Maria del Mar in 1966 and 1973. The first of these campaigns was led by the archaeologist Marià Ribas, from Mataró, and was, until now, the main source of information on the necropolis dating from late antiquity discovered during the excavations. Ribas published his findings over a period of time in four different publications and dated the necropolis to between the late 4th century and first half of the 6th century. Our study analyses these four publications and also considers the photographs and original documentation from Ribas's excavation, which includes plans and drawings of many of the tombs and of the materials found, as well as brief notes on the progress of the works. The life-size drawings of the sections of some of the amphorae in the necropolis have proved particularly enlightening, in particular those drawings of amphorae that have since been lost or which were not conserved. The amphorae found in this necropolis that have been located in the stores of the Museu d'Arqueologia de Catalunya (MAC) have been drawn again and classified according to the most recent tables of types. In addition, we have reviewed S.J. Keay's documentation concerning the excavations of 1973, as well as his typological attributions in his well-known book on amphorae from late antiquity in Catalonia, since virtually all the material found by Ribas in this necropolis was included in Keay's work. Keay dated the initial period of the necropolis to between the late 5th century or early 6th century and a time that he did not determine.

The comparative study of the drawings included in Marià Ribas's original documentation, those published by S.J. Keay and, lastly, those that we ourselves have done form the basis of our study, which has enabled us to identify most of the material and in many cases to attribute it to the tomb where it was found. The photographic evidence that has survived also proved valuable in this respect, and also helped in establishing a reliable calculation of the number of pieces found at the site by ensuring that the various versions of the documentation did not result in mistakenly counting the pieces

more than once. In some cases, we have chosen to present a modern version of Ribas's original 'rough' drawings, since they are of better quality than those finally published.

This study also includes the amphorae found in 1991 and 2001 in various preventive works undertaken to the east of the Church of Santa Maria del Mar in Passeig del Born and Plaça Comercial. Even though these do not strictly belong to the same group as those found in the necropolis, these inhumations took place in the same period and are undoubtedly connected as regards the place of burial.

The results of this study have been affected by the fact that some of the significant pieces S.J. Keay was able to study have proved impossible to locate in the MAC stores, above all the Keay 60 found in tomb 73, since this form, in our opinion, is still ambiguous as regards its type. Other unique pieces include the amphorae Keay 62L, 58 and 69, though we believe, in the case of the first two of these at least, to have made progress in determining their type. Following an analysis of the available documentation and studying the preserved material, an attempt was made to establish the number of amphorae from this site. This revealed that we have documentation concerning a total of 67 fragments of amphorae that provide useful data once we have excluded the material broken into small fragments, residual pieces and modern intrusions. The most common type of amphora in this necropolis is the Bonifay 46/Keay 62, of which we have 32 examples, almost half of them corresponding to variant A of this form. As is also the case in this majority type, the pieces produced in North Africa are notably more abundant in this collection of amphorae. The other types of amphora of African origin found can be classified as Bonifay 35B/Keay 27B, Bonifay 44/Keay 55 and Bonifay 53A/Keay 34. The first of these, which dates from the first half of the 5th century, belongs to a tomb found to the east of the central section of Santa Maria del Mar, probably connected with the road network in this area.

The amphorae made elsewhere are far fewer in number. Firstly, we have the

Keay 69 from tomb 31, which we, like S.J. Keay, believe is of Baetican origin, and also the possible Bressel 23 c or d found in tomb 81, the whereabouts of which are today unknown. Nor have we been able to find fragments of the two eastern LRA 4B amphorae found in tombs 8 and 58. Fortunately, however, we have new information concerning the second of these thanks to Marià Ribas's original documentation, which has led us to classify it as within the variant B2 of this type of amphora and to date it to around the mid-6th century or a little later.

The piece that is chronologically the latest from the necropolis of Santa Maria del Mar is a small amphora of the Globular 3 type, found in tomb 4 in 1973. This is the sole element that enables us to date the tomb to after the mid-7th century, though we are unable in this case to establish the place where it was made.

Most of the amphorae in this necropolis date from between the late 5th century and the first half of the 6th century—a dating that is most applicable to a large number of the burials—though there are some that are later, such as those from tombs 60 and 73, which date from between the late 6th century and first half of the 7th century, or the one from tomb 4, found in 1973, mentioned earlier.

The overall chronology of the Santa Maria del Mar necropolis can be placed, in our view, to between the 5th century and well into the second half of the 7th century.

As we stroll through the city today, we are rarely aware of the changes that have occurred in it throughout the centuries and of the need for us to see it as a living entity that evolves over time in response to certain factors. This article reflects on how the progressive development of the area took place as part of a process of urban growth instigated by various elements among the urban patricians keen to obtain income in addition to that generated by agriculture, a new income that consisted of rental payable on artisanal crafts workshops.

The area we are concerned with lies in the old city's eastern sector, the centre of which is in what is now Avinguda Francesc Cambó. Its boundaries were formed by streets that still exist today or streets or other elements that have since disappeared but which once formed a unit: Riera de Sant Joan, a street that no longer exists, in the west; Carrer Rec Comtal, in the east; Carrer Sant Pere Més Baix in the north; and the thoroughfare made up of three streets, Carrer Bòria, Carrer Carders and Carrer Corders, in the south. This area gradually became firmly established and in medieval times formed the Sant Pere neighbourhood or quarter, also known as La Salada.

In Roman times, this land lay outside the walled area, to the north of the branch of the Via Augusta. In late medieval times, the urban development of the area, physically separated from the city and other hamlets around the walls by the Riera del Merdançar gully, was influenced by the branch of the old Roman road, which served to structure the neighbourhood, and the very early building of two places of worship of considerable importance, Sant Pere de les Puel·les and Sant Cugat del Rec or del Camí, around which lay a series of properties, some of them developed. In broad brush terms, the gradual urban development of the area was linked to a number of factors and key figures: although elements related to the monarchy or the Church may have been solely responsible, we should not forget, as Bensch points out in his work *Barcelona i els seus dirigents 1096-1291*, the importance of the new classes of the urban patriciate. From 1140 onwards,

the rise of this patriciate depended on its ability to control and make the most of the new sources of urban wealth, though it retained its interest in purchasing small plots of cropland in the surrounding area. These new sources of wealth must be linked with their determination to control the small stalls and workshops run by craftsmen.

The first land to be developed was located near the roads, where archaeologists have found a clear example of urban growth in the form of a property that follows the pattern of a house with corral in what is today Plaça de Sant Cugat del Rec. Another example of this initial development has been documented in the sector, however the remains have been significantly affected by the vast project for the Santa Caterina monastery of preachers, which was built at a later date on the same site.

It seems that virtually all the development of the sector took place from the late 13th and early 14th century onwards. In all the interventions that reach the appropriate levels, remains of varying significance of the constructions of the day have been found, providing an understanding of the various elements that occupied the area.

Clear examples we might mention include all the interventions conducted at Porta Cambó, where considerable information has been gathered concerning the large houses that stood in the area, which were interspersed with more modest constructions built on an elongated plan, still visible in the planimetric survey done in the late 19th century. In the large houses, between Carrer Jaume Giralt and Carrer Fonollar, the partially preserved structures of various large Gothic houses have been identified. The ground floors of these properties were specified as being set aside for craft industries.

The workshop on the former Carrer Mercaders is in keeping with this trend whereby the craft industries became established in the area. Some of the items found here are highly original and are unique in medieval contexts in Barcelona and so have formed the basis for attempting to elucidate the function of the workshop.

The group of items that provide information regarding the uses of this work-

**A STUDY OF THE ORGANISATION
AND PRODUCTION OF POTTERY IN
BARCELONA BETWEEN THE 13th
AND 18th CENTURIES BASED ON ITS
ARCHAEOLOGICAL CHARACTERISTICS**

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shop are found in the excavation level of this space that dates from the second half of the 14th century. The pieces in question can be interpreted as various parts of stills found together with a series of small pottery crucibles. According to the literature that has been studied, the presence of stills in archaeological contexts has been linked with various pre-industrial activities. In this particular case, we believe that the most likely activity is the working, processing and refinement of metal, specifically the obtaining of mercury by crushing and heating cinnabar (mercury sulphide). Cinnabar was used for various purposes in medieval times, but the information gleaned from the workshop indicates that it was employed here to make amalgams of gold and silver to gild metal parts that have been linked with horse bit makers and saddlers. We know that in 1389 there were four citizens in the Sant Pere neighbourhood who pursued this activity. None of them is recorded as being a saddler by craft, so we cannot dismiss the possibility that the closure of this workshop, dated to the second half of the 14th century, occurred before 1389, which would explain this circumstance.

The numerous excavations conducted in Barcelona in recent years have unearthed a large amount of material related to pottery production in the city in pre-industrial times, from the 13th century until well into the 18th century. Decorated Catalan majolica produced in Barcelona from the 14th century onwards, white majolica decorated in green and manganese, majolica decorated in blue or polychrome and majolica with lustre decoration, is known by archival and toponymic evidence and has been the subject of detailed studies since the first half of the 20th century. Today, we have available to us publications in which we find this kind of material in stratigraphic contexts. In addition, we have recently started to learn more about the archaic majolica and the green tableware of the 13th century, as well as the common ware produced in Barcelona.

This research is being pursued today within various archaeometric projects included in the Tecnolonia project, which has enabled us to widen the chronological framework of study—spanning from the 13th century to the 18th century—as well as the types of pottery under consideration: archaic majolica, green tableware, glazed common ware, polychrome common ware, oxidised common ware, large jars, Catalan majolica decorated in green and manganese, Catalan majolica with lustre decoration, Catalan majolica with lustre and blue and Catalan majolica (varied decoration in blue and/or other colours) imitating Ligurian *berettino* blue, otherwise known as ‘Barcelona blue on blue’. The complexity observed in this pottery production in Barcelona called for a detailed study of the chemical compositions of the clay pastes to establish the various reference groups, to determine the possible raw materials used to make the pastes and, lastly, to compare the results with the archaeological information, with regard to both the various pottery productions studied and their chronologies.

At the present time, a total of 255 individual items are included in this archaeometric study and they cover an extensive period spanning from the 13th to the 18th century. Their chemical composition has been established

using X-ray fluorescence. The study of these results, using statistical techniques, has enabled us to define 11 groups that represent 11 different production types. Nine of these, indisputably of Barcelona origin, in fact correspond to at least three base clays that would have been used by potters to prepare clay pastes that they modified—in particular by varying the content of carbonates and by adding calcite in the appropriate proportions—according to the end product they wanted to make. We have thus identified an initial clay that would have been used to produce the pastes for the pottery made in the 13th century, consisting of green glazed tableware, glazed common ware and archaic majolica. The results seem to suggest that there was no precise recipe for preparing the clay paste used to make green tableware, whereas in the case of majolica, the formula seems to have evolved quickly from an initial attempt at making pottery using border calcareous pastes to pastes containing lime. The aim was to produce pale pastes and to economise on the use of tin oxide, which was used to conceal the dark colour of the paste and to obtain a white colour on which the decoration could be applied. It is likely that this phenomenon influenced the evolution of pottery in the 13th century and later. A second clay would have been used as the basis for making majolica from the late 13th and 14th centuries. Thus, the B1 group of Catalan majolica in green and manganese from the late 13th and the 14th century has an average CaO content of 11.44%. On the other hand, DR, which mainly includes majolica with lustre decoration, majolica with lustre and blue, and majolica with various decorative finishes dated to the 16th and 17th centuries, has an average CaO content of 16.61%. Turning now to the 16th and 17th centuries, the SC group of Catalan majolica with lustre decoration has a significantly higher CaO content amounting to an average of 25.60%. Number 3, the last of the production groups made using the same base clay, consisting of imitation Ligurian *berettino* blue and oxidised common ware, dating mostly from the 18th century, has an average CaO content of 25.90%. Lastly, a third clay would have been

used to make production groups II and III, consisting of glazed common ware, polychrome common ware and large jars. Dated from the late 15th century to the 18th century, these clay productions are low in lime or border calcareous. In this case, the glaze is honey-coloured or yellowish and the decoration would have been applied on top, hence there was no need for the clays to contain lime. In other words, these pieces were made at the same time as majolica tableware; however, clay containing less calcite and a more significant sandy phase would have been employed to produce them.

These three base clays would, therefore, have been used to produce a number of production groups (up to nine) that would have clear chronological connotations and would indicate the existence of major structural changes in the pottery production of Barcelona. At the same time, however, there would also have been a clear correspondence between the different types of pottery produced. The results obtained so far are uneven, since some types of pottery, especially majolica, are better represented than others, but they nevertheless enable us to observe that the base clays, and the clay pastes that were used, vary in accordance with the purpose of the pottery to be made.

This study is still in progress but has so far revealed the complexity of the clay pastes used to make pottery between the 13th and 18th centuries. This research has omitted an in-depth technological study, including decoration and glazes, which would have added to the complexity, since in at least some instances it seems that the guilds of potters were responsible for purchasing and distributing clay among their members. The complexity observed here is, therefore, directly related to major strategic changes in pottery production in the city, changes that we are now beginning to discern and which call for further study in order to understand them in full.

