

**ENGLISH TEXT
SUMMARY**

The city of Barcelona is a living metropolis that is constantly changing and evolving, yet as an historic city, the evidence and vestiges of its transformation are contained within the reticule of its streets and its territory. The present prompts us to reconsider the past and especially the future. Different ways of understanding and planning cities lead to a number of different types of urban interventions: construction, destruction, renovation, restoration, rehabilitation, preservation, etc... The range of effects on heritage caused by the many types of urban or architectural interventions varies widely, which then generates different types of archaeological interventions. Archaeological and historical heritage is not located merely in the subsoil in the form of buildings and levels that hold objects of historical significance; many fossilised remains exist in some of today's buildings. Urban archaeology in Barcelona is based on a vision of the entire city as one sole site, an archaeology of territory that aims to determine the evolution over time of the urban space, its geo-morphology, structure, buildings, layout and network of streets and roads. The city is not merely studied within the realm of interventions in the subsoil, but also in relation to existing buildings, and as much heritage as possible is documented and recovered.

Contrary to salvage or emergency archaeology, this is preventive archaeology, which explores the planning, organisation and diagnosis phases prior to interventions. Archaeology should be present in the urban planning phase before urban projects are drafted. All heritage legislation has one clear objective; the prime importance of having inventories at our disposal that enable better heritage management, as it is impossible to protect what is unknown, which is why most public administrations with competences in the area of heritage have compiled or are compiling protective inventories. In the case of archaeological heritage, these inventories have been denominated archaeological charts or risk charts.

The City History Museum of Barcelona is developing a Geographic Information System known as SIGBARQ. The aim of the SIGBARQ project is to devise a tool for managing and investigating Barcelona's archaeological heritage. SIG-

BARQ entails drafting an inventory of the city's archaeological heritage from documentation currently known to us and prospecting systematically in the territory to enable good management and programming practices to be applied to it. This geographic information system should be used as an active tool in all archaeological work undertaken in Barcelona, from start to finish. Yet, it should not only be conceived of as a management tool, but also as an instrument for reflection about the city. Having a joint vision of the interventions carried out and the data compiled at our disposal allows us to plan actions that respond to scientific inquiries, approached in terms of some of the existing gaps in knowledge about the city's history.

SIGBARQ's primary use by archaeologists will be as a tool for scientifically investigating, analysing and managing Barcelona, especially its urban space and evolution over time. Of equal, if not greater importance will be its use in evaluating archaeological heritage when determining and defining urban planning and interventions in the heart of the city. We hope to see it become a basic work tool for urban planners and technicians. The project's development will ease planning archaeological interventions and preventing the destruction of archaeological heritage.

The site located on Calle Reina Amalia 16-16 bis is remarkable for the prehistoric remains uncovered during the archaeological digs of 2003-2004, which have made major contributions to knowledge about the late Neolithic in Barcelona, hitherto entirely unknown. The site's geographic and geological situation is also of interest, as it lies on Llano de Baix on the Barcelona plain, hugging the coast at the foot of the rocky outcrop known as Montjuïc, which was a wooded plain crisscrossed by torrents and watercourses from the Collserola mountains in prehistoric times. These communities were established close to a coastal lagoon where agricultural and livestock raising activities took place and was complemented by harvesting, fishing and hunting.

Although other archaeological digs have revealed remains from prehistoric times, the digs at the Sant Pau del Camp (1988-1990) and the Civil Guard barracks in Sant Paul del Camp (1990-1991) (Granados, Puig, Farré, 1993) are the most relevant and have yielded the greatest number of remains from Neolithic chronology.

This paper presents the prehistoric ruins found at the site, which have been attributed to the late Neolithic (2500 BC. - 2000 BC. Veraza Group) because of the typology of the ceramics. The structures, five in all, were encountered under the surface of a stratum of alluvial clays and are formed by piles of several types of different-sized stones (slate, limestone, sandstone...), measuring 15-20 cm, deposited in the clay without any type of material binding them together. They are mostly round and the most noteworthy of them is the u.e. 137 structure. Most of the remains are very smooth, which is most likely due to groundbreaking works on upper levels or the modern buildings located directly above. The purpose they served is unknown at present, but it is remarkable that the land between the structures is totally untouched and that material can only be found in the piles of stones. Although the structures are limited in number, the remains of associated materials are varied; they include, for example, ceramic remains, lithic macro-tools, faunal remains, marine molluscs and construction material. Of great interest

among them are the ceramics, particularly a medium-sized sub-spherical vessel with a horizontal cordon under the rim, which was used for storage (picture 3). Sub-spherical and cylindrical-shaped recipients of this type, with convex bases and applied cordons, have been found in other sites in Catalonia and the South of France (Martín, 1980; Martín, 1992). Interpreting the structures is rather complex, as the remains are isolated. They may have been used for striking large vessels, such as those found at the Riera Masarac site (Pont de Molins, Alto Ampurdán) (Tarrús, Chinchilla, 1985). In general, they are different-sized shallow pits.

Structures similar to those documented at Reina Amalia have recently been found in the archaeological excavation at Riereta 37-37 bis in Barcelona (González, 2005), in close proximity to both the monastery of Sant Pau del Camp as well as Reina Amalia. Structure numbers 17 and 11 at the Calle Riereta site also correspond to piles of stones, one of which is the clearly rounded.

Although the remains documented at Reina Amalia are few in number, they are highly significant within the context of a prehistoric Barcelona that is still largely unknown to archaeology; the findings at sites and during the course of digs have been limited to a few isolated points, framed within the context of large-scale excavations at medieval and modern sites and a unique site with its own singular features (Sant Pau del Camp), which unfortunately has yet to be studied. To this last must be added the recent excavation at Calle Riereta, which is none other than a continuation of this important site in the Barcelona quarter of El Raval and from which new and interesting contributions can be expected. Despite its relatively small area, Reina Amalia can be considered part of this context, becoming the first prehistoric site to offer an inter-disciplinary vision of the late Neolithic in Barcelona.

The study of the archaeological site at Calle Princesa 21 - Calle Boquer 8-12 in the city of Barcelona has furnished new data on the ceramics industry located on the outskirts of the city of Barcelona, ancient Barcino, during Roman times. The establishment of a ceramics workshop on Calle Princesa at the beginning of the first century BC is closely linked to the city's founding and the changes brought by the introduction of new Roman socio-economic structures in northeastern Spain. One of the most radical transformations took place in agricultural practices, now predominated by the cultivation of vineyards and large-scale wine production for trade purposes. This production was stored and transported in local amphorae manufactured at a number of ceramic workshops in rural areas along the Catalan shore. The workshop on Calle Princesa's most remarkable feature is its location at the city gates in an urban area, very close to the sea and next to Vía Augusta. These conditions must have made it easier to secure the prime materials needed and expedite the finished product within the area of Barcino, which would have been a redistribution centre.

The documented remains from this industrial complex correspond to a building that partially conserves three structured areas around a central space.

The site's stratigraphic sequence shows two phases of use in the spaces designated for production, which indicates that the workshop was in use for over a century. During the first century BC, a round kiln with a central pillar was used, of which the combustion chamber and praefurnium have been conserved. The dimensions of the kiln, 2 m in diameter, lead us to believe that it was used for firing pondera and/or common ceramics - amphorae and construction material must have been fired in a larger kiln. Several landfills of tegulae, pondera and amphorae and an alignment of Pascual 1 have been documented in relation to the kiln. These spaces were remodelled early in the second century AD, when a well was built and the kiln destroyed. The combustion chamber was filled in with sediments and an abundance of common ceramics and Dressel 2-4 amphorae. A deposit for decanting clays, faced con-

tegulae, was built on top of the remains. These ruins substantiate the continuity of artisan production and reflect the changes in the space's organisation and the continuing existence of operations at the ceramics workshop during the first half of the second century AD. The workshop on the Calle Princesa primarily produced Pascual 1-type amphorae, but also manufactured Dressel 2-4 amphorae, common ceramics, tegulae and pondera. Forty-two fragments of Pascual 1, pondera 2 and four sediment samples from different parts of the kiln were archaeometrically characterised. The sherds were chemically characterised by fluorescent X-rays (FXR), which enabled us to determine the Reference Group or prime material used in manufacturing the ceramics from the Calle Princesa workshop. Furthermore, the samples were mineralogically characterised by X-ray diffraction (XRD), which allowed us to determine the mineral phases in each fragment, so as to estimate equivalent firing temperatures. The analysis revealed a very homogenous amphorae manufacture generally based on the use of a limestone paste and two different technological processes: most of the pieces examined were fired at high temperatures (and in some cases over-fired or severely over-fired) and a few pieces were fired at low temperatures. The chemical analysis also showed that the same material was used to manufacture the Pascual 1 amphorae and the pondera. This data indicates the existence of a ceramics workshop at the gates of the city of Barcino which produced very standardised ceramics during the first and second centuries AD. Defining the reference group of the amphorae production from the Calle Princesa workshop will allow us to compare these samples with other samples of Pascual 1 amphorae from other production centres in Tarraconense in subsequent studies. We will thus be able to consider the production technology used and degree of organisation in this workshop in comparison with others. Furthermore, the comparison of these samples with others from reception centres will allow us to identify the possible trade networks used to distribute the amphorae.

A POSSIBLE LATE ROMAN POTTERY PRODUCTION CENTRE: THE OCCUPATION OF OLD SANTA CATERINA MARKET DURING THE EARLY BRONZE AGE

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THE CASTELLUM OF BARCINO: FROM ITS EARLY ROMAN EMPIRE ORIGINS AS A MONUMENTAL PUBLIC PLACE TO THE LATE ANTIQUITY FORTRESS

The excavation at the old Santa Caterina market led to the recovery of documentation from different periods in the city's history ranging from the early Bronze Age to the present day. This study examines one of the phases related with this site: the phase close to the change in era associated with the advent of the early Roman Empire.

The ruins of a possible ceramics production centre are presented, the presence of which had been suggested by earlier digs at Avenida de Francesc Cambó in 1984 and 1986, which indicated the presence of a repository for waste connected to a pottery workshop that predominantly produced Pascual I and Dressel 2-4 amphorae.

This production centre, of which Santa Caterina would have been part, is located in an outlying area of the city north of the Vía Augusta sector and occupies an area of some 3000 square metres (the conserved part) and would have extended in all directions except the southwest.

The documented remains indicate that prime materials were obtained to manufacture ceramics with, in light of the location of large furrows in the natural soil used to dig for clay and the use made of the zone's natural aquifers. Furthermore, the typology of the documented structures and large spaces, which had been filled in with fired clays, rubble and fragments of ceramic, supports this hypothesis.

Unfortunately, no combustion or kiln structures, the most important element in this type of establishment, have been recovered, but the documented data allows for a very plausible approximation.

The recovered material indicates the extensive manufacture of the type of amphorae mentioned earlier, with a smaller production of common ceramics and construction material.

One relevant finding is the large number of marks that were documented, some 60 specimens with 15 different names, and the documentation of two new types: LAETI and EPAPR. To grasp the importance of the marks recovered, it should be borne in mind that up to the time of the Santa Caterina excavation, only around 50 seal specimens in all had been recovered in Barcelona

from that period.

Studying and interpreting these marks has prompted further reflection on the likelihood of their identifying the owner of the wine the vessels contained, rather than the potter, and shed new light on trade practices and Barcino's role as the area's distribution centre.

The excavations on the ground floor and beneath the building erected in 1866 by Fontseré at number 6, Calle Regomir in Barcelona led to the recovery of structures and archaeological levels of a part of the Roman city's Castellum area, aside from other remains dating to medieval and modern times. Although many stratigraphic series come from small-size sondages, it appears that the following may be cautiously ventured:

The entire excavated sector was the object of a construction programme in the last quarter of the first century AD. This included an large apsidal building, the function of which is unknown (perhaps thermal), a crypto-portico and upper floor or floors, the function of which are also unknown (perhaps storehouses), and a space to the northeast of this last space (area A), perhaps tabernae or a transit area, alongside which runs a gutter. Other areas to the west and south of the sector (areas B and C) can be deduced, although the floor plan cannot be restored, as it lies beneath neighbouring buildings. There was no wall in this space at the time, a discriminating factor in terms of the city.

The transit level of the crypto-portico and the gutter were amortised in the first half of the second century AD, probably after a fire. The Castellum was not fortified until the fourth century AD, when the wall and towers (including the round tower) were built, amortising area A, at the same time a monumental double gate, probably related to this space and sketched by Puiggari when the Arch of San Cristóbal was torn down in 1861, was erected.

Finally, the clean water drainpipe that flowed into the apsidal building was amortised around the fourth century AD. No archaeological indications exist at present (they were lost as a result of subsequent construction activity) on the use of this fortified space.

The importance of the recoveries from the excavations at Regomir 6 transcends the strictly local realm, understood as the sector in question's semi-microspatial level, and directly prompts a general re-interpretation of Barcelona's origins, considered as such because of its urban continuity from Roman Barcino times onward.

Although the historical interpretation of the findings will undoubtedly be the product of the recent debate among various researchers, we believe that the significance of the findings is determined by their responses to three basic questions: What, When and Where, i.e., the public and monumental character of the documented remains; their antiquity, which practically dates to the city's founding and development in accordance with the original design; and the site's location on the city's seafont. The site's spatial coordinate itself is a salient aspect and may be related to the possible existence of a port very close to Barcino, subsidiary of the large anchorage zone (Statio) located in Les Sorres (along the coast of Viladecans, Gavà and Castelldefels), a possibility suggested by Izquierdo (1997) and Carreras (1998) several years ago.

This paper presents the archaeological studies and residue analysis conducted at three wine production centres located in the Mediterranean area of the Roman Layetana: the production centre at Plaza del Rei in Barcelona (Barcino), the winemaking installations at two domus on Calle Lladó in Badalona (Baetulo), and the wine production centre at El Morè in San Pol de Mar.

The findings from these multi-disciplinary studies have furnished a wealth of new data on grape processing and wine-making at these sites.

The analysis protocol involved sampling the residues adhering to the coating of the opus signinum of the wine fermentation deposits at each site to recover fill sediment as well as sediment from drainage channels. The methodology employed to study them was a combination of techniques that identified macroscopic, microscopic, chemical and biochemical indicators. The same protocol was followed at all three sites: the combined study by stereo microscope, optical microscopy with phase contrasting (OM) and scanning electron microscopy (SEM) with an incorporated x-ray microanalyser, as well as gas chromatographic and spectrographic analyses, gas spectrometry-mass spectrometry (GS-MS) and infrared Fourier transform spectrometry (IRFT).

Mineralised grape seeds were identified at all three sites and it was shown that these seeds were large, oval or pyramid-shaped and long with individualised ends. Biometric criteria related to the size of the seeds allowed different types of indices to be obtained, such as the relationship between the width and length of the seed, and the relationship between the length of the chalazae and the entire seed, which indicates that the grapes were grown and not wild.

The study also identified tartrates in the fermentation deposits at all three sites, as well as concentrations of yeast, indications of the wine fermentation process. Marine diatomas, possibly due to the addition of saltwater or salt during processing, were found at the Baetulo and Barcino sites. Furthermore, it was possible to document the use of salt or brine as a stabiliser in the wine prepared at the cella vinaria in Barcino. Another element was the discovery of a high con-

centration of phytoliths corresponding to mature fruit sclereids, as well as the presence of compounds characteristic of beeswax and sclereids characteristic of cinnamon sticks.

To summarise, several constants stand out in the findings: a variety of cultivated grape that conforms to established parameters was found at all three sites and tartrates were found in their deposits and channels. Furthermore, an abundance of additives, such as lime and saltwater, was noted in the wine and was present in the residues from the installations at Barcino and Baetulo. It was also seen that Roman wine was aromatised with different types of plants or herbs, such as the cinnamon identified in the cella vinaria of Barcino and fenugreek, an herb found in the residues of drains from the deposits at Baetulo. It was also sweetened by fruits or honey, as in the case of the figs and the fruit and honey preparation found in one of the recipients of the cella vinaria of Barcino.

All these findings underline the great importance that the use of ancillary sciences and new techniques, such as archaeometry and analysing organic residuals, represents for traditional archaeology. Thanks to them, we have been able to verify and expand on aspects which ancient sources have made us familiar with, yet which cannot be verified solely through the application of archaeological methodology.

This article presents an assemblage of ceramic materials uncovered during excavations at the Palau Reial in Barcelona (Plaza del Rei site), which was later to become the seat of the kings of Aragon. The assemblage can be dated to the ninth and tenth centuries, as it contains typically Carolingian shapes and decorations, such as round vessels and decorations incised with a roulette or awl. This type of ceramic has also been found in other parts of Catalunya Vella, especially in the counties of Barcelona and the Ampurias -which largely coincides with the area under Carolingian rule-, and in other European enclaves under Carolingians influence. Nine different shapes with their respective variations have been identified according to the profile or shape of the lip: pots, round vessels, pitchers, pinched spouts, jars, jugs/bottles, lids, pans/platters and pots with rounded handles. One of the most interesting features of the assemblage is a new variation of round vessel that has hitherto been unknown in Catalonia, and the use, although occasional, of glaze coating in the ninth century. A thermoluminescent analysis of 19 artefacts allowed the assemblage to be dated accurately.

Furthermore, the partially or totally spatulated finishes of the pieces is another defining element from the period. As for the pastes, reduced firings predominated, although mixed firing was also used, as were oxidants, pastes that ranged from reddish or orange tones to beige. The decoration consists of incised motifs arranged in bands of varying widths. The lines are generally parallel or wavy, some made with pointed instruments or combs. Awls were used to make decorations out of very simple elements: different-sized dots used in combination with each other to form simple decorative motifs that included horizontal lines, wavy lines, double bands, crosses and zigzags. The use in Barcelona of the roulette in decoration is insignificant. In all cases, very simple moulds measuring 0.2/3 cm wide were rolled over the paste, leaving a line of small triangles and rectangles behind. The operation was repeated several times until bands were formed. A more complex mould that drew a 1-cm-wide band of rhomboid motifs can only be found in two cases.

Archaeometric studies on the ceramics from the Plaza del Rei site show that they were not manufactured abroad, as their components are compatible with a local or regional setting; in some cases, manufacture coincides with the manufacture in the study of the late Roman ceramics recovered from the site. Thus, this indicates a series of small local workshops that adapted to technological changes and new fashions, where production was no doubt influenced by new currents from the Carolingian world. These workshops were not necessarily located solely in the city centre, but were probably located on the outskirts of the city of Barcelona.

A total of 20 fragments -twelve spatulated early medieval ceramics from the ninth and tenth centuries, four non-spatulated ceramics from the same contexts and four ceramics with spatulated finishes from contexts prior to the ninth and tenth centuries- were archaeometrically characterised by X-ray fluorescence (XRF) and X-ray diffraction (XRD). In addition and in accordance with the findings from the XRF and XRD, a selection of thin films from eight fragments was also characterised by polarised optical microscopy (OM). All the ceramics had been discovered during excavations in the zone of Plaça del Rei and its immediate environs. The findings were contrasted with two earlier studies on late sixth and early seventh century Roman materials in Barcelona and Mataró, as well as with other ceramics from excavations in Barcelona which date to the period between late Roman times and the early Middle Ages in this study. A diverse complexity was revealed, as the twenty fragments examined in this study yielded eleven differentiated productions.

Only three of the twenty fragments had the same features as the URCP defined in the study of late Roman materials in Barcelona. A ceramic with a spatulated finish and a spatulated ceramic are part of URCP BC-4.1^a, and their origin is compatible with the Barcelona area. Another ceramic with a spatulated finish is related to URPC BC-2/PL-C, which was identified in Barcelona and Mataró. This is the only calcareous production, as the other materials are not very calcareous and would have been used in common ceramics in late Roman times. Its provenance is also compatible with some point on the Catalan coast.

The remaining fragments have allowed nine new, previously unidentified, late Roman productions to be defined, only two of which are represented by more than one sherd. In the first place, the URCP BC-11 includes four spatulated ceramic fragments. Most of the estimated equivalent firing temperatures (EFT) are low, although one of the fragments clearly reflects firing phases within the 950-1000°C range. The materials they consist of display a dependence on mainly granitic areas, although

there are a few metamorphic fragments. Their provenance is compatible with a regional origin. In the second place, URCP BC-14 includes a sherd with a spatulated finish and five spatulated ceramics. In these cases, the fragments reflect a wide range of EFTs, and estimates range from a low EFT to an EFT of over 1000°, with mainly open or reduced firings. This manufacture shows several lithic fragments from plutonic rocks, yet at the same time, there are also metamorphic fragments of possibly slate and schist or siltstones. This combination of igneous and metamorphic materials is also compatible with several of Barcelona's outlying areas. The seven remaining fragments each represent a differentiated manufacture. Only two of them, although new manufactures, appear to bear a certain relationship with identified materials; one ceramic fragment with a spatulated finish and a composition lying between calcareous and not very calcareous, displays a manufacture with plutonic rock fragments that is related to materials from URCP BC-2PL-C. Like the URCP in question, its provenance is compatible with points on the Catalan coast. Furthermore, one spatulated ceramic fragment is composed of materials related in some way with those from URCP BC-4.1^a. Its manufacture reveals the presence of some granitoid type of rock fragment, which demonstrates its compatibility with a regional origin. The five remaining fragments represent five different manufactures that are unrelated to each other or to the other URCPs defined. These five fragments correspond to one spatulated ceramic and four early medieval, non-spatulated ceramics from the ninth and tenth centuries. The existing petrographic data on the spatulated ceramic shows the presence of plutonic lithic fragments, perhaps in addition to other materials. In any case, their compatibility with the zones of the Barcelona plain cannot be dismissed. As for the non-spatulated ceramics, petrographic data exists on only one fragment. Igneous, metamorphic and sedimentary lithic fragments were identified in this case, which makes attributing its provenance difficult, although it may correspond to a zone on the Barcelona plain.

These findings appear to corroborate that the manufacturing centres active in late Roman times ceased to function in the Carolingian period, or at least changed the way they secured prime materials and their manufacturing technology. Despite this change in workshops in Carolingian times, the image lingers of a fragmented ceramics production most probably related to small workshops in areas lying close to Barcelona, as possible compatibility with a local and/or regional provenance has been observed in all the cases studied. Although the sample studied contains very few fragments, it has left no doubt that no single manufacturer of spatulated ceramics provisioned the markets of Barcelona in Carolingian times. The image arising from this preliminary study of Carolingian materials is of a ceramics production that employed similar surface treatments, which we identify as spatulated, taking place at a number of workshops on the outskirts of the city. At a minimum, URCP BC-11 and BC-13 allow us to venture that some workshops very probably specialised in the production of a particular model that would not be the monopoly of any single workshop.