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Updating knowledge: architecture, use and chronology of the Late Bronze Age stepped monuments in Mallorca*

Actualizando el conocimiento: arquitectura, uso y cronología de los monumentos escalonados en Mallorca

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ABSTRACT

The ongoing excavation of a stepped monument at the Mestre Ramon settlement in the island of Mallorca provided new chronological and architectural information motivating an analytical review of known Mallorcan stepped monuments. The combination of the already existing chronological information and the new radiocarbon dates for Mestre Ramon place the construction of stepped monuments within the Prototalaiotic period (*ca.* 1100/1000-850 cal BCE). This chronology constitutes the basis for an analysis of the architectural characteristics of the monuments and of their relationships with other structures. This study offers a preliminary, but detailed, characterisation of the material features of stepped monuments and their social dimension within the process of social transformation that occurred during the Late Bronze Age in Mallorca.

RESUMEN

*La excavación en curso de un monumento escalonado en el yacimiento de Mestre Ramon en la isla de Mallorca ha aportado nueva información cronológica y arquitectónica que ha motivado una revisión analítica de las estructuras conocidas como monumentos escalonados en Mallorca. La combinación de la información cronológica existente con nuevas dataciones radiocarbónicas relacionadas con el yacimiento de Mestre Ramon ha permitido situar el momento de construcción de los monumentos escalonados en el período Prototalayótico (*ca. *1100/1000-850 cal a.n.e.). Este encuadre cronológico ha sido la base del análisis de las características arquitectónicas de dichos monumentos y su relación con otras estructuras. El trabajo que se presenta ofrece una caracterización preliminar, pero detallada, de las peculiaridades materiales de los monumentos escalonados y de su dimensión social dentro de los procesos de transformación social que se desarrollaron durante el final de la Edad de Bronce en Mallorca.*

Key words: Balearic Bronze Age; Monumentality; Stepped structures; Ritual practices; Chronology.

Palabras clave: *Edad de Bronce Balear; Monumentalidad; Estructuras escalonadas; Prácticas rituales; Cronología.*

1. INTRODUCTION

Monumental structures, such as naviforms, talaiots and settlement walls, are the most emblematic material expressions of the late prehistory of the island of Mallorca (Fig. 1)[1]. These monuments are still a part of the

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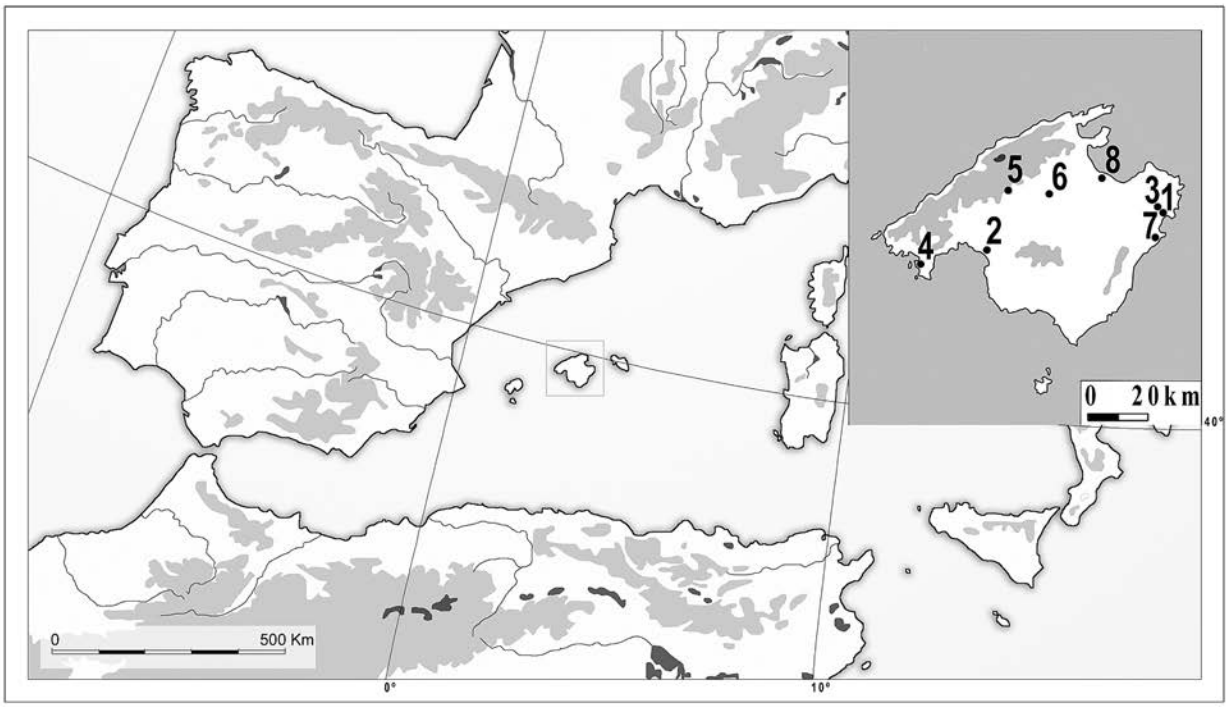
[1] Since there is still not unanimous agreement of the different research groups about the periodization of the prehistory of Mallorca, it seems appropriate to clarify that in this article we use the periodization proposed by the research team of the University Autonomous of Barcelona (Lull *et al*. 1999, 2008; Micó 2005), although the period that starts in the VI century cal BC (designated by them as Post-talaiotic) is denoted here as Balearic, and its conclusion is not pinpointed to 123 BC —the official date of the Roman Conquest of the Balearic Islands— but rather to the change of era. The periods used will be: Naviform *ca.* 1600-1100/1000 cal BCE, Prototalaiotic *ca.* 1100/1000-850 cal BCE, Talaiotic *ca.* 850-550 cal BCE and Balearic *ca.* 550 cal BCE-1 arch AD.



Period	Chronology	Monumental architecture
Naviform	*ca.* 1600–1100/1000 cal BCE	Naviforms
Prototalaiotic	*ca.* 1100/1000–850 cal BCE	Naviforms and first tower-like monuments
Talaiotic	*ca.* 850–550 cal BCE	Talaiots
Balearic	*ca.* 550 cal BCE–1 arch AD	Settlement walls

Fig. 1. Above: Mallorca within the western Mediterranean and location of studied Mallorcan stepped monuments: Mestre Ramon (1), Son Oms (2), Pula (3), Son Ferrer (4), Can Sec I and Can Sec II (5), Son Mas des Potecari (6), Sa Gruta (7), and Es Figueral de Son Real (8). Right: Periodization of the late prehistory of Mallorca.

landscape of the island today, being the object of many publications, and they structure the chrono-cultural sequence of the prehistory of Mallorca. The talaiots are the most numerous of these monuments, and in the social imaginary, they represent the prehistory and the archaeology of the island. Talaiots are tower-like buildings with circular or rectangular floor plans. They have walls with a tripartite structure (including an external and an internal wall separated by a filling), an access passage, and an internal chamber, which usually has a column in the central part that supports the roof.

The excavation of the Son Oms complex presented a new category of monument for the prehistory of Mallorca: the stepped monument or tumulus (Rosselló-Bordoy 1963a, 1965b). Very soon, many structures were associated with the Son Oms monument since these also present a stepped profile, for example, Son Mas des Potecari, Sa Gruta, Sa Sínia Nova (Rosselló-Bordoy 1963b: 66) and subsequently Pula (Rosselló-Bordoy 1992: 424). The stepped profile was the basic feature that distinguishes these structures from the talaiots of Mallorca. However, there are further characteristics that also differ. For instance, these monuments are solid structures that do not have a chamber or a column and were probably not roofed. Nevertheless, these stepped monuments were still classified as talaiots, while specifying their particularities (Rosselló-Bordoy 1965a, 1979).

Aramburu-Zabala (1998) established a typology for the monuments of the late prehistory of Mallorca in which the structures that have a stepped profile were distinguished from the "classical talaiots". 117 monuments with a stepped profile were inventoried and classified according to three types: the stepped talaiots (*e.g.,* Pula), the stepped tumulus (*e.g.,* Son Oms), and the stepped platforms (*e.g.,* Puig des Diners). According to this classification, the stepped talaiots have a circular floor plan, while the stepped tumulus have a circular or oval floor plan and they culminate in a rectangular structure;

the stepped platforms are stepped tumuli placed on an elevated area on a border of a cliff, so that they do not present a symmetric and "complete" floor plan.

Since 2000, the excavation of four stepped monuments (Son Ferrer, Can Sec I, Can Sec II, and Mestre Ramon) has amplified evidence for these structures. Their systematic excavation applied more accurate scientific methods, provided new architectonical, chronological, and contextual information, and made comparisons between stepped monuments possible. Thus, the study of these four structures, together with the ones excavated earlier (such as Son Oms and Pula), enables us to undertake a preliminary definition of the material characteristics of the stepped monuments and their social significance in the prehistory of Mallorca.

This article puts special emphasis on the Mestre Ramon monument; unpublished information is presented, since it is the ongoing excavations at that site that motivated the writing of this state of the art analysis of the stepped structures in Mallorca.

2. STUDIED STEPPED MONUMENTS

2.1. The Mestre Ramon monument

The Mestre Ramon complex was classified by Aramburu-Zabala (1998: 249) as a talaiotic settlement with a central tower-like monument (referred to by the author as Sant Jordi). The cleaning campaign of 2012, carried out by A. Puig —which constituted the beginning of the ongoing research project— focused on a section of the settlement wall of the Balearic period and on the tower-like monument. The latter was identified and described as a stepped monument (Hernández-Gasch *et al*. 2015). During following campaigns, two more structures were identified: enclosure 1 to the south of the stepped monument and enclosure 2 to the southeast. In other parts of the settlement some stone alignments and structures were recognized, but further intervention is required to investigate their architecture. Of all these structures, only the stepped monument is described in detail in this article with special attention to the radiocarbon dates that are published for the first time. A general description of the settlement and the research project, developed together with the University of Washington, was published recently (Hernández-Gasch *et al*. 2015).

The stepped monument at Mestre Ramon is located on the top of a hill, *ca.* 40 m above sea level and it is composed of two structures: a central platform and a surrounding step placed at a lower level (Figs. 2 and 3). The step is not a solid structure over which the platform is placed, but a concentric construction attached to the platform. Each structure consists of a bipartite wall, including a perimeter wall with larger

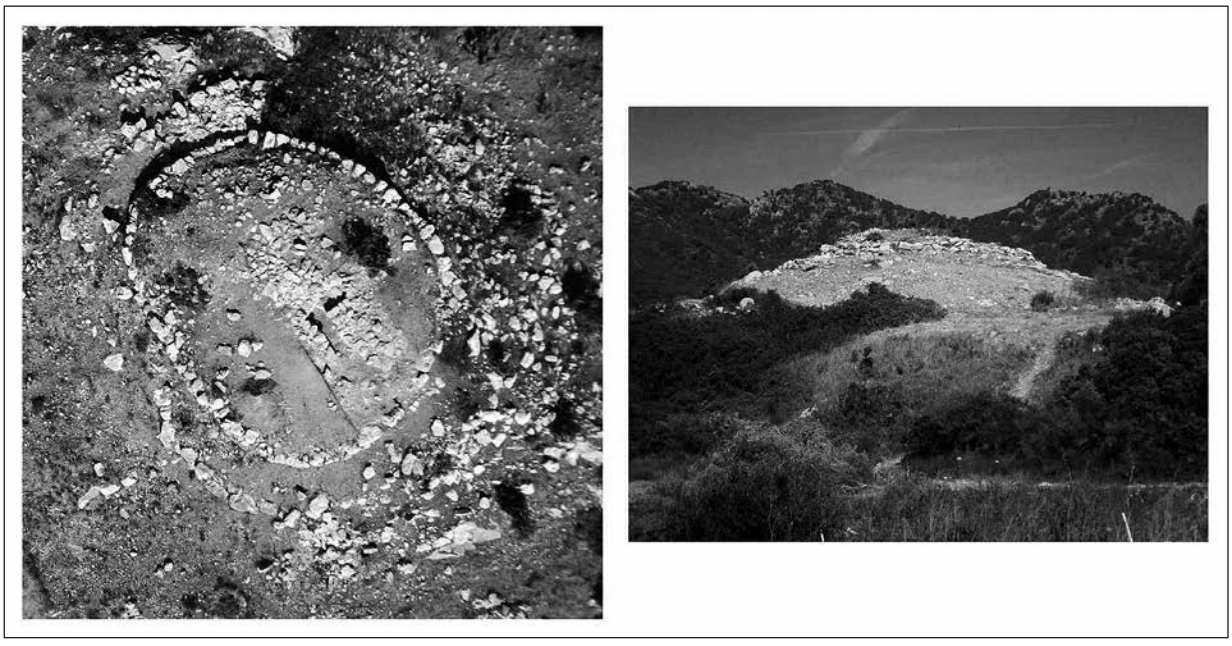


Fig. 2. Aerial (left) and side (right) photos of the Mestre Ramon stepped monument. The images were taken in 2014 by members of the Project team lead by J. Hernández-Gasch and A. Puig (Projecte d'Intervenció Arqueològica al Jaciment Arqueològic de Mestre Ramon, Son Servera. Anys 2013-2017).

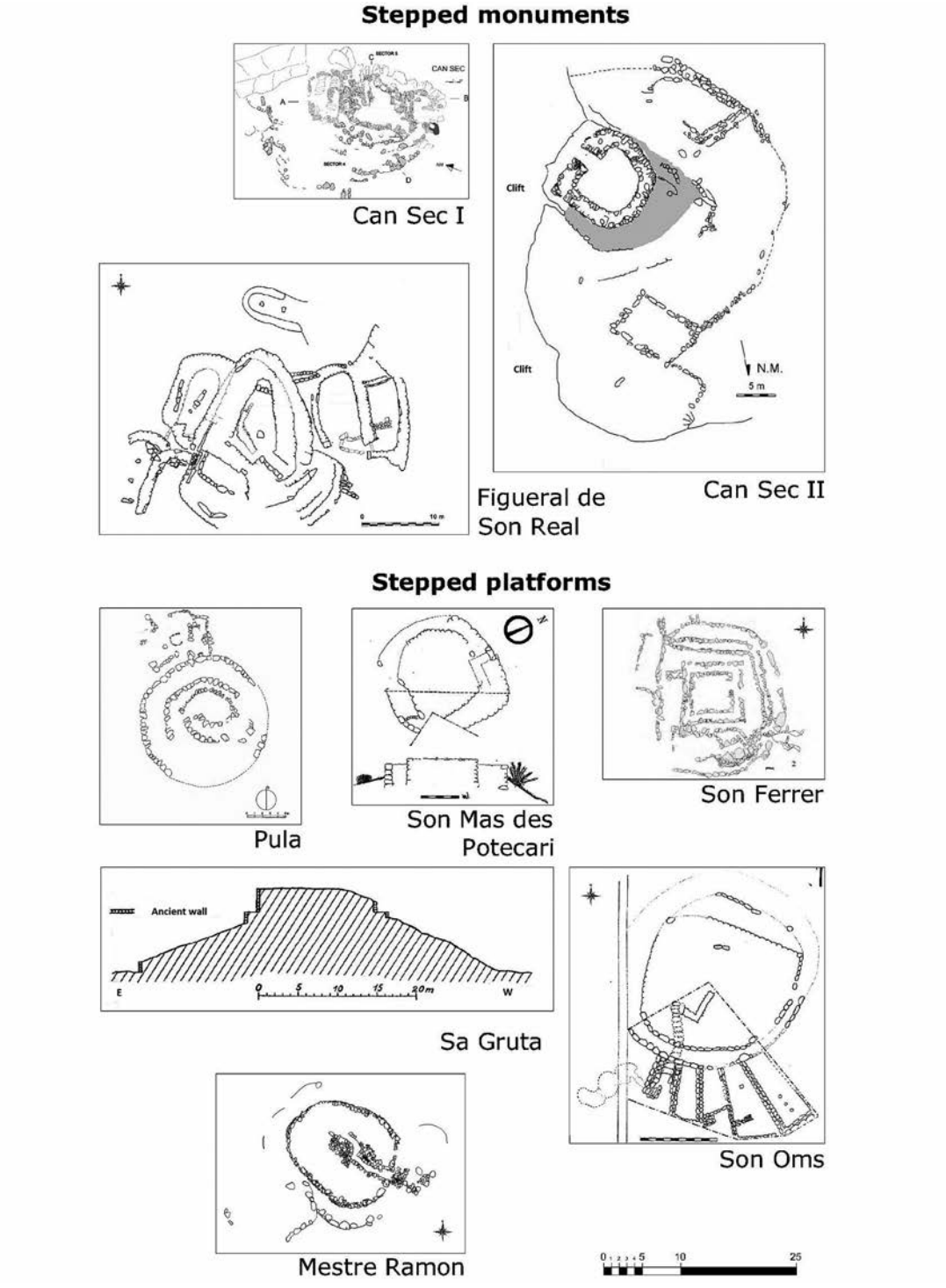


Fig. 3. Floor plans and cross sections of the analysed stepped monuments: Can Sec I (Aramburu-Zabala 2013: fig. 1.10), Can Sec II (Aramburu-Zabala 2016: fig. 1.5), Es Figueral de Son Real (Rosselló-Bordoy and Camps 1972: fig. 2), Pula (Rosselló-Bordoy 1992: tab. 1), Son Mas des Potecari (Rosselló-Bordoy 1963b: fig. 1), Son Ferrer (Calvo *et al.* 2005: fig. 2), Sa Gruta (Mayr 1914: fig. 5), Son Oms (Rosselló-Bordoy 1965b: fig. 3), and Mestre Ramon. Considering the existing information, the Pula monument is classified as a stepped monument; however, the presence of a possible raised chamber would differentiate it from other stepped platforms.

stone blocks and a filling with smaller ones, so that the filling of the step is attached to the perimeter wall of the platform.

The platform presents an approximate circular floor plan and has an area measuring 149.3 m^2. The wall stands around the full circle: at the south section it preserves up to five rows of stone blocks (1.2 m height), while in other sections only the first row is distinguishable. The wall that constitutes the step that surrounds the platform has a theoretical perimeter of 62 m, since it is not preserved at the northeast sector. The width of the step fluctuates between 2.1 and 3.2 m and the height reaches 1 m. Thus, the monument as a whole has an area of 286.4 m^2 (Hernández-Gasch *et al*. 2015).

In 2013, the first systematic excavations at the Mestre Ramon settlement were undertaken. The last discovery is a passage, still being investigated, which represents the access to the upper part of the platform from the bottom of the step. The passage is composed of basically three sections, showing a zig-zag floor plan: a straight section developing from southeast to northwest; a connected section leading in a right angle from southwest to northeast, and finally a last section in the summit of the platform that once again goes from southeast to northwest and shows a curve at the end towards southwest. The passage has a longitudinal section of 13.7 m and an average width of 0.7 m. The entrance to the passage is one meter below the ground level of the platform and there is a huge step (*ca.* 1 m) that connects the first and the second section partially bridging the inclination. We do not know whether the passage was covered; no stone slabs that could have covered the passage were found. However, the lack of stone slabs could be related to the partial destruction of the passage, when the stone blocks were removed and the corridor was used as a landfill. This event occurred during *ca.* 2nd century BCE, established from the dating of the material found in the landfill level (a T.8.1.3.2. Punic-Ebusitan amphora and a Lamboglia 31 Campanian A bowl).

The excavation of the entrance at the southeast end of the passage discovered a hall. It is wider than the rest of the passage (1.2 m) and it is built partially with a different type of rock (travertine instead of limestone). Its excavation showed evidence of two successive access systems into the passage of the monument corresponding each to an occupation stage: an older staircase access with four descending steps which were covered in more recent times by two different stone pavements.

During the first excavation campaigns, a test pit was dug (2.3 by 1.5 m) in the filling of the step at the northern sector of the monument (Fig. 4). The excavation enabled the documentation of remains of different activities related to the construction and probably also with the use and the abandonment of the monument. The uppermost unit of the stratigraphic sequence is Stratigraphic Unit [SU] 1, which corresponds to the superficial sediment, naturally deposited. This covered SU 2, a layer that extended over the entire area of the test pit. SU 2 was composed of stones of different dimensions, and is therefore interpreted as the collapse level of the platform. In fact, in this area, the external wall of the platform (SU 8) lost some rows of stone blocks. This loss undoubtedly provoked the collapse of

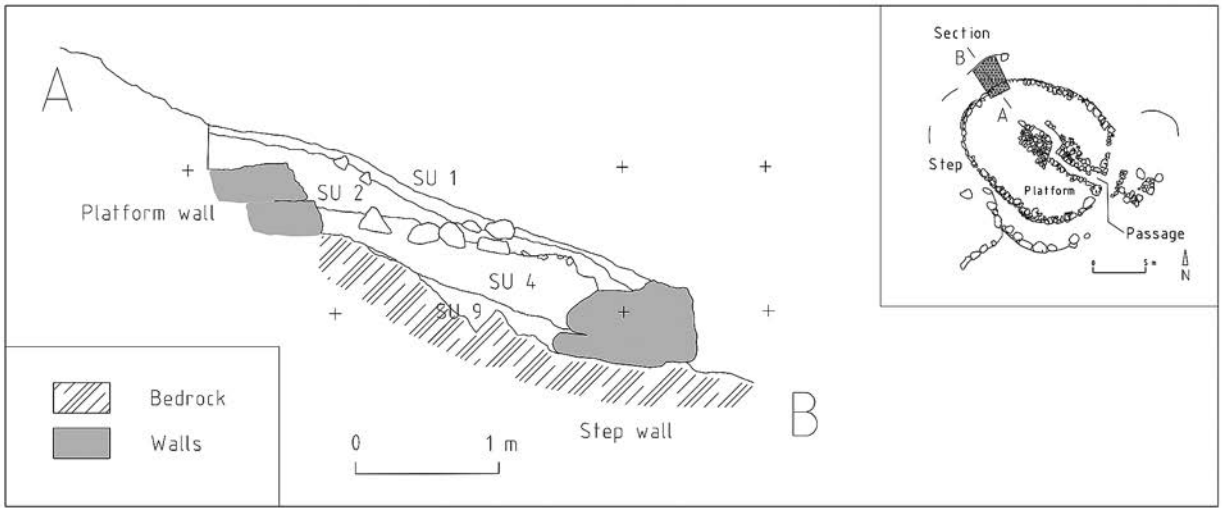


Fig. 4. Cross section of test pit dug in the filling of the step at the northern sector of the Mestre Ramon stepped monument showing the stratigraphic units where the radiocarbon dated bone samples were collected (SU 4 and SU 9).

part of the filling and of the use level of the platform that formed SU 2. There were faunal remains in SU 2 0.5 m from the external wall of the platform (SU 8). These faunal remains are probably related with the secondary deposition of the use level of the platform. Ceramics are scant, as in the other layers. However, within SU 2 a ceramic shard the shape of which exhibits parallels with a Late Naviform and Prototalaiotic ceramics (Fig. 5). It is a very open hemispheric bowl with a handle and corresponds to variation A of type 7 (Pons 1999: 108, fig. 26), dated to the Talaiotic I of Pons (1999: 102) or the Late Naviform (1200-1050 BCE) of Lull *et al.* (1999: 69, fig. 1.1). The ceramic model used to define this shape comes from the southern naviform of Son Oms (Lull *et al.* 1999: 69, fig. 1.1; Pons 1999: 165, fig. 69).

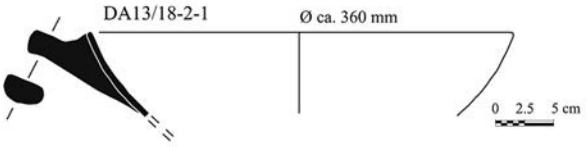


Fig. 5. Drawing of the ceramic sherd collected within the collapse level from the platform of the monument of Mestre Ramon (SU 2). Its shape has parallels within the Late Naviform and Prototalaiotic pottery.

The base of SU 2 was difficult to determine due to the characteristics of this layer and of the layer below it, which was interpreted as the filling of the wall of the step (SU 4). Both layers were composed of the same sediment type and of stone blocks, larger in SU 2 than in SU 4. SU 4 rested only partially on a thin (5 cm) layer (SU 3) that lies on the bedrock surfacing in the southwest corner of the test pit. It has to be noted that SU 3 presents the same sediment type as SU 4. However, SU 4 showed flat stones that rested over SU 3. Above the flat stones, medium-sized stone blocks were placed and were well fitted. Thus, both SU 3 and SU 4 are interpreted as construction layers, and SU 4 clearly represents the filling of the step.

Below SU 4, a last level was excavated (SU 9) that rested directly on the bedrock or filled the cracks in the rock, in some cases with stone blocks in order to straighten the level. This layer reached a depth of over 0.20 m. The part of SU 9 that covered the bedrock was a very thin layer that sometimes was not preserved since it was damaged by excavating SU 4. While SU 4 was clearly attached to the external wall of the platform (SU 8), it seems that SU 9 was partially below this wall.

Abundant faunal remains were found within the excavated layers of the step. Five bone samples in SU 4 and in SU 9 were selected for radiocarbon dating with the aim of providing a *terminus post quem* for the construction of the monument. Two animal bone samples were analysed (C6 and C13), both corresponding to *Ovis* and/or *Capra.* Sample C6 is a humerus fragment from SU 4 and dates to between 1117 and 918 cal BCE (2σ confidence level). Sample C13 is a cervical vertebra from SU 9 and dates to between 1052 and 898 cal BCE (2σ confidence level) (Tab. 1). Given that the two samples represent the same archaeological fact (the construction of the step of the platform) and that the results of the dates overlap, these can be combined in order to narrow the chronological interval. The function of Oxcal *14C date combination* (Ramsey 2001) was applied and it results in an interval within 2σ of 1048 and 919 cal BCE.

The analysis of the faunal remains of SU 2, 4 and 9 indicates that 78.9% of the bones correspond to *Ovis* and/or *Capra*, and that individuals between 2 and 6 months old are overrepresented (Hernández-Gasch *et al.* 2015: figs. 12, 13). The bones presented cut marks and both the animal parts related to consumption (forelimbs and hind limbs) and those related to the first stage of the butchering process (hooves and heads) were identified in the bone register. This evidence suggests that the killing of the animal was carried out *in situ*. Since these faunal remains are not associated with the domestic sphere (the site does not show so far any signs of having habitations during that period), they may be the result of ritual sacrifice practices. The sacrifice of animals, mostly of young age, in sanctuaries and at worship places is a recurrent practice in the societies of the prehistory of the Balearic Islands (Hernández-Gasch and Ramis 2010).

Lab code	14C years (BP)	Method	Sample	Context
Poz-65920	2850 ± 35	AMS	Animal bone	SU 4. Filling of the lower wall of the stepped monument
Poz-65921	2815 ± 30	AMS	Animal bone	SU 9. Filling of the lower wall of the stepped monument

Tab. 1. Radiocarbon dates and supporting information on the construction moment of the Mestre Ramon stepped monument.

That the faunal remains come not only from the layers related to the use of the stepped platform (SU 2), but also from the construction layers (SU 4 and 9), could be the result of ritual sacrifices carried out during the construction process or even of prior ritual episodes on a hilltop that was already considered a sacred place.

2.2. The Son Oms monument

The Son Oms monument and the surrounding structures were excavated, dismantled and one of them moved and restored because of the construction of the second runway of the airport of Palma. Consequently, the data related to this settlement are exclusively bibliographic and it is not possible to corroborate them *de visu*.

According to the measurements and the floor plans published by Rosselló-Bordoy (1963a: 10-11, fig. 1, 1965b: fig. 2, 1984: fig. 1) and Rosselló-Bordoy and Camps (1973: fig. 1), the stepped monument of Son Oms had a maximum width of 24.5 m and a minimum of 19.5 m, and it was 5 m high. It was composed basically of two concentric walls of oval floor plan placed in different levels. There was also a straight wall in the upper part of the structure.

The relationship of the straight wall with the concentric walls is not clear since it varies depending on the publication. In the first two published floor plans, the straight wall transversely crosses the upper concentric wall (Rosselló-Bordoy 1963a: fig. 1, 1965b: fig. 3), whereas in the floor plans published years later (Rosselló-Bordoy and Camps 1973: fig. 1; Rosselló-Bordoy 1984: fig. 1), this wall is shown as part of the upper concentric wall, which connects with the lower one, forming a monument with a spiral-shaped floor plan.

Rosselló-Bordoy (1963a: 14) indicates that the different concentric walls of the structure do not rest one over the other, as has also been observed in Mestre Ramon, but rather all the walls rest on the bed rock. Thus, Rosselló-Bordoy distinguishes between the upper concentric wall, the central nucleus of the monument, and the lower concentric wall, the buttress of the monument. The walls also had a bipartite structure, formed by an external wall and a filling.

At the northeast part of the monument, a covered passage was detected with a zig-zag floor plan, very similar to the one recently discovered in Mestre Ramon. This crosses the monument from the base to the top part, ending with an uncovered staircase (Rosselló-Bordoy 1963a: 11, 1965b: 12).

The Son Oms monument was located within an architectural ensemble named Pleta de Son Vidal Nou, constituted by different architectural complexes corresponding to different periods. The archaeologists that excavated the site distinguished five architectural complexes and several burial contexts in an area of *ca.* 60,000 m^2. These include a rectangular structure defined as a sanctuary (monument A), a circular talaiot with attached rooms (monument B), the stepped monument (monument C), a labyrinthine structure (monument D), and a building referred to as a hypostyle hall (monument E).

The stepped monument was erected above a double naviform. A charcoal sample located in the fireplace of the naviform was dated (QL-20: 1282-932 cal BCE [95.4%]) and published for the first time by Rosselló-Bordoy (1979: 191). The radiocarbon result dates the final use of the fireplace. Given that the construction of the monument implies the abandonment of the naviform, the date establishes a *terminus post quem* for the construction of the monument. In addition, the Son Oms monument had several attached radial structures of unknown chronology. However, they have architectural similarities with the talaiotic radial structures attached to circular talaiots, for example, Ses Talaies de Can Jordi.

A burial context was identified in an artificial cave located next to the stepped monument. The architectonical characteristics of the cave are similar to those of the Late Bronze Age caves of Mallorca (Rosselló-Bordoy 1963: 28-30)[2].

Scattered burials were also identified in the surroundings and within the stepped monument, the labyrinthine floor plan building and the hypostyle hall. All were inhumations. Grave goods include a Campanian B bowl with a handle (form Pasquinucci 127) with a chronology that spans from 200 to 40/20 BCE; a biconic jug of Iberian production from the Catalan coast, similar to forms 4 and 5 of Aranegui, dated between 200/150 and 150/100 BCE respectively; and a fusiform unguent bottle of "Quadrado B3" type dated between 200 and 125 BCE. Thus, the chronology of the burial goods suggests that this funerary space probably corresponds to the 2nd century BCE.

The burial contexts were scattered among the ruins of monuments C, D and E, so that the inhumations were carried out when these structures were already abandoned (Plantalamor and Cantarellas 1973: 307). Thus, the scattered burial contexts of Son Oms are conform to the 2nd century BCE practice of interment in abandoned structures, observed in other settlements of the island such as Son Fornés, Ses Païsses, and Na Galera.

[2] For the typological classification of the Late Bronze Age caves in Mallorca see also Coll, J. 1989: *La evolución del ritual funerario en la Cultura Talayótica.* Unpublished dissertation. Balearic Islands University.

The spatial connexion of the Son Oms stepped monument with the burial contexts, and especially with the artificial burial cave, led to the definition of this structure as a tumulus (Rosselló-Bordoy 1963a, 1979). This "label" became established in the literature, being the term used to name most of the stepped structures (Rosselló-Bordoy 1992: 424; Aramburu-Zabala 1998). We define a tumulus as a convex sepulchral monument: based on the available data, Son Oms did not contain burials and, consequently, cannot be considered a tumulus, functionally or conceptually.

2.3. The Pula monument

The Pula monument is composed of a) an outer and lower circular concentric wall, measuring 16 m in diameter, and b) an inner and upper wall with a spiral-shaped floor plan. The entire structure reaches 4 m in height. The structure of each wall is based on an external wall and a filling. According to Rosselló-Bordoy (1992: 424), the central part of the structure, enclosed by the inner wall, is a raised chamber. This arrangement is similar to other old tower-like monuments, for example, to the one in Ses Païsses and to the Minorcan solid talaiots, which are also composed of concentric walls. In some cases a raised chamber has been also noted (Plantalamor 1991: 264).

The excavation of the filling of the outer wall revealed the structure of the monument. In the published cross-section, it can be observed that both the outer and the inner walls rest on the bed rock (Rosselló-Bordoy 1992: 433, tab. 2), as also found at the Son Oms and Mestre Ramon monuments.

Several structures are attached to the Pula monument. One of them was defined as a porch (located at the west sector of the complex). The oldest and most controversial radiocarbon date of the complex (P-1404/P-1438: 1682-1421 cal BCE [95.4%]) came from this porch. The problem lies in the context of the dated sample. It was gathered in a stratigraphic level of landfill that rested on the bed rock, prior to the use of the porch. Such landfill could include material of different chronologies. However, this landfill was created when the stepped monument was already built, since it was attached to the monument (Rosselló-Bordoy 1992: 433, tab. 2). Therefore, its dating indicates a *terminus ante quem* for the construction of the monument.

On the other hand, the more recent radiocarbon date is associated with the supposed collapse level of the chamber of the monument (BM-1998R: 1442-970 cal BCE [93.8%]). This could date the abandonment or the last use of the chamber. However, since it is a charcoal sample, some authors have argued that this sample could correspond to a wooden beam of the roof and would date the moment of the structure's construction (Micó 2005: 244; Lull *et al.* 2008: 40). The possibility also has to be considered that the collapsed level is, in fact, part of the filling of the inner wall, so that there was no chamber. In this case, the charcoal sample would also date the monument's construction. Either way, the wide standard deviation of this date of 100 years only allows the affirmation that the sample dates prior to 970 cal BCE.

It has to be noted that a circular talaiot, unexcavated and covered by vegetation, is located 20 m from the stepped monument.

2.4. The Son Ferrer monument

The monument of Son Ferrer is composed of five concentric walls, three of them merging into one wall in the western sector. The lower wall has a more or less circular floor plan, the following two walls have irregular floor plans, and the two upper walls have a clear rectangular floor plan. The northwest/southeast axis of the monument is 20 m long and the southwest/northeast axis is 17 m long. The walls are also composed of an external wall and a filling and each wall rests on the fossil dune over which the monument was built (Calvo *et al*. 2005: 488-489). The monument is 3.6 m high, the difference between the central and the upper part of the structure and the top of the fossil dune. In the southeast sector of the monument, several stone blocks are placed horizontally and in different levels. This area was interpreted as a ramp that leads to the central and upper part of the structure (Calvo *et al.* 2005: 490).

The excavations carried out at the monument of Son Ferrer by the University of the Balearic Islands between 2000 and 2006 revealed a complex archaeological ensemble with a chronology that can be divided in four phases.

The first phase corresponds to a hypogeum excavated to the rock, which is located just below the monument. The oldest materials found inside indicate that this structure was used between *ca.* 1800 and 1450 BCE (García *et al*. 2015: 187). This hypogeum is related to two artificial burial caves located in a surrounding area within a radius of 70 m (the caves of Can Vairet). According to Calvo *et al*. (2006: 61-62), the three structures form a single necropolis.

The second phase corresponds to a first stepped monument that has been described as a structure built using the cyclopean technique and with a stepped appearance. The radiocarbon date of six samples from SU 17, 67 and 77 (see Tab. 2) establishes the construction and the use of the monument between *ca.* 1100 and 800 cal BCE (García *et al*. 2015: 188). At the south end

Settlement	Code	14C years (BP)	Cal BC 1σ	Cal BC 2σ	Sample	Context	Interpretation
Es Figueral de Son Real	Y-1856	2960 ± 80	1282 (68.2%) 1048	1402 (94.9%) 976 952 (0.5%) 946	Charcoal	Level III. Above the use level and under the collapse level of the chamber of the central monument	Construction/ Use of the central monument
Es Figueral de Son Real	Y-1857	2920 ± 80	1228 (68.2%) 1004	1382 (3.2%) 1342 1308 (92.2%) 910	Charcoal	Landfill between the wall that remodels the chamber and the internal wall of the chamber of the central monument	Construction/ Use of the central monument
Son Oms	QL-20	2920 ± 60	1209 (68.2%) 1030	1282 (95.4%) 932	Charcoal	Fire place in the naviforme on which the stepped monument was built	It indicates an earlier point in time, probably no too distant, to the construction of the stepped monument
Pula	P-1404	3260 ± 60	1614 (62.3%) 1496 1474 (5.9%) 1460	1682 (0.6%) 1675 1666 (94.8%) 1421	Ash layer	Landfill attached to the stepped monument	Controversial context
Pula	BM-1998R	2990 ± 100	1386 (10.3%) 1340 1317 (54.4%) 1107 1101 (3.0%) 1086 1062 (0.6%) 1060	1442 (93.8%) 970 962 (1.6%) 934	Charcoal	Filling of the upper wall of the stepped monument	Construction of the stepped monument
Son Ferrer	KIA-30648	2840 ± 30	1042 (52.1%) 971 960 (16.1%) 936	1108 (1.5%) 1099 1090 (93.9%) 916	Animal bone	SU 17. Landfill between the walls of the first stepped monument	Use of the first stepped monument
Son Ferrer	KIA-25585	2835 ± 25	1018 (46.1%) 970 961 (22.1%) 934	1071 (0.5%) 1066 1056 (94.9%) 912	Animal bone	SU 17. Landfill between the walls of the first stepped monument	Use of the first stepped monument
Son Ferrer	KIA-30652	2800 ± 30	996 (68.2%) 915	1026 (91.4%) 891 878 (4.0%) 848	Animal bone	SU 17. Landfill between the walls of the first stepped monument	Use of the first stepped monument
Son Ferrer	KIA-25202	2855 ± 30	1056 (60.0%) 973 958 (8.2%) 940	1114 (95.4%) 928	Animal bone	SU 67. Filling of a wall of the first stepped monument	Construction of the first stepped monument
Son Ferrer	KIA-25200	2800 ± 25	992 (2.0%) 990 980 (66.2%) 916	1016 (95.0%) 894 862 (0.4%) 858	Animal bone	SU 77. Filling of a wall of the first stepped monument	Construction of the first stepped monument
Son Ferrer	KIA-25199	2765 ± 25	969 (4.4%) 962 933 (41.7%) 892 878 (22.1%) 846	978 (95.4%) 836	Animal bone	SU 77. Filling of a wall of the first stepped monument	Construction of the first stepped monument
Son Ferrer	KIA-25198	2455 ± 30	749 (26.8%) 684 667 (10.5%) 640 588 (2.9%) 578 566 (28.0%) 484	756 (28.0%) 679 671 (17.8%) 606 598 (49.6%) 413	Animal bone	SU 65. Filling of a wall of the second stepped monument	Construction of the second stepped monument

Tab. 2 [1]. Radiocarbon dates and supporting information on the construction and use moment of the studied stepped monuments. Radiocarbon dates were calibrated using the software OxCal 4.2 (Ramsey 2009) and the calibration curve IntCal 13 (Reimer *et al.* 2013).

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Settlement	Code	14C years (BP)	Cal BC 1σ	Cal BC 2σ	Sample	Context	Interpretation
Son Ferrer	KIA-25205	2710 ± 30	894 (31.4%) 864 857 (36.8%) 824	910 (95.4%) 808	Animal bone	SU 41. Filling of a wall of the second stepped monument	Old material that remained during the construction of the second stepped monument
Son Ferrer	KIA-25207	2710 ± 35	895 (68.2%) 823	918 (95.4%) 806	Animal bone	SU 98. Filling of a wall of the second stepped monument	Old material that remained during the construction of the second stepped monument
Son Ferrer	KIA-25255	2515 ± 30	775 (15.4%) 747 685 (10.4%) 666 642 (42.4%) 555	792 (26.6%) 727 719 (1.8%) 704 695 (66.9%) 541	Animal bone	SU 27. Filling of a wall of the second stepped monument	Construction of the second stepped monument
Son Ferrer	KIA-25210	2485 ± 25	756 (11.0%) 732 690 (5.0%) 679 671 (4.7%) 660 650 (47.4%) 544	771 (95.4%) 516	Animal bone	SU 41. Filling of a wall of the second stepped monument	Construction of the second stepped monument
Son Ferrer	KIA-25203	2460 ± 30	750 (27.0%) 683 668 (11.7%) 637 623 (2.0%) 616 591 (26.9%) 509 497 (0.7%) 494	758 (29.5%) 678 672 (65.9%) 428	Animal bone	SU 65. Filling of a wall of the second stepped monument	Construction of the second stepped monument
Can Sec I	KIA-43329	2840 ± 30	1042 (52.1%) 971 960 (16.1%) 936	1108 (1.5%) 1099 1090 (93.9%) 916	Animal bone	SU 9. Clay level deposited by human action in the enclosure 1	Use of the stepped monument
Can Sec I	KIA-43328	2560 ± 30	800 (61.7%) 756 679 (4.3%) 671 604 (2.3%) 598	805 (66.3%) 746 686 (7.5%) 666 643 (21.6%) 553	Animal bone	SU 9. Use level above the pavement of the enclosure 1	Use of the stepped monument
Can Sec I	KIA-45776	2835 ± 25	1018 (46.1%) 970 961 (22.1%) 934	1071 (0.5%) 1066 1056 (94.9%) 912	Animal bone	SU 11. Use level of the enclosure 3	Use of the stepped monument
Can Sec II	KIA-47577	2795 ± 30	994 (5.4%) 986 980 (62.8%) 908	1016 (89.4%) 888 881 (6.0%) 846	Animal bone	SU 4. Use level of the stepped monument	Use of the stepped monument
Mestre Ramon	Poz-65920	2850 ± 35	1054 (55.3%) 970 960 (12.9%) 935	1117 (95.4%) 918BC	Animal bone	SU 4. Filling of the lower wall of the stepped monument	Construction of the stepped monument
Mestre Ramon	Poz-65921	2815 ± 30	1002 (68.2%) 928	1052 (95.4%) 898	Animal bone	SU 9. Filling of the lower wall of the stepped monument	Construction of the stepped monument

Tab. 2 [2]. Radiocarbon dates and supporting information on the construction and use moment of the studied stepped monuments. Radiocarbon dates were calibrated using the software OxCal 4.2 (Ramsey 2009) and the calibration curve IntCal 13 (Reimer *et al.* 2013).

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of the monument, SU 67 and SU 77 exposed structural remains from this original monument (the filling of the wall). SU 17 is in a small and unroofed area, where a large number of very fragmented faunal remains were found. Therefore, this space has been defined as a landfill. Thus, SU 17 represents a moment during the use of the original monument and not a construction moment.

If we assume that the radiocarbon dates corresponding to SU 17 represent the same archaeological event, namely the use of the monument, and that those corresponding to SU 67 and 77 date the construction of the monument, then the chronological interval of these two events can be constrained. In order to combine the radiocarbon dates, the Oxcal function "14C date combination" (Ramsey 2001) has been used, as it has been applied in the case of Mestre Ramon. The obtained interval from the dated samples corresponding to SU 17 is between 1025 and 918 cal BCE in 2σ, whereas the interval corresponding to SU 67 and 77 is between 1002 and 910 cal BCE in 2σ. Thus, the original stepped monument of Son Ferrer was built and its first use occurred in the 10th century cal BCE.

The third phase of the Son Ferrer ensemble is characterized by the remodelling of the stepped monument. This alteration implies the construction of a new architectural complex. The dated samples come from the fillings of different walls of the structure (SU 27, 41, 65, and 98). According to the floor plan published by García *et al*. (2015: fig. 1), SU 27 corresponds to the filling of the upper wall; SU 41 to the filling of the western lower wall; SU 65 to the filling of the southern lower wall; and SU 98 to the filling of the northern lower wall. Calibrated radiocarbon dates show two chronological groups. One group, with four dates having wide and overlapped intervals are located on the "Hallstatt plateau", from *ca.* 800 to 400 cal BCE (KIA 25198, 25203, 25210 and 25225, see Tab. 2), while the other two dates range from *ca.* 900 to 800 cal BCE (KIA-25205 and KIA-25207, see Tab. 2). Given these results, García *et al*. (2015: 190) interpreted this second group of samples as old pre-existing material that remained in a mixed sediment when the monument was remodelled and, consequently, they took the first group of samples to date the remodelling of the monument. Differences in the range of these radiocarbon dates cannot be taken as an argument for the existence of pre-existing materials, since there are no other older archaeological materials (*e.g.,* ceramics) found within these contexts. Assuming that the materials within the contexts are approximately contemporary, then the two group of dates almost intersect at *ca.* 800 cal BCE, the beginning of the 8th century BCE would be the likely date for the remodelling of the monument. Furthermore, it is unlikely that the monument was remodelled maintaining its typological characteristics as a stepped monument several centuries after its first construction and the erection of other similar monuments. Thus, the beginning of the talaiotic period is taken as the more probable date for the reconstruction of the monument of Son Ferrer.

The fourth phase of the settlement is characterized by a new funerary use of the archaeological ensemble. Some spaces between the different steps of the monument were transformed for the sites of child graves (burial areas 2 and 3) and collective inhumations were carried out in the Bronze Age hypogeum located under the stepped monument and its access passage (burial area 2). The remodelling and the first burials occurred between *ca.* 500 and 400 BCE (Calvo *et al*. 2014: 363). The funerary use of the monument endures until the Roman Period, probably until *ca.* 50-200 AD. Moreover, a use of the space between *ca.* 530 and 625 AD (García *et al.* 2015: 196) should be noted.

2.5. The Can Sec monuments

The two stepped monuments of Can Sec (Can Sec I and Can Sec II) are located in an elevated area on the very edge of a cliff and are separated by 50 m. Can Sec I consists of three enclosures of irregular floor plan, disposed in an axis from approximately north to south. According to Aramburu-Zabala (2013: 13), the first enclosure corresponds to the principal chamber since it is in a highest and a central position, it is paved, and the other two enclosures are attached to it. The second enclosure would function as the antechamber to access the principal chamber. The third enclosure would represent a separated functional space, being the only roofed chamber. In addition, according to the floor plan published by Aramburu-Zabala (2013: fig. 1.10), there are five walls on the west side of the enclosures which give a stepped profile to the structure. A closer description of this side of Can Sec I is not possible because this area was not excavated. Taking into account the three enclosures and the mentioned five walls, the structure of Can Sec I encompasses an area of *ca.* 176.4 m^2.

There is a steep slope on the east side of the Can Sec I monument. On the west side the slope is less steep and it is used for the above-mentioned five walls that give the monument its stepped profile. Thus, from the lower wall to the top of the central chamber there is 4 m difference, but from the top of this chamber to its pavement, the monument is only 0.5 m high.

The architectural and placement characteristics of Can Sec I correspond to the "stepped platform" category in Aramburu-Zabala's (1998: 150-152) typology of stepped structures. Monuments of this type is located on high hills or on steep slopes and are attached to bedrock, giving them a semi-circular floor plan.

Three radiocarbon dates were obtained from SU 9, 11, and 35. The first two SU were located in the central chamber (enclosure 1) and the third SU in the roofed chamber (enclosure 3). SU 9 was composed of very fine clay that filled the upper part of a natural crack of the bedrock. The sides of the crack were set up with stone blocks —larger than those forming the pavement— (Aramburu-Zabala 2013: fig. 6). The clay was placed by human activity and it covered two pots (one *pithos* pot without a base and another globular pot), two ceramic bases, a fragment of calcite, and a bovid humerus. Thus, the clay deposit belongs to a moment when enclosure 1 was used and suggests that this area did not have a domestic function, but was used as a ceramic workshop (Aramburu-Zabala 2013: 13). The C-14 sample from SU 9 is a scapula of *Ovis/Capra* (KIA-43329) and dates to between 1090 and 916 cal BCE (93.9%).

The second dated sample from enclosure 1 (KIA-43328) is an *Ovis/Capra* epiphysis that comes from the use level above the pavement (SU 11), interpreted as the first moment of use of this chamber (Aramburu-Zabala 2013: 24). The 2σ calibrated radiocarbon date is 805 to 553 cal BCE. The fact that part of the interval lies within the Hallstatt plateau enlarges the time span up to 553 cal BCE, but the highest percentage of probability is between 805 and 746 cal BCE (66.3%). The difference of 100 years between the most recent date of the interval of KIA-43329 (of SU 9) and the oldest date of KIA-43328 (of SU 11) calls into question Aramburu-Zabala's interpretation that SU 11 represents the first use of enclosure 1.

The third sample is an *Ovis/Capra* bone (KIA-45776) collected in the use level of enclosure 3 (SU 35). The radiocarbon date lies between 1056-912 cal BCE (94.9%). That SU 35 is 0.50 m thick suggests that it accumulated over a period of time and thus would not directly indicate the first use of this area. However, this date is close to the oldest date from enclosure 1.

The director of the excavation, Aramburu-Zabala, proposes that the construction of Can Sec I took place during the 10th century BCE. Nevertheless, the review of the radiocarbon dates and the contexts lead us to suggest that the construction of the monument could have occurred earlier, since the samples date use levels rather than construction levels, such as the filling of the wall. Furthermore, the two oldest dates (KIA-43328 from enclosure 1 and KIA-45776 from enclosure 3) do not date with certainty the first use of the chambers and can therefore deviate even more from the construction moment of the monument. For these reasons, the interval between 1100-1000 BCE seems more probable for the building of Can Sec I, pending more dates associated directly to the structures.

The recent publication of the excavation of the Can Sec II monument has shown that it is similar to Can Sec I in some aspects (Aramburu-Zabala 2016). That monument is also located on the edge of a cliff and on the side opposite the cliff there are two attached walls at different levels —bridging a slope of *ca.* 2.5 m between the monument and the terrain— which gives a stepped profile to the structure. However, its architectural characteristics differ considerably from Can Sec I, since its main feature is a tower-like structure (with thick, high walls built using cyclopean masonry) with an inner chamber. It also presents a more complex structure with internal subdivisions and a window. Material remains found within the monument do not permit identification of a specific function for the structure. However, the lack of evidence for the presence of a hearth, the monument's exposed location, and its only entrance being on the facade by the cliff all may suggest that it is not a domestic structure (Aramburu-Zabala 2016: 39). The excavation of the area surrounding the monument —where two rectangular buildings and an enclosing wall have been identified— could provide new information about the function of the stepped monument.

An *Ovis/Capra* bone, collected from the first use level of Can Sec II (SU 4), was radiocarbon dated (KIA-57577) to 1016 and 846 cal BCE (2σ calibrated range). However, the continuous interval between 1016 and 888 cal BCE has a probability of 84.4%. Thus, the monument was probably in use before the IX century and both monuments of Can Sec may have been used during the same span. Based on the ceramic material and considering the fact that Can Sec II has different use levels, Aramburu-Zabala (2016) establishes that the monument was in use during the whole Talaiotic period. Regarding its construction, it is only possible to determine a *terminus ante quem*, indicating that Can Sec II was probably built before the beginning of 9th century BCE. Since the dated sample was collected from the first detected use level, it is possible that the radiocarbon result is close to the construction moment. However, as with Can Sec I, to determine precisely the construction moment of the monument, datable samples associated directly to the structures are required.

In the same elevated area about 500 m from the stepped monuments, a small funerary cave was discovered (Aramburu-Zabala and Martínez 2014). Two bone samples from interred individuals were radiocarbon dated (KIA-41969 and KIA-43327). The results indicate that these individuals died during the 9th century cal BCE. Thus, Can Sec cave represents one of the few burial contexts of the time interval between the Prototalaiotic and the beginning of the Talaiotic periods, as they are chronologically delimited by Lull *et al*. (1999 and 2008). If the stepped monuments were still in use after the 9th century BCE, they would be contempora-

neous to the interments. This and the supposed ceramic workshop at Can Sec I leads Aramburu-Zabala (2013) to propose that the pottery used as grave goods was produced at the monument.

2.6. Other stepped monuments

In addition to the presented monuments, three structures that have not been excavated or defined as stepped monuments have to be taken into account: Son Mas des Potecari, Sa Gruta, and Es Figueral de Son Real.

The superficial cleaning of the Son Mas des Potecari monument exposed its architectural structure. According to the descriptions and sketches of Rosselló-Bordoy (1963b: 63-64, fig. 1), the monument is composed of two concentric, approximately circular walls at different levels. It has a diameter of 15 m and is 4 m in high. Rosselló-Bordoy indicates that on the north side of the structure there was an entrance leading to an L-shaped corridor. Since the monument is currently covered by vegetation, it has not been possible to confirm the existence and nature of these features. Rosselló-Bordoy also notes that the location of this monument is spatially related to a circular talaiot, situated 45 m away.

The stepped monument of Sa Gruta has aroused interest and admiration since the early 20th century, when Mayr (1914: 20-21) described the existence of a monument with considerable height and two concentric, rectangular walls. The long side of the inner and upper wall is between 12 and 14 m long and had up to 5 rows of stones, according to a picture taken before 1944 (Àlvarez-Ossorio 1945: fig. 35A). The outer and lower wall is approximately 17 m long. The structure is 4 m high and was built on a natural elevation of 6 m that stands out in the flat area that surrounds it. According to the sketch published by Mayr (1914: fig. 5), there was a wall on the east side of this elevation, which thus would have been integrated into the architecture of the monument. Given that this third wall is not defined in the author's description, it is unclear whether it is a third concentric wall of the monument or a structure attached to the elevated area[3].

The settlement of Es Figueral de Son Real is composed of several naviforms (Bronze Age domestic units) and has been recognised as a transitional forerunner of the settlement model of the Talaiotic period (Calvo and Salvà 1997; Hernández-Gasch and Aramburu-Zabala 2005; Lull *et al*. 2008; Salvà and Hernández-Gasch 2009). Es Figueral de Son Real is a fossil dune on top of which a central monument of apsidal floor plan was built that organizes the space and the naviforms that surround it. Rosselló-Bordoy and Camps (1972: 119) already mentioned the presence of a platform and steps leading to the central monument, but as far we know, no one has noticed that the outer wall that partially surrounds the central monument is, in fact, a step, providing the structure with a stepped profile. In the southeast part of the monument, not surrounded by this outer wall, five successive lines of stone form a monumental stair leading to the entrance of the apsidal structure.

There are three radiocarbon dates from Es Figueral de Son Real. These are on charcoal samples, one from a medieval fire, the other two from the chamber of the central monument. One of the latter samples, Y-1856 (1402-976 cal BCE [94.9%]), comes from stratigraphic level 3, which contains ash and charcoal from the fire that destroyed the chamber. It is below level 2, which contains flat stones and represents the collapse of the wall. The charcoal sample could be part of a wooden beam and has been interpreted as an evidence of the construction moment of the structure without excluding the possibility that it could date a moment of its use (Micó 2005: 197). The other sample, Y-1857, was collected in a landfill located over the bedrock and between the internal wall and a western wall that restructured the chamber. Its date, 1308-910 cal BCE (92.2%), has also been interpreted to represent the construction or a use moment of the monument (Micó 2005: 197).

What events are dated by the prehistoric samples collected in the Es Figueral de Son Real monument cannot be determined. However, combining both of them, it can be established that the construction/use of the central monument did not occur before 1402 cal BCE and could have possibly taken place as late as 910 cal BCE. It has to be noted that the other structures of the settlement are attached to this central monument. Therefore, these were built after the construction of the central monument.

3. THE STEPPED MONUMENTS: A PROTOTALAIOTIC MATERIAL EXPRESSION

All the radiocarbon dates for the construction and use of the stepped monuments fall *grosso modo* at the transition between the 2nd and the 1st millennia BCE.

The dates from the Pula settlement deviate the most from the others and are more controversial due to their archaeological context. Nevertheless, since it has been established that the construction of the monument had to have occurred before 970 cal BCE, Pula must have

[3] Alcover (1941: 240, appendix fig. 53) publishes a sketch and a description of Sa Gruta. This shows a rectangular structure with a chamber and a column on the top of the monument, similar to a rectangular talaiot. Although the structure is currently covered by vegetation, one can clearly observe that there is no such a column.

been in use at about the same time as the other five analysed monuments. The older stepped monument at Son Ferrer was built after 1002 cal BCE and before the 910 cal BCE and all the samples related to the use of the structure date before 918 cal BCE. The combined two dates from the Mestre Ramon monument place its construction between 1048 and 919 cal BCE. At Son Oms, the dating of the last use moment of the naviform, over which the stepped monument was built, indicates that the latter must have been constructed after 1282 cal BCE. The first moments of use at Can Sec I are between 1090 and 912 cal BCE, indicating that its construction possibly occurred during the first half of the 11th century BCE. At Can Sec II the first use is dated to between 1016 and 888 cal BCE suggesting that the monument was built before the 9th century BCE. Finally, the radiocarbon dates from Es Figueral de Son Real show that the construction or the use of the central monument occurred between 1402-910 cal BCE. In conclusion, all the mentioned structures would very probably have been built and put into use as of 11th-10th centuries BCE, an interval that is within the Prototalaiotic period.

Regarding the moment when the stepped monuments were no longer in use, there is only information for Son Ferrer and Mestre Ramon, where dated contexts are available that indicate a *terminus ante quem* for their abandonment or functional change.

The construction of the second Son Ferrer stepped monument during the beginning of Talaiotic period implied the partial destruction of the first monument. However, it is unknown if this construction merely represents a remodelling or signalizes the abandonment of the first monument on an architectonical and functional level. In any case, the modification around the 5th century BCE of some spaces of the second monument to carry out burials implies that its function was definitely altered.

At the Mestre Ramon monument, one of the structures that surrounds it (building 1) was built over the first step of the stepped structure, probably using the stone blocks from the external wall of the same step. Since the presence of a settlement wall points to the existence of a Balearic settlement at the archaeological complex (while very scarce materials and no structures corresponding to the Talaiotic period have been identified), building 1 was probably built, and therefore the stepped monument was already abandoned, during the Balearic period. Moreover, the passage of the monument was partially destroyed and used as a landfill around the 2nd century BCE.

It has to be noted that enclosure 1 of the Can Sec I and the monument of Can Sec II were still in use at the beginning of the Talaiotic period. Aramburu-Zabala (2013: 12) indicates that the monuments were abandoned between *ca.* 650-550 cal BCE, but he does not specify the information that leads him to this conclusion.

It has become clear that the stepped monuments were no longer being built at the beginning of the Talaiotic period and that they were abandoned before the Balearic period, but it is not always clear if the abandonment was before or during the Talaiotic period (when the talaiots spread throughout Mallorca). There is some evidence showing that at the beginning of the Talaiotic period certain structures were still in use (*e.g.*, Can Sec) or were remodelled (*e.g.*, Son Ferrer), but until there is more chronological information, the use of these structures during the Talaiotic period will remain unclear[4].

4. THE STEPPED MONUMENTS: A "HODGEPODGE"

The distinctive architectural features that led the archaeologists to establish a new category of prehistoric monument in Mallorca was based on the stepped profile of the monuments and the lack of chambers in these solid structures. The detailed analysis of the excavated examples enabled a further completion of their architectural characteristics.

Basically, two different stepped monuments have been identified corresponding to either solid structures or structures with a chamber. The solid structures are composed of successive horizontal or sloping walls at different levels. The walls do not rest one over the other, working as different overlapped platforms, but rather all the walls rest directly on the bedrock. The walls have a bipartite structure, consisting of an external part formed by larger stone blocks and a filling part formed by smaller ones. Thus, the filling part of each wall is attached to the external part of the wall located in an upper level. Given these distinctive architectural features, we define these solid structures as 'stepped platforms', the upper wall being the platform and the attached walls, the steps. This stepped platform type corresponds to Mestre Ramon, Son Oms, Son Ferrer and probably also Pula, Son Mas des Potecari, and Sa Gruta. The two monuments of Can Sec and Es Figueral de Son Real differ from this type in that the central part of these structures consists of a chamber with a tripartite wall. However, the walls that surround the central chamber follow the same pattern as the steps in the stepped platforms: they are bipartite walls attached to the external part of the upper wall.

[4] Recent radiocarbon dates, ordered after the writing of this manuscript, clearly shown the use and the construction of the latest pavements of the corridor of Mestre Ramon in the Talaiotic period.

The bipartite walls are architecturally different from other prehistoric walls on Mallorca which rather have a tripartite structure (external wall, filling, and internal wall).

The number of walls and the floor plans of the stepped monuments vary considerably, but three of the described monuments present several similarities. Son Oms, Son Mas, and Mestre Ramon are each composed of two concentric walls and have a passage to access the upper part of the platform. However, in all the analysed cases the highest point of the structure is also the central part, around which the other parts of the monument were built (in the case of the monuments of Can Sec, the highest point does not correspond to the central part of the monuments since these are stepped only on one side, due to the cliff next to which they were built). Moreover, most of the structures have architectonic features linking the base of the monument to the upper and central parts. These features can either be a corridor, a ramp, stairs, or the whole monument can be described in some cases as a spiralling cone. All these features are always pointing towards the central and the higher part of the monuments. Furthermore, the height of the structures, and consequently their prominence, is emphasized in some cases by placing the monuments on elevated areas, so that the relief becomes an architectural element of the structure.

Regarding the stepped platforms, the architectural emphasis of the central and upper parts of the monuments suggests that the platforms were the focal spaces where the principal activities were performed. The overall evidence suggests that most of the stepped platforms were unroofed structures. This affected directly the preservation of the material remains that could provide information about the activities carried out at the monuments. Only at Mestre Ramon was it possible to collect and study archaeological material from the upper part of the structure and to establish hypotheses about activities carried out there.

The Can Sec and Es Figueral de Son Real monuments present distinctive features without any direct parallel in the prehistory of Mallorca but they show that staggering can be applied to different type of monuments in order to provide prominence and monumentality to the structure. Es Figueral de Son Real is representative of the settlement pattern change that occurred between the Naviform and the Talaiotic periods. Since it is the central building of the settlement, it may also indicate the beginning of the stepped conception in monuments.

Before extrapolating the established common features of known stepped monuments to those that are not excavated, one must take into account that the number of studied samples is not extensive. The available examples revealed that the definition of the architectural characteristics is often impracticable without excavation. Some architecturally diverse monuments, such as Son Ferrer, Son Oms or Can Sec I, were thought to be tells before they were excavated (Rosselló-Bordoy 1963a: 11-12; Calvo *et al*. 2005: 488; Aramburu-Zabala 2013: fig. 1.8). From those tells, some protruding stone blocks could be distinguished, which formed unrelated walls at different levels, so that these presented a stepped profile. Most of the unexcavated structures classified as stepped monuments currently exhibit this appearance. Thus, before excavating a stepped monument it is not possible to establish a relationship among the walls or to define floor plans.

The current state of research makes it difficult to establish a uniform typology of stepped monuments from the excavated examples that would enable us to extrapolate architectural characteristics to the unexcavated monuments. Thus, the category of the stepped monument is understood as a "hodgepodge" that encompasses all the structures that present a stepped profile.

5. THE STEPPED MONUMENTS WITHIN THE MONUMENTAL AND TOWER-LIKE PHENOMENON OF THE EARLY 1ST MILLENNIUM BCE

Around 1000 BCE the central tower-like monuments at the S'Illot and Ses Païsses settlements were erected. These monuments represent the forerunners of a phenomenon that spread over the entire island between the 9th and the 8th centuries BCE: the construction of the talaiots, tall monumental buildings with a chamber and a central column.

This phenomenon is linked to a transformation of the structure of the settlements and of the social organization, changing from the Bronze Age naviform settlement based on dispersed domestic units to the Iron Age talaiotic settlements based on congregated domestic units around or between one or more talaiots. The talaiots are supra-domestic buildings and became the nodal structures of settlements. Furthermore, their large dimensions indicate that a significant labour investment was required to build them in comparison to the other buildings of the settlements.

Although the stepped monuments have been distinguished architectonically from talaiots, they have been included in this tower-like monumental phenomenon and to the events associated with a change of social space. In particular, the stepped monuments have been studied as part of the territorial structure of the Talaiotic period. That most of the stepped monuments are located on hills or mountains and that some of them are visible from talaiotic settlements led to a definition of these constructions as boundary marks between different settlements (Aramburu-Zabala 1998: 226, 2013: 15; Calvo *et al*. 2005: 498).

Based on the results of the radiocarbon dates, it has been established that the stepped monuments were built during the Prototalaiotic period, before the construction of the talaiots, while the moment of their abandonment is not clear. The Prototalaiotic is a period during which some naviform settlements were still in use —*e.g.*, level 3 of naviform 1 at Closos de Can Gaià (Calvo and Salvà 1999: 68)— and during which the first settlements with a typical talaiotic structure appeared (Ses Païsses and S'Illot). Thus, the stepped monuments have to be set between the Naviform and the Talaiotic periods, being a transitional material expression.

In the detailed study of each excavated stepped monument, it has been noted that three stepped monuments (Son Oms, Pula, and Son Ferrer) have naviform layers beneath them. Furthermore, the spatial relationship between the Son Oms and Son Ferrer monuments with naviform burial contexts is noticeable, as it is the fact that those spaces were also reused during the Balearic period.

Regarding the spatial connexions between stepped monuments and talaiotic structures, it stands out that three monuments (Son Oms, Pula, and Son Mas) are each located between 30 and 60 m from circular talaiots. Aramburu-Zabala (1998: 188, 225) documented a close spatial relationship between stepped monuments and circular talaiots in only 15 cases (of a total of 117 catalogued stepped monuments), which statistically is insignificant. Besides, there is not a single close spatial relationship between stepped monuments and rectangular talaiots.

However, it has to be noted that the Mestre Ramon monument is surrounded by hills with circular talaiots placed on their summits (Ses Rumies, Turó de s'Olivar, and Son Lluc), a fact that contrasts with the lack of talaiotic structures at the settlement of Mestre Ramon, despite, as recently shown (see note 4), the gallery of the platform was used and arranged during the Talaiotic period. Although, other platforms exist in more remote places of the same territory not closely linked to any talaiotic settlement, it would appear that prototalaiotic communities were responsible for such constructions and the talaiotic ones, for their later use, regardless of the distance to the dwelling places.

The Son Ferrer monument has been interpreted as being part of a talaiotic territorial context. It is one of the satellite structures of the talaiotic (although most of the structures and levels excavated so far belong to the Balearic period) settlement of Puig de Sa Morisca, since it is located on an elevated area and is visually connected with this settlement (Calvo *et al*. 2005: 498).

In general terms, the stratigraphy indicates that the naviform places that are directly related with the stepped monuments were already abandoned when the monuments were built, whereas coexistence between talaiotic structures (especially the circular talaiots) and stepped monuments is certain.

The association of the stepped monuments with the community that built and used them is a crucial research line to establish the role of these monuments in the transitional phase between the Naviform and the Talaiotic periods. However, only Es Figueral de Son Real has been linked physically to contemporaneous structures. This lack of information also applies to the first central tower-like monuments, whereby very little is known about the domestic units contemporaneous to these monuments and their size. For example, at Ses Païsses, which has been extensively excavated during the last few years, evidence indicates that during the first phase of the settlement, when the tower-like monument was built, there were only a few domestic units, possibly a single one, located around it on the most elevated area of the hill (Salvà and Hernández-Gasch 2009: 306). Only over the centuries, mostly after the monument and the attached structures were abandoned, did the settlement expand around the old structures. During the late Iron Age, much of the pre-existing structures were then surrounded by a settlement wall. In the case of S'Illot, a similar development is observed with a very limited original settlement.

The Mestre Ramon stepped monument provides some hypotheses about their relationship with the community that built and used them. Evidence of ritual slaughter activities at Mestre Ramon indicates a specific use of the monument within the ideological-symbolical sphere. Thus, the Mestre Ramon example may suggest that the stepped monuments represented the monumentalisation of spaces that were sacred because of their prominence in the landscape or their association with old domestic or funerary structures (the dwellings and burial caves of the Naviform period). Since Mestre Ramon is visible from the surrounding talaiots, it could have been a communal aggregation centre or a shared ceremonial complex of the different communities that lived in the neighbouring area. These communities were possibly very small and some of the first which followed the Iron Age settlement pattern, similar to those of the early phases of the Ses Païses and S'Illot settlements.

6. CONCLUSIONS

The construction of the stepped monuments has to be seen in the context of the emergence of the talaiotic settlement model to the detriment of the naviform model, when the communities started to build monumental structures that do not have a domestic function but required significant collective labour investment to be

built. Their construction suggests changes in the social organization, in the territorial model and in the political-ideological practices of the early 1st millennium BCE. However, it does not appear that the stepped monuments presented the same social function as the first central tower-like monuments (Ses Païsses and S'Illot) and the talaiots, which are the nodal structures around which the daily life of the communities was developed.

The widespread lack of remains that could explain the activities carried out at the stepped monuments together with the added social value of the monuments —involving a significant effort in their construction and their prominence— lead to the suggestion that the stepped monuments were ideological-symbolical structures, *i.e*., objects with inherent symbolical value. Furthermore, the fact that the stepped monuments are not directly related to settlements, led archaeologists such as Calvo *et al*. (2005: 495) to define these structures as a "symbolical support of a community in opposition to the other communities". Nevertheless, the settlement of Mestre Ramon points out the ritual function of the monuments and raises the possibility that the stepped monuments were ceremonial complexes belonging to the surrounding communities.

The combined study of the activities carried out at the stepped monuments and of their relationship with the other structures will provide the required data in order to understand better their function and the social processes that determined their construction between the Naviform and the Talaiotic periods. A chronology of the stepped monuments is an important step in that direction. Thus, in our opinion, there is enough evidence to link the construction of this monuments to the Prototalaiotic period and its use over the Talaiotic one, which leads, in consequence, to a profound and urgent revision of the concept of "Prototalaiotic" itself.

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