

ARTICLE

The 3rd century AD in motion: new proposals on the morphologic and chronological evolution of lamps (Disc-type, *Firmalampe*, Dressel 28, Dressel 27, Dressel 30 and Disc-type derived)

El siglo III d. C. en movimiento: nuevas propuestas sobre la evolución morfológica y cronológica de las lucernas (Disco, *Firmalampe*, Dressel 28, Dressel 27, Dressel 30 y Derivadas de Disco)

José Carlos Quaresma

NOVA/FCSH – Universidade Nova de Lisboa. CHAM – Centro de Humanidades, Portugal

josecarlosquaresma@gmail.com, <https://orcid.org/0000-0003-3139-1975>

Abstract: This paper discusses the diachronic evolution of some lamp types, namely Disc-type, *Firmalampen*, Dressel 28, Dressel 27, Dressel 30 and Disc-type derived, with a stratigraphic and statistical base, comparing the results from several regions: *Italia*, *Dacia*, *Moesia*, *Gallia* and *Hispania* (*Tarraconensis*, *Lusitania* and *Baetica*). Several stratigraphies point to the existence of transitional types between the Early Empire forms and the Late Roman ones. The 3rd century AD seems to be the key period for the understanding of this process, for several chrono-stratigraphic data indicates a crucial typological transition during its final decades.

Keywords: Middle Empire; lamps; typology; diffusion; chronology; stratigraphy.

Resumen: En este trabajo se discute la evolución diacrónica de algunos tipos de lucernas –Disco, *Firmalampen*, Dressel 28, Dressel 27, Dressel 30 y derivadas de Disco–, con una base estratigráfica y estadística, comparando los resultados de varias regiones: Italia, Dacia, Moesia, Galia e Hispania (Tarraconense, Lusitania y Bética). Varias estratigrafías apuntan a la existencia de tipos de transición entre las formas alto-imperiales y las tardorromanas. El siglo III d. C. parece ser el periodo clave para la comprensión de este proceso, ya que varios datos cronoestratigráficos indican una transición tipológica crucial durante los finales de dicho siglo.

Palabras clave: Alto Imperio; lucernas; tipología; difusión; cronología; estratigrafía.

Received: 23-04-2025 / **Accepted:** 17-11-2025 / **Published:** 16-07-2026

Citation: Quaresma, J. C. (2026). "The 3rd century AD in motion: new proposals on the morphologic and chronological evolution of lamps (Disc-type, *Firmalampe*, Dressel 28, Dressel 27, Dressel 30 and Disc-type derived)". *Archivo Español de Arqueología*, 99, 765. DOI: <https://doi.org/10.3989/aespa.099.026.765>

Copyright: © 2026 Editorial CSIC. This is Diamond Open Access content distributed under the terms of the Creative Commons Attribution 4.0 International (CC BY 4.0) License.

Supplementary information ↓

1. INTRODUCTION AND STATE OF THE ART

The 3rd century AD is a crucial period in the Roman Empire, debated during the first half of the 20th century by Rostovzeff (1957) and Pirenne (1970), regarding the Historiography. The rise of an African dynasty (Severian), and the transition into the African leadership of the Roman Imperial economy are part of a “globalized” world (Hingley, 2005) that is moving into Late Antiquity. This chronological concept is often located on the 4th century AD onwards (see debate in Pieri, 2005), mainly after the emblematic work of Jones (1964), who emphasized the role of Diocletianus and the new Tetrarchy. Nevertheless, the first conception of “Late Antiquity” by Brown (1971) had proposed it as a historical process started during the Antonine period. The role of the 2nd century AD has been reassessed in the last decades by part of the international scientific community (Wilson, 2009), after the first archaeological proposals made by Carandini, in the 1990s (Carandini, 1993). Moreover, the traditional exaggerated role of the Tetrarchy produces secondary waves when researchers seek to date the new historic-archaeological structures, concerning not only the economy and trade, but also the urbanism or the urban defences. Nevertheless, even in these cases, new chronological approaches have been proposed, pushing several transitions backwards, into the 2nd—regarding urbanism and urban structures—, or the 3rd century AD—regarding urban defences (Cepas Palanca, 1997; Fernández Ochoa and Morillo, 2007).

Recently, the role of the Christianisation in the chrono-morphology of lamps has been discussed by authors as Pereira (2014, 2017). With regard to lamps’ production and their commercial diffusion, we may observe that the later shapes have been dated to the 2nd century AD onwards, despite the huge lack of stratigraphic (and ceramological) works, which leads to repetitive conclusions, when attempting to set chronologies up. In this paper, we try to discuss several published stratigraphic data, alongside new stratigraphies and collections. As a methodological aspect, we must also underline that, unlike *amphorae* or *terra sigillata*, that is, typologies which differ morphologically from region to region, lamps seem (as glasses, for instance) to have widespread fashions across the Empire, with natural regional trends. In this sense, whereas other typologies, as *amphorae* or *terra sigillata*, are object of regional typologies, lamps have essentially supra-regional typological proposals, since Loeschcke or Dressel. Nevertheless, the consciousness of regional features has led to regional proposals in the last decades: for instance, Bonifay (2004) and Bussière (2000), concerning the Northern Africa, Morillo Cerdán (1999), concerning *Hispania*, and above all Bailey (1988), concerning several regional provenances.

This paper tries to discuss how different regions providing stratigraphies and stratigraphic statistical studies can be compared to discuss chronological transitions among types or typological families related to the middle Imperial period. The goal is thus the discussion of the typological chronologies, but also the discussion of possible different regional chronologies among the same type or the same typological family (Fig. 1).

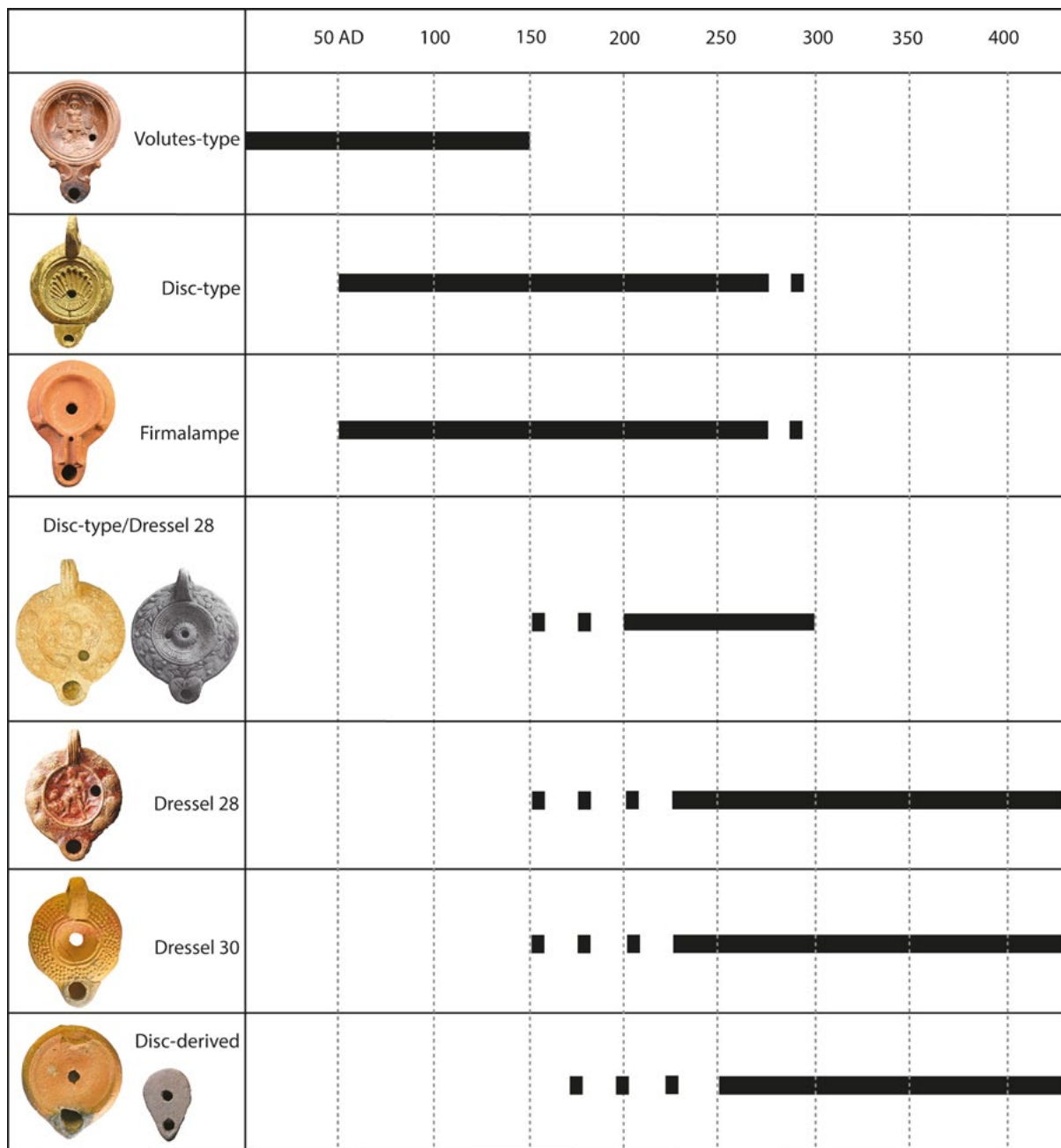


Figure 1. Present proposal of lamps evolution between the 2nd and 5th centuries.

As a state of art concerning the proposed types for discussion, several works over the last 20 years have tried to give advances on the specification of morphological variants inside the main types, but also important chronological corrections, in face of such a huge lack of stratigraphic studies.

Disc-type family (Dressel 16-20), that is, lamps without volutes, hanging simple nozzle, have been dated from the 1st century (Bussière, 2000; Morillo Cerdán, 2015) until the beginning of the 3rd century AD (Pereira, 2008, p. 46; Celis Betriu, 2005, p. 442). It is also assumed that they became commercially stronger over the 2nd century AD. Recent stratigraphic studies in Portugal have proposed its rarity prior to c. 150 AD, considering the rarity of Disc-type lamps at Monte Molião-Lagos, on the southern coastline of *Lusitania*, whose stratigraphy (that ends around 175 AD—Pereira and Arruda, 2016) presents a strong volume of Volute-type lamps (Pereira, 2008, p. 46).

The transition into the heart-shaped nozzle is dated by Bussière (Bussière, 2000) between the last quarter of the 2nd century and the middle of the 3rd century (type D X 4: with vegetal scroll on the shoulder). Based on northern Hispanic stratigraphies, Morillo Cerdán (Morillo Cerdán, 2015, p. 367) proposes the period between 150 and 200 AD for the start of Dressel 28. Bussière (Bussière, 2000, p. 112) describes its type D X 5 (= Dressel 28) as a lamp with decoration on the shoulder made through the design of grapes and leaves, which are a disruption to the previous type. Nevertheless, Bussière recognises that Dressel 28 (= D X 5) may have either a heart-shaped or a simple nozzle as the Disc-type family. D X 5 type is dated to the central decades of the 3rd century AD (225-275 AD), while other authors accept its continuity into the 4th century AD (Celis Betriu, 2005, p. 47-48) or even the 5th century AD, at least in the southern *Hispania* (Bernal and García Gimenez, 1995, p. 186). In this paper, we propose the definition of the transitional shape Disc-type/Dressel 28, not only based on the sharing of both nozzles and shoulder decorations, but also based on the existence of a single narrow or large moulding between the shoulder and the disc.

Stratigraphic data concerning transitional forms between the Disc-type and Dressel 28 are known in Puglia at least from 150 AD onwards—they may include heart-shaped nozzle but typical shoulder decoration of the Disc-type family (Fioriello, 2014, fig. 5.2) or rounded nozzle and typical shoulder decoration of the Dressel 28 type (Fioriello, 2014, fig. 7.4). A turning point in the middle of the 2nd century AD is also foreseen regarding Dressel 30, since its typical shoulder decoration starts in this chronology, too (Fioriello, 2014, p. 374). The possible retreat of the initial chronology of Dressel 30 to the middle of the 2nd century is also foreseen through the stratigraphic data from *Augusta Emerita* (González Blas, 2022, p. 171-177).

With regard to the Disc-type derived, this family has been conceptualised by Morillo Cerdán (1999, pp. 125 and 673), who established first its chronology in the late 3rd century AD. In a second moment, this family's beginning has been pointed to the second half of 2nd century, with a floruit during the 3rd century and a final chronology in the 4th century AD (Morillo Cerdán and Rodríguez Martín, 2008, p. 418; Morillo Cerdán, 2015, p. 392). The Algerian stratigraphies suggest a similar chronology: Bussière's type E II 3 is attached to the 3rd and beginning of the 4th century AD (Bussière, 2000). Our study on the assemblage from *Ammaia*, in Portugal, points to a possible extension until the late 4th or even the 5th century AD (Quaresma, 2021).

The final chronology of these late shapes is far from a conclusion, but its extension into the 5th century AD became possible, without safe proposals on a Roman or post-Roman end. The data from *Abelterium* (see below), in *Lusitania*, alongside the above-mentioned data from the southern *Hispania*, at *Cordoba* (Bernal and García Gimenez, 1995, p. 186), may suggest that types Dressel 28 (and Dressel 27), Dressel 30 and Disc-type derived have been produced until the 5th century AD in *Hispania*. Nevertheless, stratigraphic data are not strong enough to discard clearly the hypothesis of residuality.

2. DISCUSSION OF STRATIGRAPHICAL STATISTICS OVER THE EMPIRE

2.1. Italia

Both volumes III, 2 and IV of the assemblage from Ostia, devoted to the excavations of the *Terme del Nuotatore*, namely their SO area and *ambiente* XVI, provided important data concerning the evolution of lamp types during the 2nd and the 3rd centuries AD.

The first volume, published in 1973, discussed the evolution of lamp types between the Late Republican strata and the late 4th century AD ones. As we can observe in Table 1, adapted from the referred publication, the huge number of chronological phases in the SO area from *Terme del Nuotatore*, demonstrates some linear evolutions between the late 1st century and the middle of the 3rd century AD. Apart from the Late Hellenistic and Early Christian forms, several shapes have been consumed

within chronological homogeneities. Volute-type has been traded until the first half of the 2nd century AD (phase IV A-B: 100-140 AD), being probably residual from the middle of the 2nd century AD onwards. Disc-type, whose single form is Deneauve VIIa, is barely represented in terms of diversity, but its quantity is also strong and demonstrates a similar chronological pattern as volute-type family, being apparently residual from the middle of the 2nd century AD onwards, too. This chronological feature of Disc-type within the stratigraphy of Ostia will be infra discussed again, in the chapter devoted to the present-day Portuguese territory. In this Italic site, *Firmalampen* are not a main family, circulating within the same chronological phases as the previously discussed morphological families.

The first critical point of view that we must put in evidence is the lack of strata related to the second half of the 2nd century AD, which blocks any structured idea about the final chronology concerning the families of volute-type, disc-type and *Firmalampen*. They seem residual in the beginning of the 3rd century AD, but one cannot discard a probable continuity of these families until the late 2nd century AD. This lack of stratigraphic evidence blocks also our knowledge about the initial production of the later types that evolve from the Disc-type family.

Dressel 28 and 30 appear around 200 AD and reach their floruit in the middle of the 3rd century AD (phase I D: 240+ AD). During the second quarter of the 3rd century AD Disc-type derived lamps appear in the stratigraphy, increasing also their values around the middle of the century. All these late types lose influence from the second half of the 3rd century AD onwards, but once again, the lack of general evidence blocks any further conclusion on the continuity of these types through Late Antiquity.

The authors remark that Disc-type family has been consumed in high quantities and its assemblage reveals multiple changes across the stratigraphic phases between 50 and 250 AD. In fact, Disc-type family represents a natural simplification of the previous family, not only regarding the nozzle, but also concerning the simpler decoration of the central disc. Moreover, shoulders become larger and evert to the outer surface producing a less prominent joint with the reservoir wall (it is in fact the emergency of type Loeschcke IV, that is, a volute-type lamp with simple, rounded shoulder, connected to the central disc by one or two grooves). In fact, in the late 1st-century AD phase, Volute-type dominates, but this leadership is taken by Disc-type family, in 100-140 AD, through an abundant presence of nozzles that reach the disc by a rectilinear joint (it is in fact the emergency of type Dressel 20); moreover, general nozzle's dimensions increase (Carandini and Panella, 1973, p. 398).

The description of the later shapes—Deneauve VIIIb, Dressel 28 and 30 (Carandini and Panella, 1973, pp. 399-400)—reveals a new assemblage without slip, containing heart-shaped nozzles and decorated shoulders, through the design of branches, bunches of grapes and vine leaves—these are certainly shapes related to Dressel 28. Nevertheless, authors report two other decors: shoulders with dots in relief that must be denominated as Dressel 30, and shoulders decorated with leaf-scroll that belong to later shapes of Disc-type, in transition to the later shapes. One may describe them as Disc-type/Dressel 28.

The discussion of these late forms moves forward focusing on an assemblage of canonical Dressel 28 and 30, alongside Disc-derived shapes. Dressel 30 presents two models: short body with pierced handle and large, but low body with massive handle. As one can observe, some lamps may belong to the transition between Disc-type and Disc-type derived lamps, as no. 163 from fig. XXVII in Ostia's volume points to (Carandini and Panella, 1973). Fifty years later than the edition of this study, we can now propose a natural and reasonable review of these quantifications, in face of these criteria.

Table 1. *Ostia, Terme del Nuotatore*, SO area (adapted from Carandini and Panella, 1973, p. 398)

Family	Type	Phase											
		IA	IB	IC	ID	IE	II	III	IVA+B	IVC	VA	VB	VI
		360+	4 th c.	250-300	240+	225-250	240+	c. 200	100-140		c. 90		Late Rep.
Early-Christian	Atlante VIII or X	1											
Late shapes	Late shape (Dressel 30, 28 and Disc-derived)		6	1	18	2							
	Deneauve VIIIb = Dressel 28 + Dressel 30			2	32	6	3	2					
<i>Firmalampe</i>	<i>Firmalampe</i> (Deneauve IXa/b)				7	1	1	1	3		7	1	
Disc-type	Deneauve VIIa					2	2	2	55	6	37	8	
Volute-type	Plastic handle				1				16	2	18	5	
	Deneauve Vg									3	6		
	Deneauve Vd						2		3		2		
	Deneauve IV a-c								5		4	8	
	Loeschcke V								15	2	1	2	
	Loeschcke Va						7	1	10	8	20	15	
	Volute-type	1			1			1	4	5	7	31	
Early types	<i>Volgelkopflampe</i> (Deneauve II)				1	1	1	1	23	1	9		
	Deneauve I (Hellenistic tradition)										7		1

The volume that discusses *ambiente XVI* from *Terme del Nuotatore* (Carandini and Panella, 1977, pp. 18 and 88) confirms this general picture but add new information. Stratum 2, dated to the second quarter of the 3rd century AD (Tab. 2), shows the residuality of the Volute-type family and the scarcity of *Firmalampen* (in this case through a late shape), but Disc-type family is very well represented, denying the conclusions obtained in SO area. Disc-type family corresponds to 40.4%, while type Dressel 27 and the transitional shape Disc-type/Dressel 27 correspond to 2.1%. They are just slightly less common than the later shapes Dressel 28 and 30, which total 47% up. *Ambiente XVI* shows therefore the continuity of Disc-type family, at least until the central 3rd century AD, but their strong presence in the 4th century AD phase (stratum 1) may suggest their continuity at least over part of the second half of that century. Moreover, late shape types—Dressel 28 and 30—seem strongly represented in 225-250 AD, but scarcely consumed in the 4th century AD, which may suggest a possible sampling error during the formation of the stratigraphy.

Table 2. *Ostia, Terme del Nuotatore, Ambiente XVI* (adapted from Carandini and Panella, 1977, p. 86)

Family	Type	Level 1 4 th c. AD	Level 2 225-250 AD	
		Vessels	Vessels	%
Various	Various	7	2	4.3
Volute-type	Deneauve Xc	1		
	Deneauve Xb		1	2.1
	Deneauve Xa		1	2.1
<i>Firmalampe</i> -derived	Deneauve IXb		1	2.1
Dressel 28 + Dressel 30	Deneauve VIIIb	3	22	47
Dressel 27 + Disc-type/Dressel 27	Deneauve VIIa		1	2.1
Disc-type	Deneauve XIa	13		
	Deneauve VIIa	2	7	14.9
	Deneauve Va	2	1	2.1
	Disc-type		11	23.4
Total		28	47	100

A more recent study on lamps from the region of Puglia, with a stratigraphic overview of contextual information related to the 1st-3rd centuries AD, proposes three main groups (Fioriello, 2014):

- Lamps with small and rounded nozzle and large disc (Dressel 17-20, 24-25/Loeschcke VII/Deneauve VII-VII), between the 1st and the 3rd centuries AD;
- Lamps with heart-shaped nozzle (Dressel 26-28/Loeschcke VIII H/Bailey Q), mainly from the middle of the 3rd century AD, but whose production in urban officinae starts in the second half of the 2nd century or the early 3rd century AD.
- Lamps “a globetti” from the middle of the 2nd century AD onwards.

In conclusion, Italian data shows that Volute-type family reaches certainly the first half of the 2nd century AD and they share the market with Disc-type family at least from 90 AD onwards. *Firmalampen* seem to be a secondary shape in the market. Disc-type lamps have been traded at least until 250 AD and probably until the second half of the 3rd century. Dressel 28 and 30 may begin in the Severian period (200+ AD), or even earlier, around 150 AD, and set up their market leadership in 225-250 AD, but they face still a strong opposition from the Disc-type family during this century. Disc-derived type family seems to start a little later than Dressel 28 and 30, in 225-250 AD.

2.2. *Dacia and Moesia*

Moving northwards from the Italian peninsula into the present-day Romanian territory, *Dacia* (present-day eastern Romania) can provide crucial data related to the evolution of lamps in the Mid-Roman Empire, to which one can add other regional results, from *Ratiaria* (present-day Bulgaria) and the Danubian area, that complement and confirm the Dacian framework.

Dacia acts as a closed context, for its Roman occupation took place from 106 to 275 AD, that is, Dacian empirical data reflects, with rare residuality or intrusibility, a certain picture of the Roman ceramological fashion regarding lamps between these chronological points, previous to the late 3rd century AD.

Benea (2008) presented a summary and discussion of the lamps' production in this province stressing the influences promoted by the surrounding provinces, namely the north-Italic area and Pannonia, but also by the *officinae* from the eastern regions of the Empire. The Dacian production of lamps was strongly focused on *Firmalampen* and its high level of consumption is attested in every kind of settlements: military, civilian, urban and rural sites. Local/regional copies indicate also the strong

influences of the Italian prototypes, at least in the first moments of the Roman occupation of the territory, in the 2nd century AD. In fact, an important number of *Firmalampen* seem to be imported from the north-Italic area and from Pannonia, too.

Furthermore, the local/regional productions prove that in this period (106-275 AD), Volute-type family is still traded, and *Porolissum* has ateliers connected to this morphology. The proposal from Ostia, discussed above, is thus confirmed in *Dacia*: volute-type is still produced in the first half of the 2nd century AD. Dacian production is nevertheless headed by *Firmalampen* (atelier in Romula) and to a lesser extent by Disc-type family (ateliers in Romula and Napoca). This aspect is crucial.

On one hand, it shows that *Firmalampen* is a regional fashion, much more important statistically in *Dacia* than in *Italia*. In fact, *Firmalampen* seem to reach higher values in certain militarised areas of the Empire. It is the case of the northern *Hispania*, where the early-Empire assemblages present quantities of *Firmalampen* between 19.4 and 45.5%, at Astorga, Huerña, Palencia, Lancia and La Edrada, while Pisuerga is an exception with 1.4% (Morillo Cerdán, 1999, pp. 318-323 and graphs. 28-31, 35-40; for a discussion about the organisation of lamps trade, namely *Firmalampen*, see Harris, 1980; Buora, 2017).

On the other hand, it proves that Disc-type family (being *Firmalampen* a counterpart family) dominates until the late 3rd century AD, since *Dacia*, occupied until 275 AD, has never produced later shapes as Dressel 27 or Dressel 28, having a scarce presence of Dressel 30 and Disc-type derived (Benea, 2008, p. 302-305).

The chronological evolution of these families, proposed by the author, is the following one: Volute-type in c. 100-150 AD, Disc-type between c. 100 and 250 AD, with emphasis between 150 and 250 AD, and *Firmalampen* between 150 and 250 AD (Benea, 2008, p. 334).

Alicu and Nemes (1977, pp. 1-4) stress the role of Italic colons in the region and set up the initial chronology of some main urban sectors of the capital: both *thermae* and *forum* have been built in the mid-2nd century AD, approximately four decades after the Roman conquest of *Dacia*. The stratigraphic data on lamps is scarce, but one may underline that the first phase of temples A and B, from the 3rd quarter of the 2nd century AD, contains Volute-type lamps.

The Table 3 is a quantification made through the above-mentioned monograph about the lamps consumed in *Sarmizegetusa*, the capital of the Roman province of *Dacia*. It proves the still important role of the Volute-type family, with 29.2% of the assemblage. As stated supra, about the *Dacian* production of lamps, Disc-type family is less important than in the Italic region, with only 12.8%, that includes 2.6% related to the transitional shapes/decorations into the later types. *Firmalampen* are a strong typological family, with 24.1%, that includes 2.6% of late models. Putting together the quantity of Disc-type and *Firmalampen*, we reach the value of $12.8 + 24.1 = 36.9\%$, which overlaps the value of the Volute-type consumption. In my opinion, this last value proves the immediate integration of the *Dacian* market in the Roman economy, during the first half of the 2nd century, being less prudent to state that the chronology of the Volute-type family may be extended into the late 2nd century AD. *Sarmizegetusa* demonstrates also that the Disc-type derived family, as well as Dressel 30, exist already prior to 275 AD: the first one is already visible, with 6.3%, while Dressel 30 remains just an incipient type, prior to 275 AD, with 1.3%. It is important to stress that Dressel 28 and Dressel 27 are not present in the *Dacian* capital. The authors identified only the transitional models between the Disc-type and these late shapes, with 6.4%.

Dacia proves thus the final chronology of the Volute-type family, clearly after 100 AD and maybe around the middle of the 2nd century. It proves also the important role of the Disc-type, in this area together with *Firmalampen*, but these two families switch their positions if compared to *Ostia* (see above). Moreover, it shows the incipient production of late shapes, Dressel 30 and Disc-type derived, while Dressel 28 and Dressel 27 remain absent. It seems, therefore, that Dressel 28 and Dressel 30 begin

earlier in the Italic region, during 225-250 AD, but *Dacia* remains more conservative in its consumption of lamps: Disc-type and *Firmalampen* remain the main morphologies in the central 3rd century AD.

Table 3. Lamps consumed in *Sarmizegetusa* (adapted from Alicu and Nemes, 1977)

Type	Vessels	%
Dressel 12/13	16	20.3
Dressel 9A	1	1.3
Dressel 9B	6	7.6
Dressel 20	2	2.6
Disc-type	6	7.6
Late Disc-type	2	2.6
<i>Firmalampe</i>	17	21.5
Late <i>Firmalampe</i>	2	2.6
Disc-derived	5	6.3
Disc-type/Dressel 27	1	1.3
Disc-type/Dressel 28	4	5.1
Dressel 30	1	1.3
Others	16	20.3
Total	79	100

This general typological picture can be observed in regional catalogues that illustrate lamps exports into *Dacia* and Lower *Moesia*, whose published assemblages include a very-short number of transitional types as Disc-Dressel 30 and Disc-Dressel 28, without heart-shaped nozzle (Rusu-Bolindet and Botis, 2018, p. 267, no. 744-745 and p. 313, no. 874). Most importantly, the large predominance of *Firmalampen*, alongside a few number of Disc-type individuals, and the absence of transitional types characterizes the workshops of the region: *Alburnus Maior* (Bocan and Neagu, 2018), *Razboieni-Cetate* (Botis, 2018), *Drobeta* (Iliesu, 2018), *Histria* (Iliesu and Botis, 2018), and *Ostrov-Durostorum* (Baltac, 2018).

Moving southwards into the Danubian area, *Firmalampen* are not so important in this region—closer to the Italic peninsula—, than in the rest of *Dacia*. Nevertheless, alongside local/regional productions of this typological family, north-Italic imports have been recorded (Baluta, 1986, pp. 441-442). This changing of consumption patterns is also stronger in the present-day Bulgarian territory. In this case, there is much longer connection into the Roman world, prior to the 2nd century and after the late 3rd century AD. Nevertheless, Disc-type family and *Firmalampen* control the markets of this region in the 2nd and 3rd centuries (Kuzmanov, 2002, p. 242). As observed in Table 4, a quantification of the published lamps from the National Archaeology Museum in Sofia and the History Museum in Vidin, Volute-type family is also naturally significant, with 15.3%, while *Firmalampen* is a stronger assemblage, with 27.8%, and, once again, Disc-type family is less important than *Firmalampen*, with 11.1%. As observed in *Dacia*, Disc-type derived is an important family, but maybe because of the larger chronology of the town of *Ratiaria* (province of *Moesia Superior*), it reaches a quite stronger value, with 33.3%. Once again, Dressel 27 and Dressel 28 are never attested, popping up also, but scarcely, the transitional model Disc-type/Dressel 28, with 1.1%.

The Danubian area, as well as the town of *Ratiaria*, reinforces, therefore, the proposals obtained from *Dacia*, regarding the late shapes, Dressel 28, Dressel 30 and Disc-type derived. This last one is already important in the 3rd century AD, unlike the Italic region, but during this century, Dressel 28 (and Dressel 27) and Dressel 30 seem to be an Italic idea that faces a strong opposition across the non-Italic markets. In this sense, it is more reasonable the understanding of the values reached by the Disc-type derived family, already significant, above all in *Ratiaria*. Nevertheless, both in this region and in *Dacia*, besides a

scarce quantity of Dressel 30, we find just an also scarce number of transitional models from Disc-type family into Dressel 28.

Table 4. Lamps consumed at *Ratiaria* (adapted from Kuzmanov, 2002)

Type	Vessels	%
Dressel 9	9	10
Dressel 12	1	1.1
Loeschcke IV	1	1.1
Volute-type	2	2.2
Degenerated Volute-type	1	1.1
<i>Firmalampen</i>	25	27.8
Disc-type	9	10
Disc-type/Dressel 28 (heart-shaped nozzle)	1	1.1
Disc-type derived	30	33.3
Others	11	12.2
Total	90	100

2.3. Southern *Gallia*

A small amount of stratigraphic evidence from the southern *Gallia* confirms the 3rd century as a period of transition between the Disc-type family and the Dressel 28, with transitional shapes included.

Context 34 from the sector Bourse at Marseille, dated to the late 2nd/early 3rd century AD, confirms the main stratigraphic evidence, since it contains not only *Firmalampen* (1 vessel: Bonifay, Carré and Rigoir, 1998, p. 76, no. 41) and Disc-type lamps (5 vessels: idem, p. 76, no. 34-36, 39, 40), but also a smaller quantity of Dressel 28 (2 vessels: Bonifay, Carré and Rigoir, 1998, p. 76 no. 37, 38) and Dressel 30 (1 vessel: Bonifay, Carré and Rigoir, 1998, p. 76, no. 43).

An assemblage from the second half of the 3rd century AD at Sainte-Colombe, in the Rhône valley, confirms the coexistence of transitional forms (Disc-Dressel 28) and Dressel 28, respectively called by the authors as DX 1 and DX 4a (according to the Bussière typology) (Gilles, Bonnet and Andrieu, 2020, fig. 17).

2.4. *Hispania* – eastern belt

The evidence in this area concerning the middle-Roman production of both Disc-type and late forms discussed in this paper does not include any clear stratigraphic or statistical systematization. Nevertheless, one rural site may be an interesting point for future research.

Apart from the Early Imperial workshop of Tarazona, near Zaragoza, with a short-term life during the 2nd half of the 1st century AD (Aguarod Otal and Amaré Tafalla, 1987), in the *villa* of Los Cipreses (Jumilla, Murcia), the upper part of a mould related to type Dressel 28 or Disc-Dressel 28 (not preserved nozzle), belongs to its phase III, between the second half of the 3rd century and the first half of the 5th century AD (Poveda Navarro, 2012, figs. 26-28). Thus, the most important volume of data concerns naturally the consumption sites.

The important volume dedicated to the contexts from *Carthago Nova* dated to 180-220 AD points to a domination of the Disc-type family (Quevedo Sánchez, 2015, fig. 29.1, 108.2-5, 123.3, 142.12, 152.1-6, 153.1-7, 205.1-9), alongside an important presence of wheeled lamps (Quevedo Sánchez, 2015, figs. 55, 56, 58, 59, 60, 62) and a scarce presence of *Firmalampen* (Quevedo Sánchez, 2015, fig. 163.5). These contexts point also to the inexistence of the late types (Dressel 27, 28, 30 and Disc-derived), and the presence of transitional types as Disc-Dressel 28 and Disc-Dressel 30 (Quevedo Sánchez, 2015, fig. 81.8, 123.4).

In the southern *Hispania*, at Los Matagallares, a production centre near Granada, the stratigraphy runs over the 3rd century AD, with a final occupation of 270-280 AD (SU 206). Its assemblage of 18 lamps is dominated by the Disc-type family, in which one of them belongs to the transitional shape Disc-type/Dressel 28 and two of them belong to type Dressel 28 (Bernal Casasola, 1998, p. 213; with regard to transitional and later shapes, see no. 69—with large moulding between the shoulder and the disc—, no. 71—grapes on the shoulder—and no. 72— possible grapes on the shoulder).

Our study of the contexts dated to the late 3rd century AD, around 270+AD, formed in the port *suburbium* of *Tarraco*, capital of the province of *Tarraconensis*, in the present-day Catalanian territory of Spain, gives us the first case study from this western counterpart of the Roman Empire. *Hispania* confirms the main proposals for the typological transition that we build up in this paper. An extensive stratigraphy includes an assemblage of fine ware, cooking ware, lamps and *amphorae* that reach the quantity of around 14000 sherds and contains a low rate of residuality (Quaresma, 2025).

As we can observe in Table 5, the assemblage of lamps with 294 sherds or 195 individuals confirms that naturally the scarce quantity of Volute-type family is residual and that *Firmalampen* are even less important in *Hispania* than in *Italia*, if compared to *Ostia* (see above)—still, the value of 4.7% points to a contemporary use of this typology in 270+ AD. The assemblage is clearly dominated by the Disc-type family that completes 87.6% and includes 13% of transitional shapes (Late Dressel 20, Late Disc-type, Disc-type/Dressel 28 and Late Deneauve 8). The number of transitional morphologies is therefore higher than the one related to later shapes, Dressel 28, Dressel 30 and Disc-derived type, which completes 4.7%.

The large quantity of lamps allows safe conclusions on the morphological evolution of lamps consumed in *Tarraco* around 270+ AD. It attests also the clear control of the market by the Disc-type family, while late-shapes Dressel 28, Dressel 30 and Disc-derived type remain as secondary consumption types, more visible here than in *Dacia*, where Dressel 30 is scarce and Dressel 28 absent. On the other hand, *Firmalampen* remain scarce in central and meridional *Hispania*, while they are strong in *Dacia* and especially in *Ratiaria*, as in other militarized regions as the northern *Hispania* (see chapter 2.2 and Morillo Cerdán, 1999). It proves also that Dressel 28 and Dressel 30 are scarce out of *Italia*, as *Dacia* and *Hispania* demonstrate, at least until the late 3rd century AD.

Table 5. Lamps consumed in *Tarraco*: contexts from 270+ AD. Typological quantification

Type	Frag.	MNV	% MNV
Late Republican	2	2	1
Volute-type	3	3	1.6
Disc-type	136	119	62
Dressel 20	24	21	11
Late Dressel 20	6	6	3.1
Late Disc-type	10	9	4.7
Disc-type/Dressel 28	5	5	2.6
Deneauve 8	3	3	1.6
Late Deneauve 8	5	5	2.6
<i>Firmalampe</i>	12	9	4.7
Dressel 28	4	4	2.1
Dressel 30	4	4	2.1
Disc-Derived	1	1	0.5
Type <i>Tarraco</i> 2	1	1	0.5
Unc.	78		
Total	294	195	100

As we can observe in Table 6, Italian lamps are barely represented in the contexts of 270+ AD from *Tarraco*, with 2.6%, while *Baetica* follows the same weight. Nevertheless, *Italia* seems to supply earlier shapes (Disc-type family), while the coastline of *Baetica* includes this family, but also *Firmalampen* and Late Disc-type shapes. The province of *Tarraconensis* dominates intensively the market, with 94.4%, that includes not only most of the earliest shapes (Disc-type family), but also transitional shapes and all the late shapes (Dressel 28, Dressel 30 and Disc-type derived).

Table 6. Lamps consumed in *Tarraco*: contexts from 270+ AD. Regional quantification

Origin	Group	Type	Frag.	MNV	MNV Group	% MNV Group	% MNV Origin
Italia	Group 1	Disc-type	1	1	1	20	2.6
		Unc.	4				
	Group 2	Disc-type	2	2	4	80	
		Dressel 20	1	1			
		Deneauve 8	1	1			
		Unc.	2				
Total		11	5	5	100		
Tarraconensis	Group 1	Firmalampe	6	5	5	2.7	94.4
		Unc.	1				
	Group 1?	Type <i>Tarraco</i> 2	1	1	1	0.5	
	Group 2	Dressel 20	5	4	41	22.3	
		Dressel 30	3	3			
		Disc-Derived	1	1			
		Disc-type	34	27			
		Late Disc-type	2	2			
		Disc/Dressel 28	1	1			
		Firmalampe	2	2			
		Late Republican	1	1			
		Unc.	13				
	Group 2 or 3	Deneauve 8	1	1	2	1.1	
		Disc	1	1			
		Unc.	2				
	Group 3	Dressel 20	15	14	117	64	
		Late Dressel 20	6	6			
		Dressel 28	3	3			
		Dressel 30	1	1			
		Deneauve 8	1	1			
		Late Deneauve 8	5	5			
		Disc-type	84	73			
		Late Disc-type	7	7			
		Disc-type/ Dressel 28	4	4			

Tarraconensis	Group 3	Firmalampe	1	1	117	64	94.4
		Volute-type	2	2			
		Unc.	35				
	Group 4	Dressel 20	3	2	18	9.8	
		Dressel 28	1	1			
		Disc-type	13	12			
		Firmalampe	1	1			
		Late Republican	1	1			
		Volute-type	1	1			
	Unc.	19					
Total		277	184	184	100		

Baetica, coastline		Volute-type	1	1	5	100	2.6
		Disc-type	1	1			
		Firmalampe	2	2			
		Late Disc-type	1	1			
	Total		5	5	5	100	

Africa?		Unc.	1	1	1	100	0.5
	Total		1	1	1	100	

Total			294	195	195	100	100
-------	--	--	-----	-----	-----	-----	-----

A dump-pit from the *villa* of Castellet (La Canonja), near Tarragona, dated also to the late 3rd century AD, contains a small assemblage of lamps with two individuals of Disc-type (Dressel 20), one of *Firmalampe* (Dressel 5c) and one of Volute-type (Dressel 10), being the transitional models and the later shapes completely absent (Roig Pérez, 2017, p. 189, fig. 5).

Our on-going study (started in 2016, within the project of excavation and study of Pollentia, headed by Miguel Angel Cau Ontiveros - ICREA-University of Barcelona—and Maria Esther Chávez—University of La Laguna, Canarias) of contexts from Pollentia (Alcúdia, Balears) dated to the late 3rd century AD, probably related to the Franc invasions that may have reached this archipelago, alongside *Tarraco*, confirms the same scenery from the eastern *Hispania*. The assemblage is constituted by 58 sherds, that include two individuals of Volute-type, 13 of the Disc-type, one of Deneauve 7 and another one of Dressel 20 (Disc-type family totalises 15 individuals), one of Disc-type/Dressel 28 and two individuals of Dressel 28, alongside another two of Dressel 30 (late shapes totalise four individuals). Once again, the predominance of Disc-type family in *Hispania* remains clear, with scarcity of transitional models and late shapes Dressel 28 and 30.

2.5. *Hispania* – western belt

The lamps production panorama in the western belt of *Hispania* suffers from the same empirical problems of its eastern counterpart. In this sense, the best-published workshop of northwestern *Baetica*, at Plaza de la Encarnación in *Hispalis*, has only produced during the Julio-Claudian period (Vásquez Paz, 2012).

In the northwestern *Hispania* (Early Roman *Tarraconensis* and Late Roman *Gallaecia*), *Bracara Augusta* constitutes a significant case-study. In its peripheral area (maybe at Prado/Ucha), one or more workshops have produced lamps between the 1st century AD and the Late Roman period (with a possible floruit in the late 3rd century and the early 4th century AD): Volutes-type, *Firmalampen* and related (atypical) types, as well as Egg-shaped lamps with rounded nozzle. The most important forms are Dressel 20 and above all the late shapes: Late Disc-type (Morais, 2012, fig. 6, no. 2-3—large mould between the disc and the shoulder), Disc-Dressel 28 (Morais, 2012, fig. 6, no. 1—rounded nozzle, but shoulder décor of Dressel 28), Dressel 28 (Morais, 2012, fig. 6, no. 4-6—décor of Dressel 28 and heart-shaped nozzle), and some Disc-Dressel 30 (Morais, 2012, fig. 6, no. 7—décor of Dressel 30 and simple nozzle).

The study of the three necropolises from *Bracara Augusta* includes 17 lamps that may belong to these funeral sectors, but only two of them were found *in situ* (Martins and Delgado, 1989-1990, no. 46 and 50). Furthermore, one of the necropolises (Rodovia), that has been used between the 1st/2nd centuries and the 3rd century AD, has no lamps. Nevertheless, the assemblage reinforces the diachronic model proposed in the present paper.

The necropolis of *Maximinos*, dated between the first half of the 1st century and the late 3rd century AD, has no late shapes, since the assemblage contains Disc-type and transitional shapes: Disc/Disc-derived; an atypical Firmalampe with shoulder décor of Dressel 28; and a Disc-type (Martins and Delgado, 1989-1990, respectively no. 46, 50, 43).

The necropolis of Via XVII, dated between the 1st century and the 4th century AD (early?), includes a similar assemblage, but with few late shapes:

- early Imperial types (Volute-type, Disc-type and Firmalampen (Martins and Delgado, 1989-1990, respectively no. 42, 47 and 44);
- a predominance of transitional shapes: atypical Firmalampen with shoulder décor of Dressel 28, atypical Firmalampen with shoulder décor of Dressel 28 and Disc/Disc-type derived (Martins and Delgado, 1989-1990, respectively no. 51-54, 49 and 45);
- one individual of Dressel 28 (Martins and Delgado, 1989-1990, no. 48).

On the Atlantic belt of *Hispania*, mainly in the present-day Portuguese territory, a number of consumption sites as been studied by us. They have been effectively the beginning of the systematisation of our proposals about the role of the 3rd century and the existence of transitional models between the Disc-type family and Dressel 28.

Before discussing the empirical data from our research, we can discuss the results obtained at the sector Praça da Figueira from *Olisipo* (Lisbon), the capital of the Roman province of *Lusitania*. This sector presents a stratigraphy that runs from the first half of the 1st century until the late 3rd century AD (Vieira, 2011). As we can see in Table 7, that quantifies the general assemblage, Volute-type family dominates, with 61%, while Disc-type family is less important, with 34.1%. The main information given by this sector is the scarce number of late shapes Dressel 27, 28 and 30, with 6.3%, that matches with the stratigraphic behaviour of these late shapes in the eastern belt of *Hispania*, as well as in *Dacia* and *Ratiaria* (see above).

Table 7. Lamps consumed in *Olisipo*-Lisbon (Vieira, 2011, fig. 18)

Type	Frgs.	%
Dressel 9-10	12	8.5
Dressel 11-14	7	5
Dressel 13	1	0.7
Dressel 16	1	0.7
Deneauve Vg	1	0.7
Rio Tinto type	2	1.4
Volute-type	62	44
Dressel 20	19	13.5
Dressel 25	1	0.7
Disc-type	28	19.9
Dressel 27-28	5	3.5
Dressel 30 ^a	2	1.4
Dressel 30b	2	1.4
Total	143	100

At the *villa* or *vicus* from Almoínhas, near *Olisipo*, in the present-day Lisbon's peninsula, two other lamps of transitional morphologies have been recorded in funerary contexts dated to the middle of the 3rd century AD. They are part of an on-going research study about the stratigraphic evolution of trade in this settlement undertaken by us since 2015 (for these cases, see [Quaresma, 2018](#)). Both belong to what we decide to call Disc-type/Dressel 28, a transitional shape. Both cases point to the middle of the 3rd century AD has a central point for this transitional process. No. 1 is overmoulded, but one can observe a military figure on the disc, with head and double-axe, that is also known on a lamp of the same transitional shape, stamped by Gabinia, at the Museo Nacional de Arte Romano in Mérida, Spain (the capital of the Roman *Lusitania: Augusta Emerita*; see [Rodríguez Martín, 2002](#), fig. 11, nº 145). In another lamp of the same type from this very museum, one can observe the same kind of rosettes ([Rodríguez Martín, 2002](#), est. XXXVI, nº 191). No. 2 is even more overmoulded and presents maybe a series of grapes on the shoulder. This second lamp has a large moulding separating the shoulder from the disc, which seems typical from Dressel 28, while no. 1 preserves still a narrower moulding flanked by quite narrow grooves that are more closed to the Disc-type features.

Catalogue

1. Lamp - *Baetica* or *Augusta Emerita* - Disc-type/Dressel 28 – SU Grave 1 – Inv. RO 6870
2. Lamp - Local/Regional - Disc-type/Dressel 28 - ERA's survey - Grave 1 - SU 106 - Inv. 806



Figure 2. Lamps consumed in Almoínhas: contexts from c. 250 AD.

Abelterium

Abelterium (Alter do Chão) is a *civitas* in the hinterland of the central *Lusitania*, whose lamps assemblage has been recently studied (Quaresma and António, 2017). This assemblage has been recorded through the excavations undertaken at Casa da Medusa's sector, which seems to be a suburban *domus* or *villa*, close to the town. The excavations show a huge remodelling in the late 3rd/beginning of the 4th century AD that produced a *palimpsestus* of the Early-Empire levels. Due to this situation, there are no levels prior to the 4th century AD, despite several residual fine wares that prove the existence of a building since the 1st century AD. On the other hand, some layers point to the continuity of the sector until the late 5th century AD, perhaps under the strategy of squatting. Other typologies and funerary levels prove also that new (?) occupations have been carried out until the Middle Age.

Despite the lack of preserved stratigraphic evidence, in this above-mentioned study, we have proposed the establishment and morphological description of the so-called Disc-type/Dressel 28, alongside the already existent shapes Disc-type, Disc-type derived and Dressel 30, whose chronological relations have been discussed in other works on *Lusitanian* sites, as *Ammaia* (Quaresma, 2021).

Within the assemblage of *Abelterium*, we have still applied the concept of Disc-type to those lamps that contain already decorated shoulder, as the future Dressel 28, or even the transitional shape Disc-type/Dressel 28. Nevertheless, their morphological features point still to what we may call as Late Disc-type. No. 3—recorded in SU 77 from 375-400 AD—has decorated shoulder, whose width is larger than the usual in the former Disc-type—14mm. The separation between the disc and the shoulder is still produced through a simple break in the profile. No. 4 has rectilinear, decorated shoulder, still narrow, with 10 mm, which is separated from the disc by a simple, but large groove. Its decoration—grapes—could attach it already to type Dressel 28 or the transitional morphology, what we may bear in mind as possible classifications.

The transitional shape Disc-type/Dressel 28 always contains typical decors of the future Dressel 28. The assemblage of *Abelterium* includes the following morphological and decorative features:

- No. 5 (SU from 475-400 AD) has shoulder with 13 mm, separated from the disc through a simple moulding with grooves.
- No. 6 (SU from 475-400 AD) has a shoulder with 12 mm, separated from the disc through a simple moulding with grooves.
- No. 7 and 10 have shoulder separated from the disc through a simple moulding with grooves.
- No. 8 and 9 have shoulder with 12 mm, separated from the disc through a simple moulding with grooves.
- No. 11 have shoulder with 14 mm, separated from the disc through a simple moulding with grooves.

We may assume that both Disc-type and Disc-type/Dressel 28, recorded at SUs from 375-400 AD may be residual and taking into account the above-mentioned data from Almoínhas, this transitional shapes may belong to the 3rd century AD. *Abelterium* shows nevertheless certain homogeneity, expressed by shoulders with 12 mm, which can evolve into 13/14 mm, always separated from the disc through a simple, narrow moulding, flanked by grooves, as we can observe in the Disc-type family. Finally, their handles are still similar to those from that previous type.

At *Abelterium*, Dressel 28 has larger shoulders, usually with rectilinear and horizontal shape, separated from the disc through a large moulding. The nozzle is heart-shaped or still normal, as in the previous transitional type, but the handle seems larger and contains three fine, longitudinal grooves. Within its assemblage, the assemblage of *Abelterium* includes the following morphological and decorative features:

- No. 12 has shoulder with 13 mm, separated from the disc through a large moulding; its handle is large and contains 3 fine, longitudinal grooves; heart-shaped nozzle; SU from 375-400 AD.
- No. 13 (overmoulded) has shoulder with 13 mm, separated from the disc through a large moulding; SU from 375-400 AD.
- No. 14 has shoulder with 13 mm, separated from the disc through a large moulding; its handle is large and contains three fine, longitudinal grooves; SU from 375-400 AD.
- No. 15 has large moulding; SU from 375-400 AD.
- No. 16 is barely preserved, without morphological measures; SU from 350-400 AD.
- No. 17 has shoulder with 12 mm, a narrower value, and the moulding is maybe inexistent (in this case, a classification as Disc-type/Dressel 28 is also reasonable; its geometric-shaped decor may also point to Dressel 27).
- No. 18 has a quite narrow shoulder, with 8 mm, and the nozzle is still normal, but its moulding is already large (in this case, a classification as Disc-type/Dressel 28 is also reasonable).
- No. 19 has shoulder with 11 mm, separated from the disc through a large moulding; its handle is large and contains just one fine, longitudinal groove.
- No. 20 has curve, oblique shoulder with 20 mm and large moulding; its handle is also large, with three longitudinal grooves, whose internal one is large.

Abelterium allows some conclusions, for Dressel 28 demonstrated also a certain homogeneity. Its shoulder may achieve larger widths as 20 mm or narrower ones, between 8 and 11 mm, being 12/13 mm the possible breaking point in face of the previous transitional shape. Handles are larger and usually decorated by three longitudinal grooves.

Dressel 27 is represented by no. 21, whose decor has a geometric design. The disc is separated from the shoulder by a groove. It belongs to a late SU from the end of the 5th century AD, and it may be residual.

At *Abelterium*, some lamps may belong to fusion morphologies that we can denominate Dressel 28/30. They contain the large moulding between the disc and the shoulder, but this one includes vegetal motifs, typical in Dressel 28, alongside large dots, typical in Dressel 30. No. 22 (SU from 375-400 AD) has large shoulder (12 mm) with rosette and groups of five dots; no. 23 includes ears of wheat disposed in geometric position, alongside moulded and impressed large dots. In these two cases, dots are never disposed in rows, as typical in Dressel 30, but forming motifs, as observed also in Dressel 27.

With regard to the Disc-type derived, the nozzle is always quite simple and no. 24 presents a diameter of 55 mm and slightly oblique wall, with 22 mm. At *Ammaia* (Quaresma, 2021), a Roman *civitas* near *Abelterium*, our study has established two metric modules:

- a) a smaller one, with longer nozzle, slightly oblique wall and a diameter/height relation of 40/21-25 mm; the top profile may design a round shape or a slight tear-shape lamp; apparently has no handle;
- b) a larger one, with handle and quite oblique wall; its recorded diameter/height relation is 78/33 mm.

Catalogue

3. Lamp - *Hispania* - Group 2d (*Baetica?*) – Disc-type - SU 77 - Inv. 1094. 375-400 AD
4. Lamp - *Hispania* - Group 2d (*Baetica?*) - Disc-type - SU 1 - Inv. 2018+2019
5. Lamp - *Hispania* - Group 6 (*Baetica?*) - Disc-type/Dressel 28 - SU 77 - Inv. 1067. 375-400 AD
6. Lamp - *Hispania* - Group 2a (*Augusta Emerita?*) - Disc-type/Dressel 28 - SU 79 - Inv. 1126. 375-400 AD
7. Lamp - *Hispania* - Group 2a (*Augusta Emerita?*) - Disc-type/Dressel 28 - SU 72 - Inv. 4
8. Lamp - *Hispania* - Group 6 (*Baetica?*) - Disc-type/Dressel 28 - SU 1 - Inv. 2021
9. Lamp - *Hispania* - Group 3 (*Baetica?*) - Disc-type/Dressel 28 - SU 1 - Inv. 25
10. Lamp - *Hispania* - Group 3 (*Baetica?*) - Disc-type/Dressel 28 - SU 1 - Inv. 3846
11. Lamp - *Hispania* - Group 1d - Disc-type/Dressel 28 - SU 1 - Inv. 46
12. Lamp - *Augusta Emerita* - Late fabric - Dressel 28 - SU 77 - Inv. 1128. 375-400 AD
13. Lamp - *Hispania* - Group 2a (*Baetica?*) - Dressel 28 - SU 78 - Inv. 61. 375-400 AD
14. Lamp - *Hispania* - Group 2a (*Baetica?*) - Dressel 28 - SU 78 - Inv. 60. 375-400 AD
15. Lamp - *Hispania* - *Augusta Emerita* – Late fabric – Dressel 28 - SU 64 - Inv. 1074. 375-400 AD
16. Lamp - *Hispania* - Group 1d - Dressel 28 - SU 115 - Inv. 14. 375-400 AD
17. Lamp - *Hispania* - Group 2d (*Baetica?*) - Dressel 28 - SU 1 - Inv. 2016
18. Lamp - *Hispania* - Group 1d - Dressel 28 - SU 1 - Inv. 3850
19. Lamp - *Hispania* - Group 5 - Dressel 28 - SU? - Inv. 57
20. Lamp - *Hispania* - Group 2b (*Augusta Emerita?*) - Dressel 28 - SU ME - Inv. 2111
21. Lamp - *Hispania* - Group 1d – Dressel 27 - SU 68 - Inv. 1078. 490+ AD
22. Lamp - *Hispania* - Group 2d (*Baetica?*) - Dressel 28/30 - SU 78 - Inv. 27. 375-400 AD
23. Lamp - *Hispania* - Group 1b – Dressel 28/30 - SU 1 - Inv. 3962
24. Lamp - *Hispania* - Group 2b (*Augusta Emerita?*) - Disc-type derived - SU? - Inv. 59

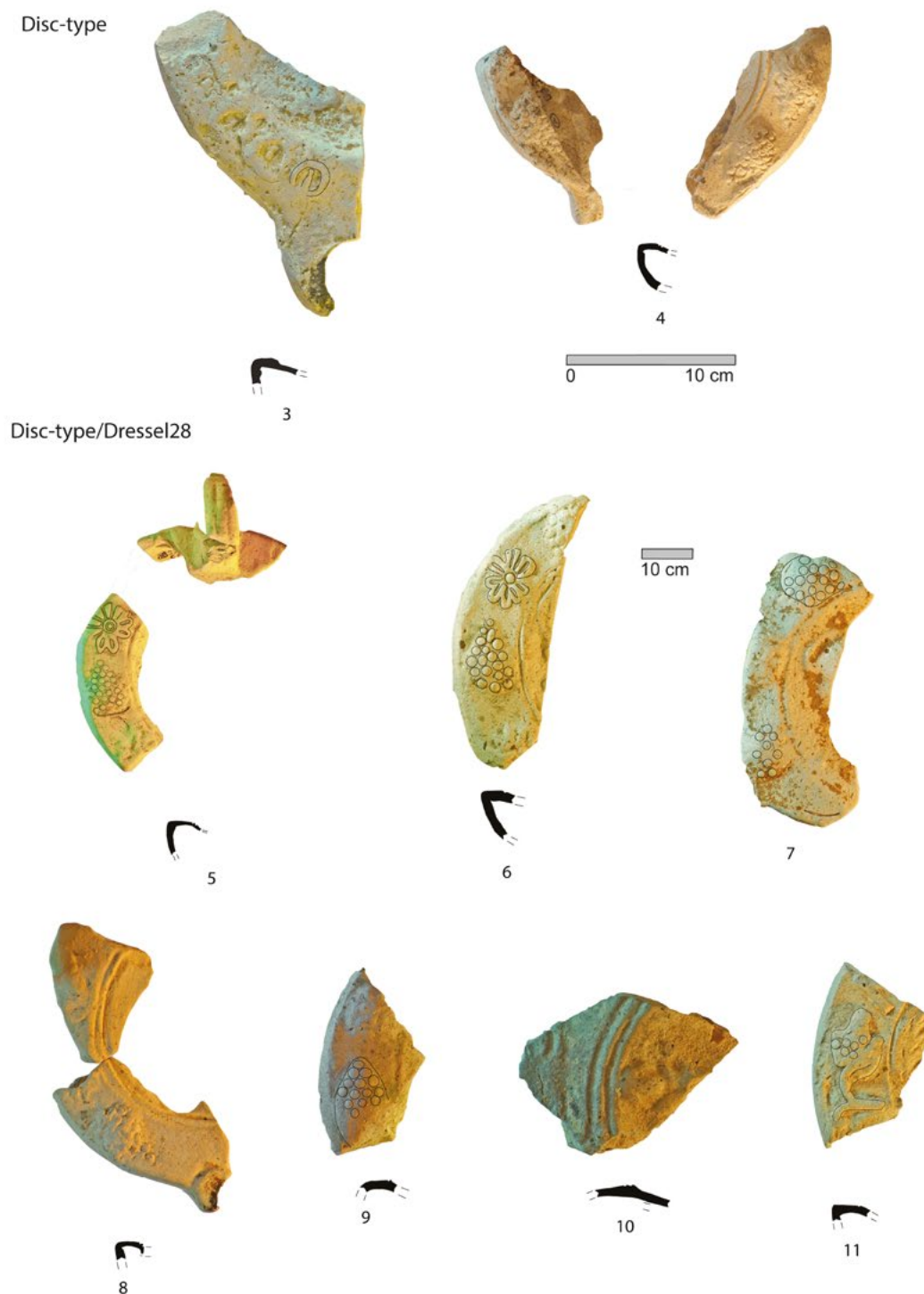


Figure 3. Lamps consumed in *Abelterium*: proposed shape evolution (Quaresma and António, 2017).

Dressel 28



Figure 4. Lamps consumed in *Abelterium*: proposed shape evolution (Quaresma and António, 2017).

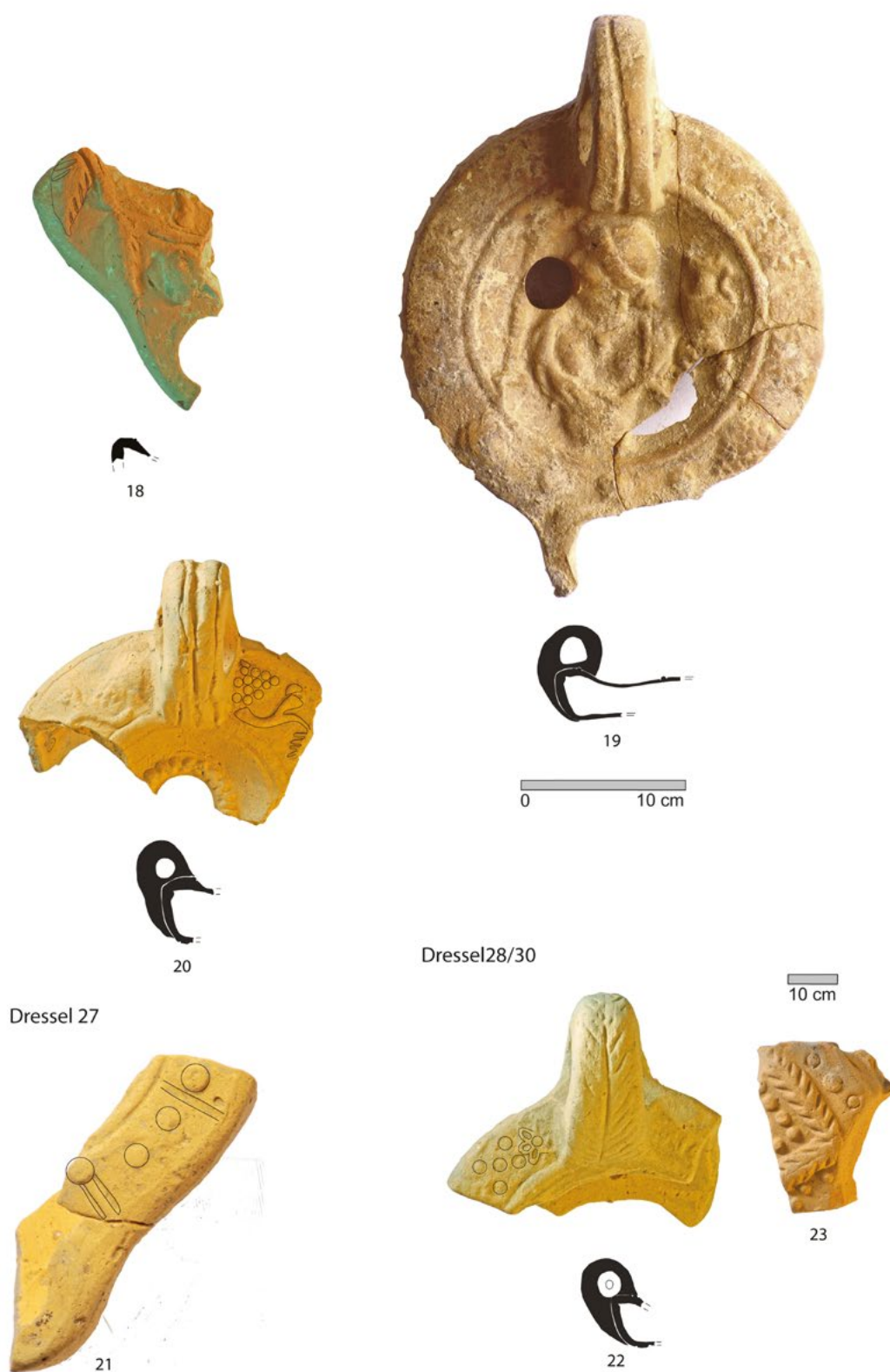


Figure 5. Lamps consumed in *Abelterium*: proposed shape evolution (Quaresma and António, 2017).

Disc-type derived



Figure 6. Lamps consumed in *Abelterium*: proposed shape evolution (Quaresma and António, 2017).

Augusta Emerita

Recent doctoral research on the sector of *Suburbio Norte* from *Augusta Emerita* represents the largest stratigraphic evidence, with a serious statistical universe, and (the most important in our opinion) a diachronic view made possible by several strata dated to the period between the 1st and the 6th centuries AD (González Blas, 2022). To the purpose of this paper, fig. 14 reflects the statistical evidence related to the period between the early 2nd century and the second half of the 4th century AD observed in this dump-pit. Despite the gap of the first and the second half of the 2nd century AD, as well as the weak universe regarding the 3rd century AD, this diachrony has given very important strata related to 100+, 150, 290 and 350-400 AD.

The phase of 100+ AD shows the expected typological evidence, dominated by the Volutes-type and the Disc-type families. The dominance of the Volutes-type family is largely demonstrated by the 150 AD phase, when two individuals of Dressel 30 (intrusions?) make their first presence, also observed in the small context from 200-300 AD.

The very-late 3rd century (290 AD) phase has a large universe of lamps, with a radical shift into a new paradigm. Volutes-type family is still important, what denotes a possible importance of the residuality-factor in this diachrony. Nevertheless, Disc-type family clearly dominates this phase, as we have observed in the eastern belt of *Hispania*. These phase from *Augusta Emerita* seems to be slightly later than the phase of 270+ from *Tarraco* and the quantity of late types demonstrates the increase of the new paradigm: in spite of their secondary role, Dressel 27 (1 vessel), Dressel 28 (9 vessels) and Dressel 30 (8 vessels) are finally consolidated morphologies in the consumption market of the *Lusitanian* capital.

Unfortunately, there is no stratigraphic evidence related to 300-350 AD, but the 350-400 AD phase is important since it shows several aspects:

- the problem of residuality, since the Disc-type family is still strongly represented with 42 individuals (Disc-type and Dressel 15-16);
- but, most importantly, the first chrono-stratigraphic evidence of the domination by the late types Dressel 27, Disc-derived and, mainly, Dressel 28 and Dressel 30.

In conclusion, both phases from the late 3rd century AD (270+ and 290 AD) at *Tarraco* and *Augusta Emerita* seems to demonstrate a gradual consolidation of the types Dressel 28 and Dressel 30 during the final decades of this century in the Hispanic territory. They also present the Disc-derived type as scarce form in both urban markets.

Table 8. *Augusta Emerita, Suburbio Norte* (adapted from [González Blas, 2022](#), fig. 81)

Cronology	SU	Type	Frag.
100+ AD	1319 (Almendralejo)	Volutes	9
		Dressel 9	2
		Dressel 11	7
		Den. 5G	2
		Dressel 15-16	1
		Dressel 20	1
		Disc	1
		Mineira	5
150 AD	1285+1286 (Almendralejo)	Der. Dressel 3	3
		Volutes	40
		Dressel 9A	1
		Dressel 9B	1
		Dressel 9C	1
		Dressel 11	36
		Dressel 5C	2
		Den. 5G	9
		Den. 7A	2
		Dressel 15-16	3
		Dressel 20	1
		Disc	3
		Dressel 30A	1
		Dressel 30B	1
		<i>Firmalampen</i>	1
		Mineira	19
200-300 AD	325 (MNAR)	Volutes	3
		Den. 5E	1
		Disc	2
		Dressel 30B	1
		Mineira	2
290 AD	1234+1237+1262 (Almendralejo)	Der. Dressel 3	1
		Volutes	14
		Dressel 9A	1
		Dressel 11	6
		Den. 5G	10
		Den. 10A	1
		Den. 10B	1
		Dressel 5C	2
		Dressel 6	3
		Dressel 7	1
		Disc	25

290 AD	1234+1237+1262 (Almendralejo)	Dressel 15-16	2
		Dressel 20	4
		<i>Firmalampen</i>	2
		Dressel 27	4
		Dressel 28	9
		Dressel 30A	1
		Dressel 30B	7
		Mineira	2
350-400 AD	1600 (Almendralejo)	Volutes	1
		Dressel 5C	3
		Dressel 6	1
		Dressel 15-16	1
		Disc	41
		<i>Firmalampen</i>	2
		Dressel 27	1
		Dressel 28	34
		Dressel 30B	25
		Disc-derived	1
		Bonifay 21	9

3. FINAL REMARKS

The geographic and temporal analysis undertaken in this paper may propose, at least as a future approach, comparative studies, based on stratigraphic and statistical results from different areas of the Empire, as a methodology for the understanding of the typological *evolutions* of lamps.

Regarding *Italia*, data shows that Volute-type family reaches the first half of the 2nd century AD, sharing the market with Disc-type family, while *Firmalampen* is a secondary family. Disc-type lamps are produced probably until the second half of the 3rd century. Dressel 28 and 30 may begin in 150+ AD and set up the market leadership in 225-250 AD, with strong opposition of Disc-type family. Disc-derived type seems to start slightly later than Dressel 28 and 30, in 225-250 AD.

The region of *Dacia* (occupied between 106 and 275 AD) confirms Ostia. Volute-type is still produced in the first half of the 2nd century AD, but trade is headed by *Firmalampen*, followed by Disc-type family. Disc-type family (and *Firmalampen*) dominates until the late 3rd century AD. *Dacia* has never produced later shapes as Dressel 27 and Dressel 28, while there was an incipient production of Dressel 30 and Disc-type derived. Dressel 28 and Dressel 30 apparently begin earlier in the Italic region, while *Dacia* remains more conservative in their consumption of lamps, in the central 3rd century AD, remaining Disc-type and *Firmalampen* the main morphologies.

The Danubian area reinforces the proposals obtained from *Dacia*. Disc-type derived is already important in the 3rd century AD, unlike the Italic region, when Dressel 28, Dressel 27 and Dressel 30 seem to face a strong opposition in non-Italic markets. In this sense, it is more reasonable the understanding of the values reached by the Disc-type derived family, already significant, above all in the town of *Ratiaria* (Moesia Superior). In *Ratiaria* and *Dacia*, there is just a scarce quantity of transitional models Disc-type/Dressel 28 and the late type Dressel 30.

Both in Mauritania and the northern *Hispania*, Dressel 28 begins its production in the second half of the 2nd century AD, prior to types Dressel 30 and Disc-derived, whose start may belong to the early 3rd century AD. The large quantity of lamps allows safe conclusions on the morphological evolution of lamps consumed in *Tarraco* and *Pollentia*, around 270+ AD, and Los Matagallares (3rd century AD). It attests the predominance of the Disc-type family, while late shapes Dressel 28, Dressel 30 and Disc-

derived type remain secondary types until the end of the 3rd century AD. *Firmalampen* are scarce in southern *Hispania* (Pereira and Arruda, 2016), being stronger in militarized areas such as the northern *Hispania*, *Dacia* or *Ratiaria*.

The stratigraphy from *Augusta Emerita* is crucial for the understanding of the typological evolution in the last decades of the 3rd century AD. The central idea of this paper, *how evolves the consumption intensity of the late types*, finds here an important diachronic demonstration. Late shapes (in this case Dressel 28 and Dressel 30) are scarce in 270+, but secondary in 290 AD, achieving the market control in the 4th century AD.

Finally, the late shapes Dressel 28, Dressel 27, Dressel 30 and Disc-type derived may achieve the 5th century AD. All this chrono-stratigraphic framework points to a further typo-chronological clue for the future research: they are essentially Late Antique types, born during the late 2nd and 3rd centuries AD, but they reach its general consolidation only during the Tetrarchy, that is, not prior to the end of the 3rd century AD.

Supplementary information ↑

Funding sources

This research was completed with no funding supports.

Supplementary material

Not applicable.

Data availability

Not applicable.

Acknowledgements

Not applicable.

Authorship contribution statement

Jose Carlos Quaresma: investigation, methodology, writing – original draft, writing – review & editing.

Competing interests

The author of this article declares that he has no financial, professional or personal conflicts of interest that could have inappropriately influenced this work.

Statement on the use of Artificial Intelligence

Not applicable.

REFERENCES

- Aguarod Otal, M.^ª C., and Amaré Tafalla, M.^ª T. (1987). "Un alfar romano de cerámica engobada común y lucernas en Tarazona (Zaragoza)". In: *XVIII Congreso Nacional de Arqueología*, Zaragoza, pp. 841-861.
- Alicu, D., and Nemes, E. (1977). *Roman lamps from Ulpia Traiana Sarmizegetusa*. Oxford: BAR, IS, 18.
- Bailey, D. (1988). *A catalogue of the lamps in the British Museum*. III (*Roman provincial lamps*). London: British Museum Publications.
- Baltac, A. (2018). "The pottery workshops at Ostrov (Durostorum), farm no. 4 spot, Constanta County". In: Rusu-Bolindet, V., Roman, Ch.-A., Gui, M.; Iliescu, I.-A., Botis, F.-O., Mustata, S., and Petrut, D. (Eds.). *Atlas of*

- Roman pottery workshops from the provinces Dacia and Lower Moesia/Scythia Minor (1st-7th centuries AD)*. Cluj-Nipoca: Mega Publishing House, vol. I, pp. 211-223.
- Baluta, C. L. (1986). *Firmalampen sur le limes de la Dacie. Pénétration et diffusion*. Studien zu den Militärgrenzen Roms, 3. Stuttgart: Konrad Theiss Verlag, pp. 441-446.
- Benea, D. (2008). "Productia de opate din provincia Dacia". In: Benea, D. (Ed.). *Dacia in sistemul socio-economic roman cu privire la atelierele mestesugaresti locale*. Timisoara: Universitatea de Vest Timisoara, pp. 301-340.
- Bernal Casasola, D. (Ed.) (1998). *Los Matagallares (Salobreña, Granada). Un centro romano de producción alfarera en el siglo III*. Salobreña: Ayuntamiento de Salobreña.
- Bernal Casasola, D., and García Giménez, R. (1995). "Talleres de lucernas en Colonia Patricia Cordoba en época bajoimperial: evidencias arqueológicas y primeros resultados de la caracterización geoquímica de las pastas". *Anales de Arqueología Cordobesa*, 6, pp. 175-216.
- Bocan, I., and Neagu, C.-M. (2018). "The pottery workshops at Alburnus Maior". In: Rusu-Bolindet, V., Roman, Ch.-A., Gui, M., Iliescu, I.-A., Botis, F.-O., Mustata, S., and Petrut, D. (Eds.). *Atlas of Roman pottery workshops from the provinces Dacia and Lower Moesia/Scythia Minor (1st-7th centuries AD)*. Cluj-Nipoca: Mega Publishing House, vol. I, pp. 91-114.
- Bonifay, M. (2004). Études sur la céramique romaine tardive d'Afrique. *BAR International Series*, 1301. Oxford: BAR.
- Bonifay, M., Carré, M.-B., and Rigoir, Y., dirs. (1998). *Fouilles à Marseille. Les Mobiliers (Ier-VIIe siècles ap. J.-C.)*. Travaux du Centre Camille-Julian, 22 / Études Massaliètes, 5. Paris: Errance/Lattes.
- Botis, F.-O. (2018). "The pottery workshops at Razboieni-Cetate". In: Rusu-Bolindet, V., Roman, Ch.-A., Gui, M., Iliescu, I.-A., Botis, F.-O., Mustata, S., and Petrut, D. (Eds.). *Atlas of Roman pottery workshops from the provinces Dacia and Lower Moesia/Scythia Minor (1st-7th centuries AD)*. Cluj-Nipoca: Mega Publishing House, vol. I, pp. 143-156.
- Brown, P. (1971). *O fim do mundo clássico. De Marco Aurélio a Maomé*. Lisboa: Verbo.
- Buora, M. (2017). "Lo studio delle lucerne romane dell'età tardo repubblicana e del primo-medio periodo imperiale nell'Italia settentrionale". In: Nuțu, G., Alincăi, S.-C., and Micu, C. (Eds.). *The man, the river and the sea. Studies in archeology and history in honor of Florin Topoleanu on his 65th anniversary*. Cluj-Napoca: Mega, pp. 21-38.
- Bussière, J. (2000). *Lampes antiques d'Algérie*. Monographies Instrumentum, 16. Montagnac: Éditions Monique Mergoil.
- Carandini, A. (1993). "L'ultima civiltà sepolta o del massimo oggetto desueto, secondo un archeologo". In: Momigliano, A., and Schiavone, A. (Eds.). *Storia di Roma. III L'età tardoantica, 2 I luoghi e le culture*. Torino: Giulio Einaudi Editore, pp. 11-40.
- Carandini, A., and Panella, C. (Eds.) (1973). *Ostia III, 2. Le terme del nuotatore. Scavo dell'ambiente V e di un saggio nell'area SO*. Studi Miscellanei, 21. Roma: De Luca Editore.
- Carandini, A., and Panella, C. (Eds.) (1977). *Ostia IV. Le terme del nuotatore. Scavo dell'ambiente XVI e dell'area XXV*. Studi Miscellanei, 23. Roma: De Luca Editore.
- Celis Betriu, R. (2005). "Las lucernas". In: Roca Roumens, M., and Fernández García, M. I. (Coords.). *Introducción al estudio de la cerámica romana. Una breve guía de referencia*. *CVDAS, revista de Arqueología e Historia*, 1, pp. 405-465.
- Cepas Palanca, A. (1997). *Crisis y continuidad en la Hispania del siglo III*. Anejos de Archivo Español de Arqueología, 17. Madrid: CSIC.
- Fernández Ochoa, C., and Morillo, A. (2007). "Ejército y amurallamiento urbano durante el Bajo Imperio romano: defensa y estrategia". In: Morillo, A. (Ed.). *El ejército romano en Hispania. Guía arqueológica*. León: Universidad de León, pp. 201-222.
- Fioriello, C. S. (2014) – "Lucerne a becco rotondo da Gnatia nel contesto della puglia centro-settentrionale". *Rei Cretariae Romanae Fautorum*, 43, pp. 367-381.

- Gilles, A., Bonnet, Ch., and Andrieu, M. (2020). "Deux nouveaux ensembles de la seconde moitié du III^e siècle à Sérézin-du-Rhône et Sainte-Colombe (Rhône)". In: *SFECAG. Actes du congrès de Lyon*. Marseille: SFECAG, pp. 281-300.
- González Blas, A. (2022). *Lucernas en Augusta Emerita. Análisis histórico-arqueológico de las producciones locales e importaciones*. Tesis doctoral. Universidad de Granada.
- Harris, W. 1980. "Roman Terracotta Lamps: The Organization of an Industry". *The Journal of Roman Studies*, 70, pp. 126-145.
- Hingley, R. (2005). *Globalizing Roman culture. Unity, diversity and empire*. New York: Routledge.
- Iliesu, I.-A. (2018). "The pottery workshop at Drobeta". In: Rusu-Bolindet, V., Roman, Ch.-A., Gui, M., Iliescu, I.-A., Botis, F.-O., Mustata, S., and Petrut, D. (Eds.). *Atlas of Roman pottery workshops from the provinces Dacia and Lower Moesia/Scythia Minor (1st-7th centuries AD)*. Cluj-Napoca: Mega Publishing House, vol. I, pp. 157-173.
- Iliesu, I.-A., and Botis, F.-O. (2018). "The pottery workshops from Histria". In: Rusu-Bolindet, V., Roman, Ch.-A., Gui, M., Iliescu, I.-A., Botis, F.-O., Mustata, S., and Petrut, D. (Eds.). *Atlas of Roman pottery workshops from the provinces Dacia and Lower Moesia/Scythia Minor (1st-7th centuries AD)*. Cluj-Napoca: Mega Publishing House, vol. I, pp. 193-209.
- Jones, A. H. M. (1964). *The later Roman Empire. 284-602. A social economic and administrative survey*. Oxford: Basil Blackwell.
- Kuzmanov, G. (2002). "Roman and Late Antique lamps from Ratiaria". In: Sirakova, S., and Stoytchev, T. (Eds.). *Annuary of the Institute of Archaeology with Museum II*, pp. 242-261.
- Martins, M., and Delgado, M. (1989-1990). "As necrópoles de Bracara Augusta". *Cadernos de Arqueologia, série 2*. 6-7, pp. 41-186.
- Morais, R. (2012). "Las lucernas de producción regional de Bracara Augusta". In: Bernal, D., and Ribera i Lacomba, A. (Eds.). *Cerámicas hispanorromanas. II Producciones regionales*. Cádiz: Universidad de Cádiz, pp. 369-394.
- Morillo Cerdán, A. (1999). *Lucernas romanas en la región septentrional de la Península Ibérica*. Montagnac: Éditions Monique Mergoil.
- Morillo Cerdán, A. (2015). "Lucernas romanas en Hispania: entre lo utilitario y lo simbólico". In: Fernandez Ochoa, C., Morillo Cerdán, A., and Zarzalejos Prieto, M. (Eds.). *Manual de cerámica romana II. Cerámicas romanas de época altoimperial en Hispania. Importación y producción*. Madrid: Museo Arqueológico Regional, pp. 321-428.
- Morillo Cerdán, A., and Rodríguez Martín, G. (2008). "Lucernas hispanorromanas". In: Bernal Casasola, D., and Ribera i Lacomba, A. (Eds.). *Cerámicas hispanorromanas. Un estado de la cuestión*. Cádiz: Universidad de Cádiz, pp. 407-427.
- Pereira, C. (2014). "Reflexiones sobre el decaer del comercio de lucernas romanas en el Occidente peninsular". *Onoba, Revista de Arqueología y Antigüedad*, 2, pp. 191-206.
- Pereira, C. (2017). "Produção e comércio de lucernas durante a Antiguidade Tardia: gênese e evolução das lucernas tardo-antigas de produção africana". *Ophiussa*, 1, pp. 105-121.
- Pereira, C., and Arruda, A. M. (2016). "As lucernas romanas do Monte Molião (Lagos, Portugal)". *SPAL*, 25, pp. 149-181.
- Pereira, C. S. P. (2008). *As lucernas romanas de Scallabis*. Dissertação de mestrado apresentada à Faculdade de Letras da Universidade de Lisboa.
- Pieri, D. (2005). *Le commerce du vin oriental à l'époque byzantine (Ve-VIII^e siècles). Le témoignage des amphores en Gaule*. Beyrouth: Institut Français du Proch-Orient.
- Pirenne, H. (1970 [1992]). *Maomé e Carlos Magno*. Lisboa: Edições Asa.

- Poveda Navarro, A. M. (2012). "La producción de lucernas en el sureste peninsular: primeros datos". In: Bernal, D., and Ribera i Lacomba, A. (Eds.). *Cerámicas hispanorromanas. II Producciones regionales*. Cádiz: Universidad de Cádiz, pp. 353-368.
- Quaresma, J. C. (2018). "Transição estratigráfica em Almoínhas (Loures, Portugal): evolução das importações finas na *Lusitania* entre c.100 e c.320 d.C.". *CIRA Arqueologia*, 6, pp. 199-230.
- Quaresma, J. C. (2021). *Le commerce de céramiques fines et de céramique culinaire africaine à Ammaia, une ville à l'intérieur du Sudouest d'Hispania (milieu du 1er s. – début du VIe s.)*. Roman and Late Antique Mediterranean Pottery, 16. Oxford: Archaeopress.
- Quaresma, J. C. (Ed.) (2025) - *An urban dump from the late 3rd c. AD (Tarraco – Carrer de Castaños, 1): chrono-morphological and commercial analysis of the main typologies*. BAR International Series, 3228. Oxford: British Archaeological Reports.
- Quaresma, J. C., and António, J. (2017). "Importações cerâmicas no interior da *Lusitania* durante a Antiguidade Tardia: tendências e cronologias da Casa da Medusa (Alter do Chão, *Abelterium*)". *Pyrenae*, 48.2, pp. 53-122.
- Quevedo Sánchez, A. 2015. *Contextos cerámicos y transformaciones urbanas en Carthago Nova (s. II-III d.C.)*. RLAMP, 7. Oxford: Archaeopress.
- Rodríguez Martín, F. G. (2002). *Lucernas romanas del Museo Nacional de Arte Romano (Mérida)*. Monografías Emeritenses, 7. Madrid: Ministerio de Educación, Cultura y Deporte.
- Roig Pérez, J. F. (2017). "L'abocador ceràmic de finals del segle III d. C. de la villa romana dels castellets (La Canonja, Tarragonès)". *Revista d'Arqueologia de Ponent*, 27, pp. 185-207.
- Rostovtseff, M. I. (1957 [1988]). *Histoire économique et sociale de l'Empire Romain*. Paris: Éditions Robert Laffont.
- Rusu-Bolindet, V., and Botis, F.-O. (Eds.) (2018). *The supply of ceramic goods in Dacia end Lower Moesia: imports and local developments. Exhibition catalogue*. Cluj-Nipoca: Mega Publishing House.
- Vásquez Paz, J. (2012). "Producción de lucernas altoimperiales en *Hispalis*: el taller de la plaza de la Encarnación de Sevilla". In: Bernal, D., and Ribera i Lacomba, A. (Eds.). *Cerámicas hispanorromanas. II Producciones regionales*. Cádiz: Universidad de Cádiz, pp. 399-324.
- Vieira, V. A. C. (2011). *As lucernas romanas da Praça da Figueira (Lisboa): contributo para o conhecimento de Olisipo*. Dissertação de mestrado. FCSH/Universidade Nova de Lisboa.
- Wilson, A. (2009). "Approaches to quantifying the Roman trade". In: Bowman, A., and Wilson, A. (Eds.). *Quantifying the roman economy. Methods and problems*. Oxford: Oxford University Press, pp. 213-249.