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Medieval tiles and bricks in Spain***

[A stampa in *Technik des Backsteinbaus im Europa des Mittelalters*, a cura di Johannes Cramer, Dorothee Sack, Berlin 2005 (Berliner Beiträge zur Bauforschung und Denkmalpflege, 2), pp. 39-49 © dell'autore – Distribuito in formato digitale da "Reti Medievali", www.retimedievali.it].

TECHNIK DES BACKSTEINBAUS

IM EUROPA DES MITTELALTERS

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Building archaeology and social change: Medieval tiles and bricks in Spain¹

Juan Antonio Quirós Castillo

Introduction

The development of Building Archaeology over the last years in Europe has raised new historical questions and developed new tools of analysis.² While the vertical stratigraphy has become the main tool of diachronic reading of construction history, the social history has been studied, too, paying great attention to production processes and forms of social control.

Traditionally, the study of building methods has been considered a secondary aspect of the history of architecture, especially in the post-classic period. The use of techniques or materials has often been explained in formal or stylistic terms, as an element of typological classification or in a theory of styles. Only rarely technical or material typologies have been used as a method of dating buildings.

Another interpretation has identified techniques with regular materials as esthetically more perfect than with irregular, assigning ideological and symbolic values to fixed forms of building. The discussion about classical materials reused in medieval buildings is one of the best examples for this kind of approach. This analysis can be fully applied to the history of research on medieval architecture in Spain, which has given priority to formal, technological or ideological criteria.

For this reason the present work can only be a first thought about the main problems, putting forward some perspectives and work proposals.

The following is a brief diachronic run through the medieval architecture of the Iberian Peninsula, separating the early medieval period from the feudal one, and giving special attention to the Islamic architecture. Before approaching these problems a brief reflection of the available sources for the archaeological study of brick and tile production in medieval Spain is necessary.

Sources and studies

The study of brick and tile production on the Iberian Peninsula has gained very little attention from the scholars dedicated to archaeology or architecture. For example, hardly any author has taken the dimensions and moulds used in producing the medieval tiles and bricks into account, although many investigations have shown the usefulness of this metrological approximation.³ As a matter of fact, not even archaeologists pay the necessary attention to this kind of architectural ceramics, although their work includes long and detailed descriptions about other movable objects.

It is true, that over the last years new research with very promising results has been made, but it is very difficult to come to an even superficial synthesis of the history of these construction materials.⁴

No tile or brick production center of the medieval period has been studied archaeologically in detail. Some of them have been excavated, as in the case of Valencia, where tiles from the Islamic, late medieval and modern age were found, but none of them has been an object of study and specialized publications.⁵ This situation contrasts with the great number of studies and excavations of kilns and factories of medieval ceramic production.⁶

Bearing in mind the limitations that the material register currently presents, it is necessary to use other means of information, offered by the written sources. The bylaws and the medieval privileges of numerous Hispanic urban centers gather information of great interest for the understanding of production processes of different construction materials. The privileges, especially those based on those from Cuenca and Teruel, include precise indications about the construction jobs and about the production control systems.⁷

From the late Middle Ages on, regulations and chapters of different corporations are known, as in the case

Building	Type	Chronology	Size [cm]	Bibliography
Casa Herrera (Badajoz)	<i>Tegulae</i>	5th–6th		Ulbert and Caballero Zoreda 1975, pp. 65, 66, 235.
Santa Maria de Mijangos (Burgos)	Bricks, tiles	6th?	32 x 32 x 5-7	Lecanda 2000, pp. 187–188.
Pla de Nadal (Valencia)	Tiles, floor tiles	7th		Juan and Pastor 1989, p. 152.
Gózquez de Arriba (Madrid)	Tiles	7th		Vigil Escalera 2000, pp. 249–250.
Cárcava de la Peladera (Segovia)	Tiles	7th		Strato 1999, p. 71.
Recópolis (Guadalajara)	Tiles	6th–7th		Olmo (personal comment).
Santa Comba de Bande (Orense)	Bricks	2nd half of the 7th		Caballero 2002, p. 97.
Santa Maria de Melque (Toledo)	Tiles	8th		Caballero 2002, p. 99.
El Trampal (Cáceres)	Bricks, tiles	8th–9th	40-41 x 23-24 x 3-5	Caballero and Sáez 1999, p. 84.
Cámara Santa (Oviedo)	Bricks	8th	30 x 20 x 4	Fernández and Quirós 1999, p. 379.
Santa Maria de Bendones (Oviedo)	Bricks	8th	44 x 44 x 5 30 x 20 x 5 26 x 14 x 3	Fernández and Quirós 1999, p. 381.
San Julián de los Prados (Oviedo)	Bricks	8th	44 x 44 30 x 30	García De Castro 1997, p. 46.
San Tirso (Oviedo)	Bricks	8th	44 x 44 30 x 30	Fernández and Quirós 1999, p. 382.
San Miguel de Lillo (Oviedo)	Bricks	9th	44 x 44 x 3-4,5 30 x 30 x 3-4,5 30 x 21-15 x 3-4,5	García De Castro 1997, p. 46.
San Miguel de Lillo (Oviedo)	<i>Tegulae</i>	9th	53,5 x 34 x 2,6	García De Castro 1997, p. 48.
San Miguel de Lillo (Oviedo)	Bricks	9th	30 x 30	García De Castro 1997, p. 47.
San Adriano de Tuñón	Bricks	8th	44 x 44	Fernández and Quirós 1999, p. 384.
Santiago de Gobiendes	Bricks	9th	44 x 44	Fernández and Quirós 1999, p. 385.
San Salvador de Valdediós	<i>Tegulae</i>	9th	30 x 20 x 4	García De Castro 1997, p. 51.
Santiago de Compostela	<i>Tegulae</i>	9th		García De Castro 1997, p. 52.
Tolmo de Minateda (Albacete)	Tiles	9th		Gutiérrez Lloret 1999, p. 78.
Madinat Al-Zahra	Tiles	10th	54-55 x 24-12	Vallejo and Escudero 1999, p. 143.
Madinat Al-Zahra	Bricks	10th	35 x 25 x 5 42 x 42 32 x 32	López Cuervo 1985, p. 57; Almagro Gorbea 2000.

Fig. 2. Spanish early medieval bricks

of Valencia or Barcelona, which offer many details about the artisan-organization.⁸ On the other hand, no treaties or systematic manuals of construction of medieval times have been kept, yet they became frequent in the following centuries.

The production of bricks and tiles in the early Middle Ages

Contrary to the neglect the study of brick and tile production of medieval times has suffered, classical archaeologists have dedicated special attention to the study of building material in roman and late antiquity architecture in the last years.⁹

The investigators have shown that tiles and bricks were introduced into Hispanic architecture late and scarcely, due to the existing construction culture, using earth building materials.¹⁰ In fact, the use of tiles and bricks is documented only from the middle of the 1st century.

The Bética and some sectors of the Tarraconense were the territories where these materials were widely spread. It was possible to prove a complex productive system during high and medium imperial age, as in the case of the Guadalquivir valley. Field walking surveys have shown the existence of a hierarchical production structure, enabling export through waterways.¹¹ Production of bricks and tiles was also linked to legionary and military establishments (fig. 1).¹²

Apparently, the production lasted through the 3rd–4th century, and although there are reports of lateritious

productions even at the end of the 4th century or at the beginning of the 5th in centers as Mérida, later on the manufactures stopped working.¹³ Likewise, the materials made with brick and mortar walls and sometimes covered with plaster, which were typical of the 3rd–4th century, disappeared.¹⁴

In figure 2 the use of tile and brick on the Iberian Peninsula during the Middle Ages is gathered in about twenty buildings and architectural collections. It shows the existence of a significant continuity of the use of these materials in the peninsular architecture from the 6th to 10th centuries, both in the use of tiles on the covers and of bricks used in the construction or in the flooring.

In some cases, these materials have been reused, as for example in the Extremaduran church of Trampal;¹⁵ but often they had been made *ex novo* during the early medieval period, as in the churches of Bande and Melque¹⁶, in Madinat Al-Zahra or in the ecclesiastic architecture built in Asturias during the 8th–10th century (fig. 3).¹⁷ The latter examples are important, since it does not seem that in Asturias a construction culture based on brick had been settled in the roman age.¹⁸

It is also important to point out that brick and tile are not only documented in religious and prestigious collections, but that they also appear in the 7th century domestic constructions of rural scope as Gózquez (Madrid)¹⁹, „Los Billares“ (Zamora) or Cárcava de la Pelad- era, in Segovia²⁰, or in 6th–7th century urban centers like Mérida²¹.

The brick measures show a continuation of the roman module. Along with the “canonical” measures documented in other places of the empire and gathered by ancient authors as Vitruve other rectangular moulds with measures: of 1 ft tall and 3/4 ft wide or 1 ft tall and 1/2 ft wide appear.²²

It is necessary to mark the existence of special and decorated bricks at least during the 5th–7th century, with motives that can be related to African buildings. For example, moulded bricks with Christian iconographic signs, geometrical and faunal ornamentation made in the Bética are known.²³ The presence of specialized workshops in this area of the Peninsula is shown by the recent discovery of bricks with the inscription “*solemnis nicare*” in Cordoba, in buildings as the mosque, San Vicente or in Cercadilla.²⁴

The obvious transformations of the early medieval construction techniques on the Iberian Peninsula can

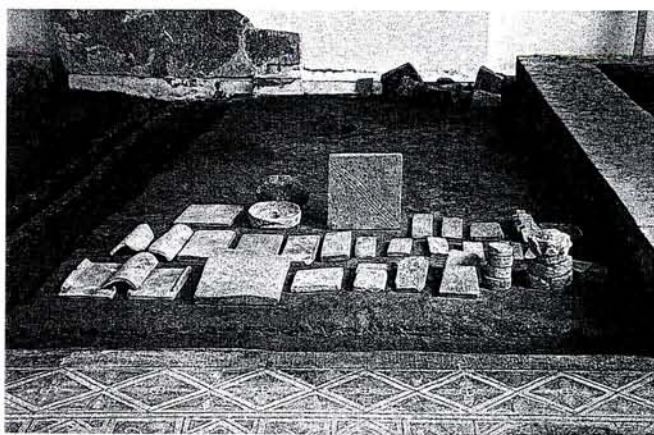


Fig. 1: Roman bricks and tiles of the roman villa of La Olmeda (Pedrosa de la Vega, Palencia).

and isolated elements with diverse sizes, and tiles sometimes glazed in green and yellow.³⁰

However, all authors that have analyzed the andalusian construction techniques, tend to say that the use of brick in the califal and taifa architecture has always been very moderate.³¹ Therefore one has to infer the existence of a polarized and fragmented production structure around specific power centers. Often, the brick appears together with masonry as in the Alcazaba of Malaga.³² In Toledo, it is exactly in this period that brick architecture appears first (fig. 5).

The treaty of Ibn 'Abdun (beginning of the 12th century) established the official size of bricks (30 x 15 x 8 cm; 30 x 30 x 8 cm), their quality and the need of conserving the official standards in the muhtasib of the mosque, the location of the kiln of bricks and tiles and the way in which these materials were to be used.³³

A metrological analysis of the bricks made in Seville during the 10th–20th century allows some conclusions about the production processes (fig. 6) and the existence of a substantial continuity of the medieval modules could be proved.

The revival of brick and tile production in the 12th–15th century

Numerous authors understand the 12th century as the period in which in almost all feudal Europe the resurgence of brick and tile production happened.³⁴ Yet, recent research has been able to prove the existence of brick and tile production at least from the Carolingian period on. As it has been shown before, in Spain the production of brick and tile went on during all the Early Middle Ages. But the most significant change took place in the 12th and 13th century. In this period a significant transformation in the production organization is obvious, in the appearance of nucleated workshops around the cities, the diffusion of rural factories and the transformations of the constructive techniques.

The art historiography has developed important studies about the use of brick and tile, essentially in the context of the called "*mudéjar art*".³⁵ In fact, the use of brick architecture has aroused many controversies: some people think that there is a very close identification between "*mudéjar art*" and brick architecture, whereas others do not agree.³⁶ The introduction of

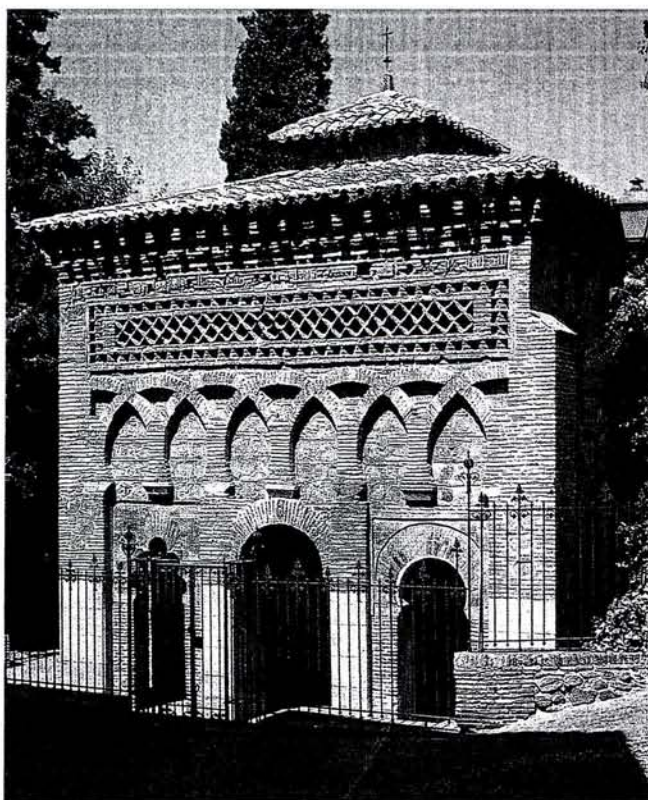


Fig. 5: Toledo, Bib-al-Mardum Mosque or Mosque of the Cristo de la Luz (year 999–1000).

brick architecture from the 12th century onwards in the feudal kingdoms has been considered the result of the influence of Islamic constructive techniques, others think there is a certain technological continuity, that goes back to the roman period.³⁷ The influence of Cistercian architecture in the introduction of brick, so important in other European regions, has to be excluded, because, except some examples like the monasteries of Nogales (León) or Santa Maria de Vega (Palencia), this architecture was made of stone.³⁸ Leaving aside these controversies there is no doubt that before the 12th century a certain polarization of limited production can be observed in some urban centers. This is the case, for example, in the city of León, where the documentation from the 10th and 11th century mentions the existence of "*casas murias*", covered with tile or with "*tabula*" richly decorated,³⁹ and where at the beginning of the 11th century, the king Alfonso V. reconstructed León's walls "of mud and log", and the church of San Juan "of lime and brick".⁴⁰ In Catalonia tile coverings of roman tradition are known until the end of the 9th century, while the Ara-

be explained as a result of simplification of production cycles, as a consequence of a decrease in artisan specialization in relation to the deep social and economical transformations that took place after the political fracture of the Roman Empire. The diminishing capacity of the leading classes caused a modification in the ways of artisan organization and the disappearance of many of the artisan *corporationes* linked to the urban centers. It is true that a complete disappearance of the specialized artisans did not take place. Yet the lack of continuous demand due to the socio-economic transformations undoubtedly led to the formation of bands of itinerant artisans who possessed the necessary technical background to construct sophisticated buildings.²⁵

The 7th century is characterized by rapid change in building-methods. In domestic architecture the local construction cultures of pre-roman origin remained, achieving an outstanding prominence during the whole Early Middle Ages. In the case of prestigious building the disappearance of stonework techniques after the 7th century is obvious, that had survived in Hispania longer than in other European regions. Those techniques reappeared only in the 10th century in the context of the feudalization of society from the north of the Peninsula.²⁶



Fig. 3: Apse of the Asturian church of San Tirso, Oviedo, 8th century.

In the Hispanic case, there is no kiln known, that was specially made for each construction by itinerant artisans, although the available information suggests progressive loss of skills of the *figlinae* specialized in the Betica during the visigothic period (6th–7th century).

The islamic tile and brick production

Although there are some studies about brick architecture in Al-Andalus, it is also true that we do not have an appropriate synthesis which would allow more than general considerations.²⁷

The use of bricks, tiles and architectonic ceramics is documented in Al-Andalus at least since the califal period. An example is the palatine city of Madīnat Al-Zahrā' (fig. 4), built near Cordoba in the 10th century. It is technologically a new construction; it used solutions ahead of its times, that spread in the following centuries as a result of firm governmental promotion. Thus, for example, the beginning of the green and manganese enameled pottery production has been related to the process of califal support.²⁸

In the case of Madīnat Al-Zahrā', the use of brick does not constitute a total innovation since, in the city of Cordoba, these materials were already used in buildings like the main mosque or in the reconstruction of the walls made by 'Umar Adb al-Aziz'. Nevertheless, it is worth to point out its use, as ancient moulds were still used (with 41–42 and 30–32 cm sided tiles), especially in the floors.²⁹ Brick was also used in arches

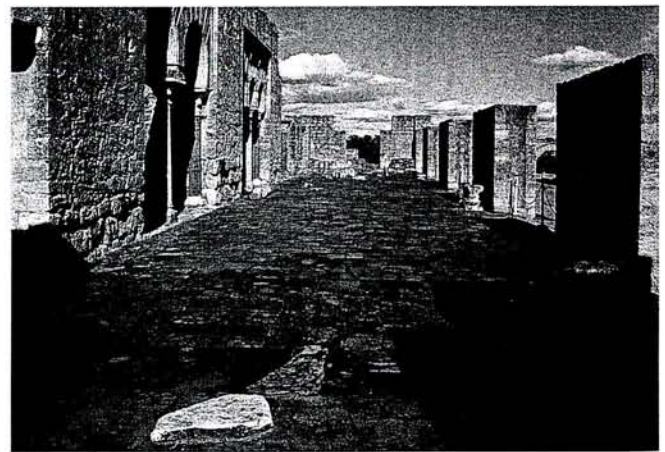


Fig. 4: Floor tiles of the palatine city of Madīnat Al-Zahrā' (Cordoba).

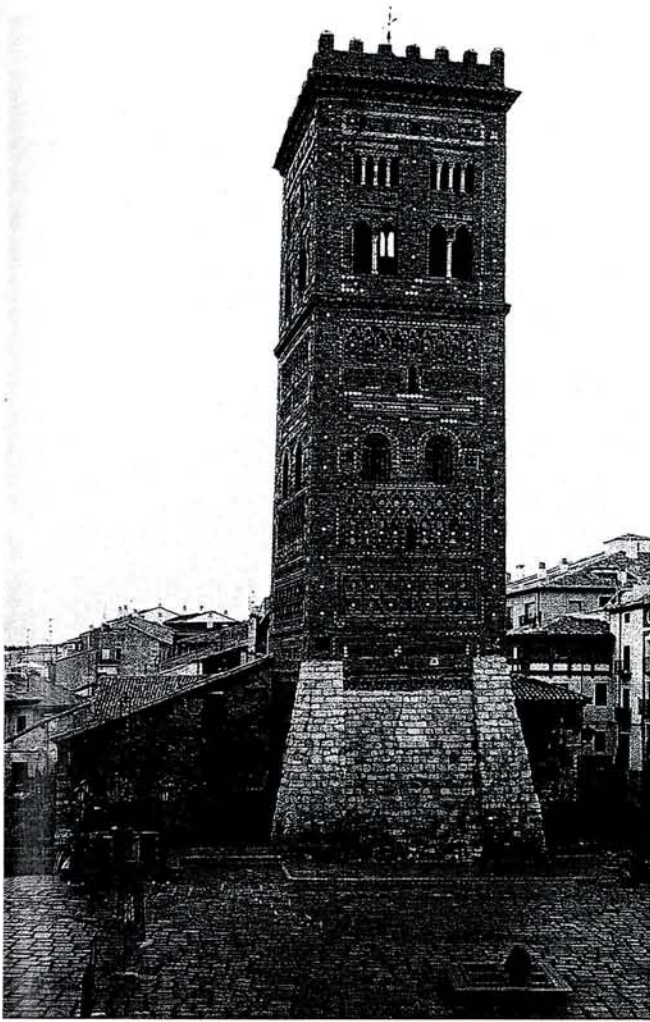


Fig. 7: Tower of San Martín church, Teruel.

manuscript of the *Cantigas* of Alfonso X the Wise, show us urban centers in which the tile-covered buildings alternate with organically covered houses.⁴⁶ In the Cantabrian regions the available information suggests a later introduction of brick and tile production. Until the 13th century the use of this kind of covering was absolutely reduced to prestigious buildings.⁴⁷ Nevertheless, it was not until the 14th or 15th century that it was generally used in cities like Guipuzcoa and Álava, where these materials were important to fight the frequent fires (fig. 9).⁴⁸

This spatial diversity shows the existence of a heterogeneity of construction cultures and of very different forms of organization of the bricklaying art in the analyzed period. The documentation distinguishes different production models that change in relation to the

socio-economic structure: During the Early Middle Ages the main use of brick and tile has been the re-utilization of roman materials and a casual production associated to the construction of single prestigious buildings. The existence of brick kilns associated to monasteries is documented at least in the 13th century in Sahagún and in San Pedro of Villanueva (Cangas de Onís, Asturias).⁴⁹

Urban brick production is known from privileges, regulations and bylaws that regulate the brick and tile production and commercialization process. The first known *Carta Puebla* or municipal privileges are those of Teruel (1177) and Cuenca (1194), that have been models for many privileges in other parts of the Peninsula during the following two centuries.⁵⁰ Regulated were in these *cartas* aspects as the size of the bricks and tiles, their quality, their price and even the characteristics of production (such as areas of extraction of the raw material, location of the factories or length of the



Fig. 8: Apse of the San Tirso of Sahagún church (León).

Building	Chronology	Size [cm]	Bibliography
Citadel	10th	27 x 13,5 x 3	Tabales 2001, p. 12.
Citadel	11th	27 x 13,5 x 4	Tabales 2001, p. 18.
Citadel	12th	28 x 14 x 4	Tabales 2001, p. 19.
Main Mosque	1172–1176	29 x 14 x 5	Jiménez Sancho 2002, p. 307
La Giralda	1184–1198	32 x 16 x 6	Jiménez, Cabeza 1988, p. 114.
San Cristobal's door	2nd half of the 12th	29 x 14 x 5,5	Rodríguez de Guzmán et alii 1993, p. 722.
Urban excavation	12th–13th	28 x 14 x 4	Corzo 1995, p. 177.
Conde de Ibarra's Palace	12th–13th	28 x 14 x 4	Tabales 1999, p. 144.
San Esteban	12th–13th	28 x 14 x 4	Tabales, Pecero 1999, p. 165.
San Cristobal's door	13th–14th	27 x 13,5 x 5	Rodríguez de Guzmán et alii 1993, p. 722.
Urban excavation	15th	28 x 14 x 5	AAA 1997, p. 447.
Urban excavation	16th	28 x 14 x 4,5	AAA 1997, p. 494.
Urban excavation	1550–1650	28 x 14 x 4,5	AAA 1998, p. 662
Urban excavation	ca. 1600	30 x 14,5 x 4,5	AAA 1997, p. 518.
Urban excavation	1650–1750	30 x 14,5 x 4,5	AAA 1998, p. 663.
Urban excavation	18th–19th	25 x 13 x 4	AAA 1997, p. 498.
Urban excavation	1900	27 x 13 x 4,5 26 x 13 x 6	AAA 1997, p. 500.

Fig. 6: Table with the size variation of the bricks of Seville during the 12th–20th centuries (AAA= Anuario Arqueológico de Andalucía).

bic tile became only general at the end of the 13th century.⁴¹ In the Valencia area, the spreading of brick happened in the final stage of the Islamic dominion, consolidating its production in the 13th century under Islamic rule.⁴² Likewise, in Aragon the *mudéjar* brick architecture spread from the middle of the 13th century on in centers like Teruel, Daroca, Zaragoza or

Calatayud (fig. 7).⁴³ In the meseta, we have signs of stable productions at least since the middle or the end of the 12th century, although it was only in the following century the existence of many production kilns is documented in the main Castilian cities,⁴⁴ or that graves made with brick walls spread (fig. 8).⁴⁵ Despite all this, in the 13th century the miniatures which appear in the

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Fig. 9: The Portalón (Vitoria-Gasteiz), civil building of the 15th century.

moulds). An autonomous and fragmented market of constructive materials was frequently established around each city. In Castile we know, for example, that the export or import of bricks and tiles was forbidden to protect the internal market.⁵¹

It is possible to document a tendency to reduction of size of bricks and tiles. For example in 15th century Toledo the moulds of bricks and tiles were to be made with the mark of the city of Toledo, "and not for much time, because they wear out and the tiles and bricks do not come out as they should, but very thin".⁵² Parallel to this urban production model, highly specialized production centers were developed, that produced a brick and tile volume destined to a wide market, even if they were located in rural spaces, as the case of Terzer, near Calatayud.⁵³ But undoubtedly the dominant production model of feudal Spain during the whole Middle Ages was little rural factories of intermittent use, that are documented for the 14th–15th century.

Conclusion

The short synthesis presented in this paper, has left aside: other kinds of production closely related to the brick and tile production, like decorated bricks, documented at least since the middle of the 13th century and the beginnings of the 14th century in Aragon, as well as architectural ceramic products glazed and enameled, which were known from the middle of the 13th century in places as Aragon or Andalusia, that have been frequently studied.

Yet the outlook, though very incomplete and partial, allows to observe the existence of an outstanding diversity of hand-crafted production models; its interpretation – if it wants to be more than a mere formal approach – obliges to make a complex analysis, in which the understanding of the architectural phenomena acquires all its meaning in the framework of the social relations of production that are characteristic of the Hispanic reality in the Middle Ages. Nevertheless, only precise monographic studies about local and regional realities, will allow to specify many of the queries brought up in this paper, contributing in this way to the construction of a social history of architecture.

Figure Reference

All figures: Juan Antonio Quirós Castillo.

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Notes

- 1 The present work has been realized in the investigation project BHA 2002-04170-C05-05 financed by the Ministry of Science and Technology. Thanks to R. Izquierdo Benito, A. Vigil Escalera, A. López Mullor, M. Alba Calzado, L. Olmo, J. M. Vila and S. Perez and to R. Azuar, Ph. Araguas and J. Argüello Menéndez for the possibility of consulting their unpublished works. Thanks to M. Fernández Mier for his critical commentaries. L. Elorza has made the translation.
- 2 The bibliography about this argument is very large, e.g. two specialized magazines dedicated to this theme: *Archeologia dell'Architettura* and *Arqueología de la Arquitectura*.
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- 4 Without the intention of being exhaustive: Tabales 2000, p. 54, Argüello 1999, Altarriba 2001. Islamic architecture: Pavón Maldonado 1986, Pavón Maldonado 1999, Azuar 2003. Building materials: Hammam 1999.
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