



Ceramic Production and Social Change in the South east of the Iberian Peninsula between the Islamic and Christian Periods: The Case of Granada

Miguel Busto Zapico¹ · Alberto García Porras¹

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Abstract

The major social and political shifts undergone by the south eastern Iberian Peninsula, and specifically Granada, Spain, between the fourteenth and seventeenth centuries brought about clear changes in the ceramic repertoire. This work analyzes these changes through the comparative analysis of three archaeological sites: the Castle of Moclín, the Palace of the Abencerrajes, and the Fortress of Lanjarón. These sites present a clear transitional sequence spanning Nasrid repertoires and Early Modern Castilian productions, including instances of both continuity and rupture. The article advances a new statistical methodology to analyze the degree of standardization of these productions, the coefficient of variation.

Keywords Ceramics · Iberian Peninsula · Transition · Production

Resumen

Las grandes transformaciones sociales y políticas que tienen lugar en el sureste de la Península Ibérica y en concreto en Granada (España) desde el siglo XIV hasta el XVII, tuvieron una clara plasmación material en el repertorio cerámico. En esta investigación nos proponemos realizar un análisis de estos cambios a partir del estudio comparativo de tres yacimientos arqueológicos: el Castillo de Moclín, el Palacio de los Abencerrajes y la Fortaleza de Lanjarón. En ellos se nos ofrece una clara secuencia de transición entre los ajuares cerámicos nazaríes, las producciones netamente castellanas y modernas, pudiéndose observar rupturas y continuidades. Iniciando una metodología de análisis del nivel de estandarización de estas producciones a través de análisis estadísticos (coeficiente de variación).

✉ Miguel Busto Zapico
bustomiguel@ugr.es

Alberto García Porras
agporras@ugr.es

¹ Departamento de Historia Medieval y Ciencias y Técnicas Historiográficas, Facultad de Filosofía y Letras, Universidad de Granada, Campus “La Cartuja”, C/. Profesor Clavera S/N, 18071 Granada, Spain

Introduction

This work focuses on the changes, attested on a variety of levels, in ceramic repertoires in the south eastern Iberian Peninsula, specifically the Kingdom of Granada (the modern provinces of Málaga, Granada, and Almería), resulting from the demise of al-Andalus with the conquest of the Nasrid Kingdom (the latest Islamicate polity in the Iberian Peninsula) by Castile. The study examines standardization in ceramic shapes with the aid of statistical analysis (coefficient of variation). This is the first time this methodology is used to analyze ceramics from this region and period. The study does not aim to reach final conclusions, but to establish a basis on which to build a larger dataset that includes additional specimens and contexts and also to take into consideration chemical and petrographic analysis. It is hoped that future work will confirm or reject the conclusions presented in this work.

In the period spanning the fourteenth and seventeenth centuries, the south eastern Iberian Peninsula underwent major changes that fundamentally altered the region's economic, social, and cultural structure. When the Castilian and Aragonese military conquest of the early thirteenth century came to a halt, the formation of the Nasrid Kingdom of Granada, which was to last for 250 years, introduced a new player on the Iberian board. The policy of this kingdom focused on the western Mediterranean, where it sought a variety of alliances with Aragon and with different Italian and North African polities, while sustaining an intermittent and wavering struggle with Castile (Arié 1992; Peinado Santaella 2000; Viguera Molins 2001). However, the kingdom's small size and political instability in its final years, along with the revitalization of the expansive drive of western Christian powers in the late fifteenth century led to its eventual downfall. The 1489–92 War of Granada ended with the kingdom's annexation to an expanding Castile.

The end of al-Andalus involved the integration of a densely populated Islamicate territory into a growing Christian kingdom. This resulted in processes of conflict and co-existence between the new Castilian oligarchy and the Muslim population (*mudéjares*), which remained the predominant group in the last decade of the fifteenth and through most of the sixteenth century. The ostensible policy of intercultural toleration presented in the capitulation pact (1492), signed by the last Nasrid ruler and the Catholic monarchs, was not respected and soon gave way to a growing social antagonism between Muslims and Christians. The first violent expression of this antagonism took place in 1499–1501 and led to the forced conversion of all the Muslims in the kingdom. These tensions became open in the early sixteenth century, and resulted in a revolt by the Moriscos (Muslims forced to convert, but who furtively kept their customs and even their religion) that swept large tracts of the kingdom between 1568 and 1571. This began a process that eventually led to the expulsion of the Moriscos in the early seventeenth century. After this, nothing was left of al-Andalus in Castile but a pale shadow of its former self. These conflicts had enormous social and economic implications for the Mudéjar and Morisco groups,

and this directly projects on material culture. The chronological milestones for our analysis will be the Nasrid period (fourteenth century), the post-conquest Mudéjar period (1492–1501) and the long Morisco period (1502–72), when the process can be regarded as complete (Caro Baroja 1991; Domínguez Ortiz and Vincent 1985).

This is not the only territory in which this sort of process of social and cultural assimilation occurred. Al-Andalus was a changing social formation whose territory gradually shrank between the eighth and fifteenth centuries, and previous works on the assimilation of former Andalusi territories into the expanding Christian feudal societies can be our reference. This process is especially well known in the Spanish Eastern Coast, where J. Martí, J. Pascual, and J. Coll, alongside L. Roca and R. Azuar, have abundantly proven the possibilities afforded by ceramic analysis as evidence for the nature and pace of the occupation, cultural assimilation, and even, in the words of some authors, colonization of the territories conquered by the Christians. Although the example posed by the Kingdom of Granada is characterized by *sui generis* processes of social change, largely owing to the evolution of the Castilian and Nasrid societies in the Late Medieval period, it still presents useful similarities with earlier instances.

Political events led to profound social transformations, reflected in the structure of Nasrid cities, the organization of rural settlements, the modes of agrarian exploitation, the organization of craft, and, consequently, material culture, including domestic ceramic assemblages. This new society demanded and created a new ceramic repertoire (Busto Zapico et al. 2017), whose analysis can provide key functional and cultural clues. As such, we argue that changes in the ceramic repertoire are a reflection of the pace, nature and depth of economic, social, and cultural transformation.

Archaeological Contexts under Analysis

In order to trace changes in the ceramic repertoire and, through it, social shifts, we have selected three very different archaeological contexts whose nature and characteristics will contribute to outline this process of change (Fig. 1). First, the Castle of Moclín, an Andalusi fortified settlement (*hiṣn*) in the frontier of the Nasrid Kingdom. The castle was conquered in 1486 and turned into a late feudal fortification (García Porras 1998, 2011, 2014, 2015, 2020; García Porras and Bordes García 1999; García Porras et al. 2018; Linares Losa 2014). Second, the excavations undertaken in the building of “El Polinario,” within the Alhambra, have yielded the remains of a building that, based on the similarity in construction techniques to those found in the nearby palatial complex of Abencerrajes, at the heart of the palatine *madīna* of the Alhambra, must be regarded as part of this complex. After the Castilian conquest, the building was reused as a private residence (Busto Zapico 2013b; Malpica Cuello 1992). Finally, the fortress of Lanjarón, built after the Castilian conquest to control one of the natural routes into the mountains of the Alpujarra, an interior region and a hotbed of social conflict throughout the sixteenth century (García Porras 2000; Lentisco Navarro 2008).

These sites are, therefore, very different. Two of them were founded during the Andalusi period: Moclín, which was established in the eleventh century and was

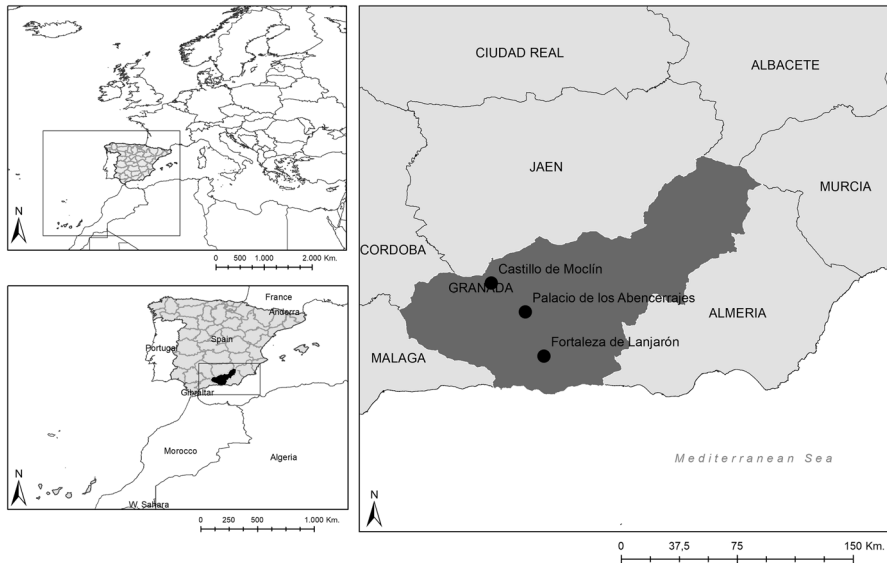


Fig. 1 Location of the sites under analysis

heavily populated prior to the Castilian conquest, and the building of “El Polinario,” built in the palatial complex of the Abencerrajes in the Nasrid period. The Castle of Lanjarón, in contrast, although not entirely *ex novo*, having some medieval precedents, was largely built in the Early Modern Age, after the conquest. Moclín and the Abencerrajes’ palace display a clear transition from the Nasrid to the Castilian repertoires, in which there are processes of both continuity and rupture. Lanjarón, on the other hand, presents the ceramic assemblage used by the military garrison deployed in the fortress after the conquest.

Methodology

This work focuses on ceramic production in the south eastern Iberian Peninsula, specifically in the territories of the former Nasrid Kingdom, using the ceramic assemblage from three archaeological sites: the Castle of Moclín, the Palace of the Abencerrajes, and the Fortress of Lanjarón. Chronologically, the study spans the fourteenth and seventeenth centuries and the transition between the Islamicate Kingdom of Granada and the full integration of its territory in Castile. In order to reveal changes in ceramic production, the archaeological material was characterized typologically and chronologically. Previous studies that link colonial processes of expansion and conquest, and the related phenomena of change and resistance, as reflected in ceramic production, have been used as reference (Gronenborn and Magnavita 2000; Rothschild 2006; Webster 1999). We have also taken into consideration studies that examine movement of populations,

migrations, diasporas, and their relationship with some ceramic productions and their meaning (Carvajal López 2019; Cowell and Jenks 2020; Živković et al. 2021a, b).

The initial steps of the project consisted in the thorough assessment of the available record, including both earlier publications and museum holdings. This information led to the selection of the three archaeological sites on which the analysis is largely based. Second, the ceramic record was examined in detail according to set and well-defined criteria. Finally, all the data were compiled and analyzed. Owing to the large number of ceramic items under consideration, a normalised recording system was used, allowing us to extract all possible technological, technical, functional, and typological information from each individual piece.

The key variable to the quantitative methodology used in this study is the *Maximum Number of Individuals* (MNI) (Adroher Auroux et al. 2016; Arcelin and Tuffreau-Libre 1998; Escribano Ruiz 2017). MNI reflects the number of bodies, rims, and bases of each ceramic type after all matches between individual fragments have been found and accounted for, so that the fragments of the same vessel are not counted separately. The method is widely used in ceramic studies (Amorós 2013; Busto Zapico 2018b; Buxeda i Garrigós and Madrid i Fernández 2008, 2016).

In addition, we have sought to identify the technological factors involved in ceramic production through such variables as clay composition, the use of inclusions, shaping techniques, firing methods, surface treatment, and decoration. We took into consideration fabric colors, defining the predominant color in given production series and discarding those items whose color was regarded as the product of later alterations. Inclusions and tempers played a key role in the typological, geographical, and formal characterization of different productions (Orton and Hughes 2013:275–285). Hand-formed, thrown and molded shapes were identified. Firing was divided into two stages: the initial stage stretches from the lighting of the kiln to the point in which maximum temperature is reached; the second involves the cooling of the kiln and the ceramics within it. Ceramics fired in both reducing and oxidizing atmospheres were identified. A large proportion of the ceramics analyzed were fired twice: to bake the clay and to fix the glazed decoration, although archaeometric analysis is necessary for a full understanding of this process. Decoration was also analyzed in detail, considering techniques and the distribution of the decoration on the pieces.

The clustering system used is based on the division of ceramic items into different groups. The first distinction is functional; the second focuses on shape, of which different series are defined, using the nomenclature used in prior research (Roselló Bordoy 1991); the third defines morphological variants within each series, forming typologies. Ceramic types were defined according to shared features within a more or less ample assemblage and inside a given chronological span (Clarke 1968). After the types were defined, subtypes based on more or less significant variants were established. This is a widespread method in ceramic studies (Busto Zapico 2018b; Escribano Ruiz 2014; García Porras 2001; Solaun Bustinza 2005). Once the typologies had been defined, the degree of standardization of all variables was calculated for each of these typologies.

We understand standardization as a reduction in variability of artifacts at several levels: composition of the raw materials; production technique; and shape and dimension, as well as decoration (Fagnoli 2021). In ceramic studies, the concept of standardization has mostly been regarded as evidence of craft specialization, and thus a key variable to trace the development of past complex social and economic systems (Orton and Hughes 2013:144–149). Standardization is regarded as a consequence or a feature of different degrees of craft specialization. In fact, it is one of the forms of archaeological evidence that allow us to build coherent arguments and present hypotheses concerning craft specialization (Orton 2012; Orton and Hughes 2013:144–149). The underlying premise is that a “high degree of standardization or homogeneity in vessel attributes reflects mass production, while relative heterogeneity is taken to indicate household production” (Blackman et al. 1993:61). Several previous works have assumed that standardization is the result of greater production rates, regarded as characteristic of complex forms of social and economic organization (Clark and Parry 1990; Costin 1991; Costin and Hagstrum 1995; Fagnoli 2021; Roux 2003; Sinopoli 1991). Here we shall focus on standardization and diversity of products, in other words, in variations in shape and type through the calculation of the coefficient of variation (CV).

The CV is defined as the standard deviation of a sample divided by the median value, often multiplied by 100 and expressed as a percentage (Orton 2012; Orton and Hughes 2013; Shennan 1988:56–57). Variability can also be statistically measured through the standard deviation, although in this case the CV is preferred because it scales variability to the size of the variable (Costin and Hagstrum 1995:631). The CV is widely used in ceramic composition studies (Živković et al. 2021a, b), and its use is advocated for geochemical and petrographic data and for any other archaeological data, both metric and nonmetric, in the analysis of craft standardization (Fagnoli 2021). In fact, it has been argued that the “CV should be the standard statistic in studies of variation” (Eerkens and Bettinger 2001:502). In this study we have measured standardization based on the CV of the diameter of the rim (var. 1), the maximum body thickness (var. 2), and the minimum body thickness (var. 3) in a sample of materials from Palacio de los Abencerrajes (Tables 1, 2, and 3). In this way, the CV results of these variables offer a measure of the standard dispersion, which allows for the analysis of the degree of standardization of a given craft production (Shennan 1988:57).

We have taken into account several constants in the CV of the metric variables. To date, constants are largely known through ethnoarchaeology, but this has not precluded their use in the analysis of a number of archaeological assemblages from different periods. A model has been developed to infer the scale and intensity of ceramic production, including modern traditional pottery production in Vall de Uxo (Castellón, Valencia, Spain), that allows for the development of a model of high rate production (Roux 2003:770). The use of the CV to establish the degree of standardization of morphometric variables has been successfully applied to Late Roman (Busto Zapico and Cirelli 2018), medieval (Orton 2012) and post-medieval (Busto Zapico 2018a, 2020) ceramics. We understand, therefore, that these models can be extrapolated to the assemblage at hand, although it must not be forgotten

Table 1 Standardization index of Nasrid wares. Typological analysis from Abencerrajes

NASRID CERAMIC PRODUCTIONS				
Typology	Standardization	Var. 1	Var. 2	Var. 3
<i>Frying Pan I</i>	No. of pieces	19	23	23
	Mean	19.11	0.48	0.33
	Std. Deviation	3.87	0.09	0.09
	CV (%)	20.26	18.87	27.92
<i>Ataifor I</i>	No. of pieces	7	8	8
	Mean	18.57	0.58	0.45
	Std. Deviation	7.37	0.10	0.09
	CV (%)	39.67	18.00	20.57
<i>Jar T-I</i>	No. of pieces	23	48	48
	Mean	10.22	0.64	0.36
	Std. Deviation	2.07	0.17	0.10
	CV (%)	20.22	26.87	26.23
<i>Jug I</i>	No. of pieces	4	12	12
	Mean	7.75	0.60	0.45
	Std. Deviation	1.50	0.15	0.09
	CV (%)	19.35	25.62	20.10

that standardization is a relative variable that depends on a large number of factors (Costin 2001:301–303).

The reference values that reveal a greater or lesser degree of standardization, and thus the characteristics of production, are as follows: a CV of 57.7% or greater is the expected variability in random production conditions (Eerkens and Bettinger 2001:497). “Variation above 57.75% suggests intentional inflation of variation and may indicate situations where individual manufacturers are actively trying to differentiate their products from those of others, thereby increasing variation” (Eerkens and Bettinger 2001:497). A CV between 6 and 9% is associated with small-scale production by part-time specialists, with a maximum production of 6000 per year and craftperson (Roux 2003:780). Another constant indicates that expert potters yield CV values between 2–3% and 6% (Longacre 1999:49–53). Previous research suggests that a CV between 2.5% and 4.5% is the minimum attainable in manual production unconstrained by external rules (Eerkens 2000: 667). A CV between 3 and 6% is associated with a medium level of production and specialization, in which potters produce between 4000 and 14,000 pieces per year each (Roux 2003:780). A CV below 3% suggest large scale and highly specialized production, with an output of over 14,000 pieces per potter per year (Roux 2003:780). It has been theoretically estimated that 1.7% is the minimum CV attainable in manual production, owing to limitations in human perception (Eerkens and Bettinger 2001:495; Ogle 1950:231). A CV below 1.7% thus suggests the automation of production through the implementation of norms and regulations; “sets of artifacts that display CVs less than 1.7% imply automation or use of an independent standard” (Eerkens and Bettinger 2001:495–496). “Variation below 1.7 percent suggests use of a scale or

Table 2 Standardization index of post-conquest wares. Typological analysis from Abencerrajes

POST-CONQUEST CERAMIC PRODUCTION				
Typology	Standardization	Var. 1	Var. 2	Var. 3
<i>Bowl I</i>	No. of pieces	4	15	15
	Mean	11.00	0.63	0.51
	Std. Deviation	0.82	0.15	0.11
	CV (%)	7.42	24.47	21.92
<i>Carinated bowl III</i>	No. of pieces	6	8	8
	Mean	12.17	0.81	0.50
	Std. Deviation	2.04	0.14	0.17
	CV (%)	16.78	16.69	33.81
<i>Dish III</i>	No. of pieces	6	18	18
	Mean	21.67	0.73	0.57
	Std. Deviation	1.63	0.21	0.13
	CV (%)	7.54	29.21	22.65
<i>Jar IV</i>	No. of pieces	3	14	14
	Mean	16.00	0.53	0.34
	Std. Deviation	6.00	0.18	0.15
	CV (%)	37.50	34.35	42.37
<i>Jug III</i>	No. of pieces	13	53	53
	Mean	9.38	0.68	0.46
	Std. Deviation	1.71	0.22	0.14
	CV (%)	18.22	31.93	30.07
<i>Jug VII</i>	No. of pieces	8	15	15
	Mean	14.13	0.63	0.43
	Std. Deviation	3.80	0.17	0.12
	CV (%)	26.88	27.29	28.49

external template to measure and manufacture artifacts and should be typical of settings where items are mechanically produced (i.e., perhaps from a mold or by a machine)” (Eerkens and Bettinger 2001:497). Following these previous studies we can interpolate the use of norms that condition production, typological randomness, scale of production, and even the number of pieces produced.

The Analysis of Ceramic Production

The ceramic assemblages analyzed in this study come from abandonment archaeological layers overlying occupation levels, and comprise a wide variety of chronological, productive, functional, and formal types spanning the fourteenth century (the final period of Islamic presence in the Iberian Peninsula) and the seventeenth century (the expulsion of Morisco communities). The assemblages reflect demand, the organization of production centers and technical know-how. The material reflects

Table 3 Standardization index of Castilian-Modern wares. Typological analysis from Abencerrajes

CASTILIAN-MODERN CERAMIC PRODUCTION								
Typology	Standardization	Var. 1	Var. 2	Var. 3	Typology	Var. 1	Var. 2	Var. 3
<i>Bowl IV</i>	No. of pieces	18	28	28	<i>Flared bowl IV</i>	9	32	32
	Mean	13.67	0.64	0.46		26.78	0.93	0.69
	Std. Deviation	1.68	0.13	0.07		6.04	0.39	0.16
	CV (%)	12.30	20.18	14.61		22.54	41.88	23.29
<i>Bowl VI</i>	No. of pieces	15	24	24	<i>Flared bowl VI</i>	17	43	43
	Mean	14.80	0.58	0.45		36.59	1.23	1.03
	Std. Deviation	2.57	0.13	0.11		4.39	0.25	0.23
	CV (%)	17.36	21.84	23.63		11.99	20.60	21.93
<i>Bowl VII</i>	No. of pieces	6	10	10	<i>Frying Pan II</i>	13	14	14
	Media	11.83	0.79	0.50		25.23	0.72	0.56
	Std. Deviation	0.41	0.12	0.14		6.13	0.17	0.16
	CV (%)	3.45	15.15	28.28		24.28	23.18	29.17
<i>Dish II</i>	No. of pieces	6	13	13	<i>Frying Pan III</i>	6	6	6
	Media	18.33	0.60	0.47		16.00	0.55	0.45
	Std. Deviation	4.97	0.15	0.13		4.34	0.30	0.16
	CV (%)	27.09	24.53	26.65		27.10	54.85	36.51
<i>Dish IV</i>	No. of pieces	32	66	66	<i>Jar II</i>	16	24	24
	Mean	21.84	0.69	0.54		13.13	0.68	0.49
	Std. Deviation	2.49	0.15	0.12		2.83	0.23	0.10
	CV (%)	11.40	22.24	21.54		21.53	34.74	19.82
<i>Dish VII</i>	No. of pieces	9	16	16	<i>Jar III</i>	12	13	13
	Media	22.33	0.81	0.64		13.17	0.58	0.35
	Std. Deviation	3.39	0.27	0.19		3.76	0.21	0.12
	CV (%)	15.18	32.99	29.69		28.57	36.18	33.86
<i>Dish XIV</i>	No. of pieces	5	11	11	<i>Jug II</i>	11	25	25
	Mean	21.60	0.62	0.52		10.55	0.63	0.47
	Std. Deviation	6.23	0.20	0.19		4.66	0.14	0.09
	CV (%)	28.84	33.01	36.43		44.15	22.76	19.23

both continuity in the identity of various social groups and the formation of new ones, which is a common social phenomenon (Fennell 2003).

In terms of functional distribution, the three assemblages under consideration present significant similarities (Fig. 2). Tablewares, kitchen wares, and ceramic types used for storage are the most common types by far, other functions being only residually represented. The percentage of items belonging to the three main groups, however, changes from site to site. In the Castle of Moclín, the most common group is that of tablewares (48%), followed by kitchen wares (33%); in the Palace of the Abencerrajes, the most numerous group is that of kitchen wares (35%), followed by table wares (34%). In the Fortress of Lanjarón, storage wares is the most common type (34%), followed by kitchen wares (31%). These differences must be attributed

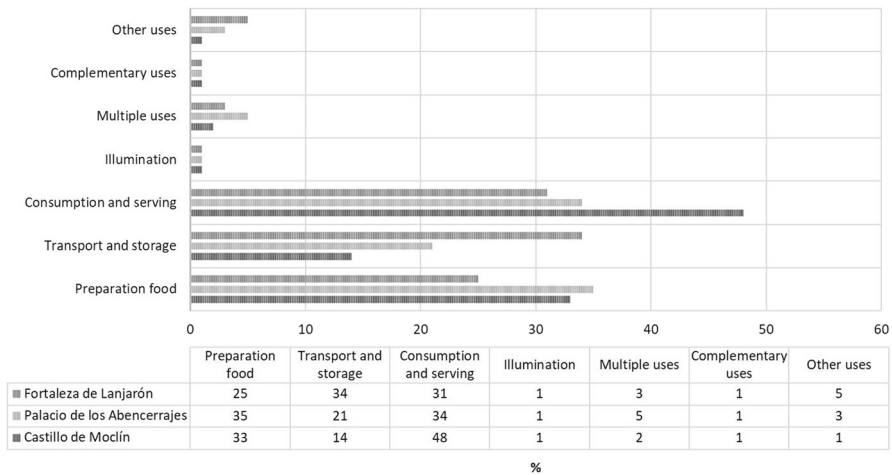


Fig. 2 Chart and contingency table expressing the presence of functional groups in the sites under analysis

to the different nature of these sites. It is, for instance, not surprising that storage wares are the most common in Lanjarón, a fortress that played a significant role in the military conflicts between Castilian and Moriscos in the sixteenth century, with the resulting need to store supplies for the garrison. In Moclín and Abencerrajes, on the other hand, the contrasts are likely due to the different functions of the areas excavated in both sites. In terms of finishing of the surfaces, the most common feature is glazing, followed by wares without any type of cover. A similar proportion of enameled and slipped wares was also attested (Busto Zapico et al. 2017:16–18).

In terms of shapes, Moclín and Abencerrajes also present significant similarities, which is probably due to the fact that both belong to the same cultural horizon, but small, yet significant differences, can be attested. Residual shapes are more common in Moclín, where Nasrid shapes and productions are more abundant. Some of the shapes found in Moclín are, in fact, altogether absent from Abencerrajes. It is possible that urban environments with a direct link with the court were more amenable to change and the introduction of new shapes, which only arrived to rural settlements at a later date. In Lanjarón, although a small proportion of the identified shapes can be associated with the Nasrid emirate and even earlier periods, most of the assemblage belongs to Castilian types (i.e., postdating the conquest). The shapes mirror those found in the city of Granada and other urban contexts in the kingdom in sixteenth-century contexts.

Nasrid Ceramic Production

Nasrid ceramic productions (Fig. 3) are the most common in the Moclín assemblage (44%); in Abencerrajes, however, this group only appears residually in the oldest excavation layers (25%).

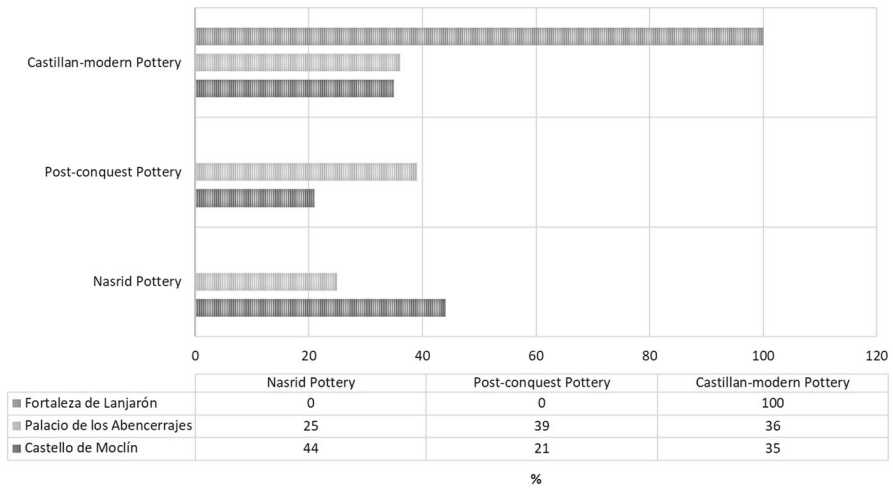


Fig. 3 Chart and contingency table expressing the presence of chronological groups in the sites under analysis

Nasrid kitchen wares present a series of highly diagnostic features in both sites (Fig. 4). Their fabric is intense red in color, which suggests the use of iron-rich clays. The preparation of these clays is a laborious process. Inclusions are numerous, especially schist, limestone, and to a lesser extent, quartz and finely-grained. The use of these inclusions result in a compact ceramic fabric, highly decanted and hard fabrics suitable for containers that were to be directly exposed to the action of fire and repeated thermal shock. Bases are convex and their surfaces were smoothed

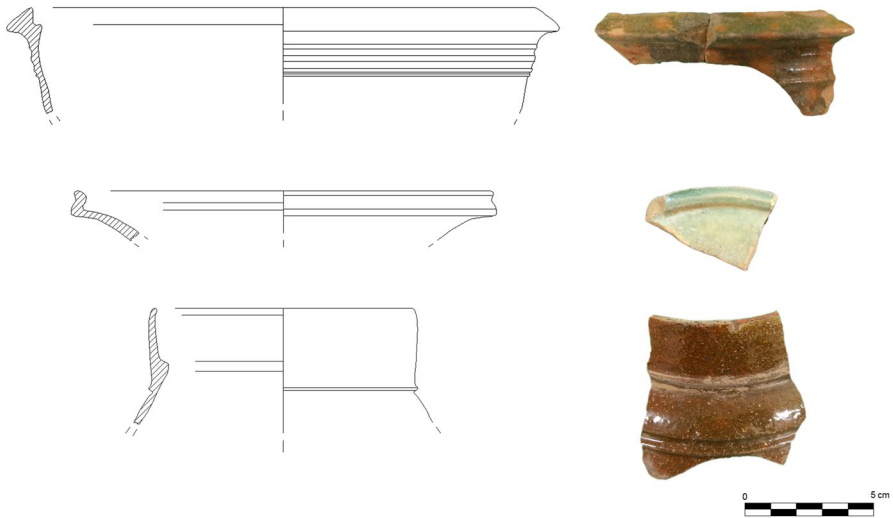


Fig. 4 Main Nasrid ceramic types analyzed

out with flat tools. This technique is already found in earlier periods; the smoothing out of the surface of the base increases the pot's resistance to thermal shock and implies a substantial saving in resources, as the smoothing out saves the need to finish the shape of the base on the potter's wheel (Fernández Navarro 2008:167). Although smoothed-out convex bases are characteristic of the Nasrid period, the technique is also found in the sixteenth century. The inner surface of Nasrid cooking wares are glazed over with a honey-colored or greenish translucent glaze. Over time, these glazes were replaced by much thicker and darker glazes. Nasrid cooking wares were carefully made, with translucent glazes, an efficient use of available surfaces and small shapes. Outfolding lips, the section of which become increasingly simple over time, are only found in the Nasrid period.

In storage wares, inclusions (limestone, schist, and vegetal tempers, identified through the presence of cavities within the fabric) are larger in size. These wares were not glazed. Their base is coarse, the result of the setting of a layer of sand or ash between the wheel and the pot during shaping.

In tablewares, the color of the fabrics are more variable. The most characteristic is reddish in color, although paler reds, yellowish, and whitish fabrics are also attested. These fabrics are hard and calcareous, rich in mineral inclusions such as caliche, mica, quartzite, and calcite; the inclusions are in all cases small, suggesting that the clay was thoroughly decanted. Containers used to contain liquids were made with porous clays to keep the contents cool. Bases were finished on the wheel, and *ataifores* present a ring base. Some of the characteristic features of Nasrid tablewares survived with modifications into the sixteenth century, but some disappeared altogether. For instance, the high ring bases characteristic of the Nasrid period tended to become lower over time (Linares Losa 2014:114). In addition, *ataifores* tend to become smaller, probably for individual use. Metal oxides (copper, manganese, iron, antimony, and cobalt) were used to color the decorative glazes; the mixing of the different ingredients used in the glazes in the right proportions involved a complex technology.

It has been argued that the advanced skills of Nasrid potters resulted in well-shaped, highly decanted and light fabrics (Flores Escobosa et al. 1997:23). Indeed, compared with later productions, Nasrid shapes are remarkably light. For instance, cooking pans can weigh as little as 474 g (Busto Zapico 2015:215). Walls are more slender than in later productions: cooking pans present a minimum thickness of 0.3 cm, *ataifores* of 0.4 cm, and jugs of 0.4 cm. In fact, the thickness of the walls and the diameter of rims and bases are its most characteristic feature of these productions (Busto Zapico 2013a:71). These pieces were considerably standardized (Table 1), but not as much as the two groups that we shall see shortly. All typologies analyzed yield a CV below 40%, which suggests that these ceramics were made in non-random conditions, as these conditions are expected to yield an CV of 57.7% or above (Eerkens and Bettinger 2001:497). The highest CV for this period is 39.67%, related to the diameter of the rim of the *Ataifor I* type; the CVs for the remaining types and variables is around 25%. These pieces are representative of a small-scale production model carried out by non-specialists; the volume of production must have not exceeded 6000 pieces per potter per year (Roux 2003:780), and must not have been subject to superimposed production constraints (Eerkens 2000:667),

without the use of molds or patterns to elaborate the profile of the pieces (Eerkens and Bettinger 2001:497). The small scale of pottery production in the Nasrid period stands in sharp contrast with the output of sixteenth-century pottery workshops (Pleguezuelo Hernández et al. 1999:267). We cannot rule out that potters were trying to make their pieces recognizable deliberately, increasing the variability of the shape and the profile (Eerkens and Bettinger 2001:497).

Post-Conquest Ceramic Production

This section deals with a *sui generis* group of ceramics which was produced during a very short time. These are the ceramic types found in layers dated to the immediate aftermath of the conquest of the Nasrid Kingdom of Granada in 1492 and through the sixteenth century. Some of the features present in these productions were long lived (some were already attested in the late Nasrid wares), while others are to be found only during this period. Although these are transitional productions, these wares present characteristic features that allow us to distinguish them from typically Nasrid and Castilian ceramics. Some authors have drawn a direct link between this group of wares and the Morisco population, referring to it as “Morisco ware.” This burdens these wares with economic and social issues of identity which, in our opinion, may be overstated. As such, we have chosen to refer to these ceramics as “post-conquest wares.”

In quantitative terms, the differences between Moclín and Abencerrajes are significant (see Fig. 3). While in Moclín post-conquest wares account for 21% of the total ceramic record, in Abencerrajes these ceramics amount to 39% of the overall assemblage, making it the most abundant group in this site. This suggests that the ceramic transition that these productions represent had less of an impact in Moclín than in Abencerrajes, perhaps as a result of the distance between the former site and the city of Granada and the influences that were reaching it. Another factor may have been the expulsion of Moclín’s Morisco population after the conquest (Ladero Quesada 1968). This may have hampered the emergence of a hybrid demand characterized by the coexistence of Nasrid and post-conquest wares. What seems clear is that these differences in the ceramic repertoire reflect the cadence and variables that affected the process of ‘Castilianization’ in different locations. The high proportion of post-conquest wares found in the Alhambra may indicate that this was one of the epicenters of change in ceramic repertoires. We must not forget that some areas in the *medina* of the Alhambra, which are close to the palatial complex under analysis, housed important pottery workshops both in the Nasrid period and after the conquest (García Porras et al. n.p.) and that these spaces may have played a key role in disseminating these, sometimes peculiar shapes, with which to meet the needs of the Castilian elite, which immediately after the conquest was present in the Alhambra and Granada, but not so much elsewhere in the kingdom.

Sixteenth-century kitchen wares preserve many characteristically Nasrid features (Fig. 5). Fabrics remained pretty much unchanged, with the use of iron-rich clays with schist, limestone, and quartzite inclusions, although the size of these inclusions tend to be sensibly larger than in the earlier period. The bases were

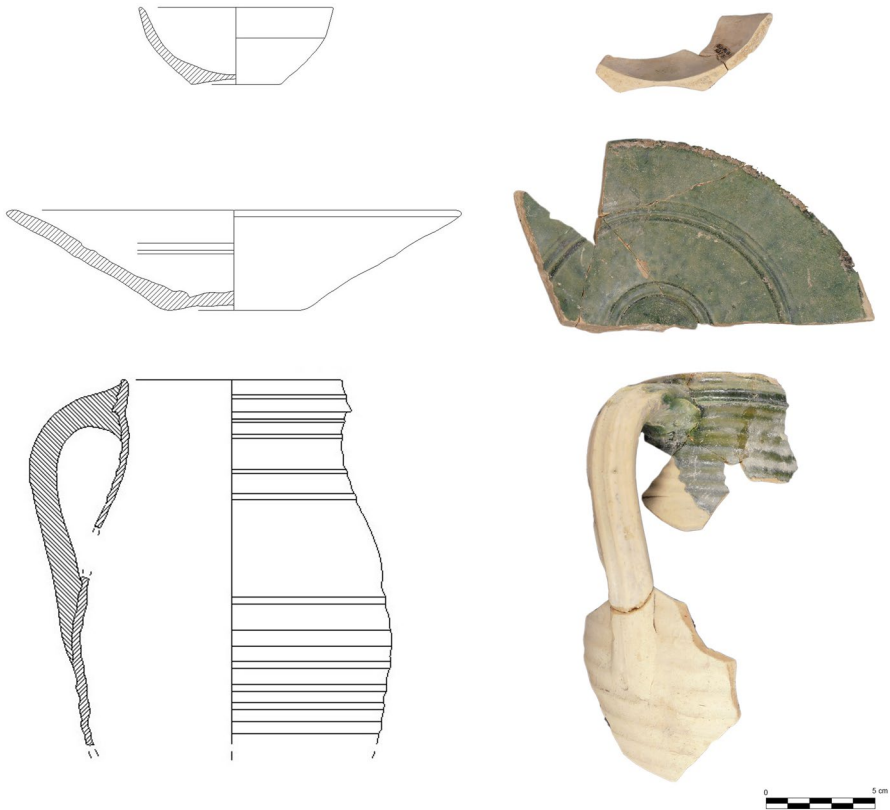


Fig. 5 Main oist-conquest ceramic types analyzed

still smoothed out with flat tools, but finishing on the wheel is also attested. This feature may be a consequence of a growing tendency toward the polishing of surfaces or simply of the imitation of other ceramic productions (Fernández Navarro 2008:167). It is unclear whether this technological change had already begun in the Nasrid period or whether it is a typically Castilian influence. On the other hand, while some pieces still present a thin, translucent glaze, metallic-looking, thicker and darker glazes gradually become the norm over the sixteenth century. This suggests significant changes in the composition of the glazes and glazing technologies. In terms of shape, the changes mostly affect the lips, which become progressively simpler, especially in saucepans; this trend becomes particularly noticeable in the seventeenth century. The greater thickness of necks in closed cooking pots allows for the development of faint grooves over the lips, which are now outlined by parallel ridges on the outer wall. The bodies of cooking pots tend to abandon their former pear-shaped profile to adopt a globular outline.

Two different-colored fabrics, whitish and orangey, were used for the production of storage wares. They are both rich in large-grained inclusions. Everything suggests that these clays were less thoroughly decanted, and present a coarse

appearance. These clays may be a direct response to technical needs; the large size of the inclusions may have contributed to preserve the shape of the pots and avoid cracking during drying and firing. The presence of elongated pores in the fabric also indicates the use of vegetal tempers. Like in the previous period, the grainy surface of the base suggests that a layer of sand or ash was laid out over the potter's wheel during shaping.

Tablewares feature a wide variety of fabrics, whitish and orangey clays being the most abundant. These fabrics tend to present very fine schist and limestone inclusions. The clays used are hard and very compact, although paler fabrics tend to be more porous than darker ones. The bases of tablewares were finished on the wheel. Virtually all tablewares were covered in white or green glazes. The use of opaque stanniferous glazes become widespread; this creates a white background over which to lay out other decorative motifs. The glazing of liquid containers becomes increasingly common over time. However, the most significant change undergone by post-conquest tablewares is the emergence of new shapes, most notably plates. As noted, already in the Nasrid period some *ataifores* may have been adapting to individual consumption; after the conquest, this series is superseded for good by the plate.

Another significant variable is weight. These wares are a good deal heavier than Nasrid productions, cooking pots weighing as much as 1,398 g (Busto Zapico 2015:215). In addition, these shapes are both taller and broader, leading to much larger pots than before (Linares Losa 2014:163). The walls are only slightly thicker than in Nasrid wares: cooking pots present a minimum thickness of 0.3 cm; plates and bowls of 0.5 cm and jugs of 0.4 cm. The weight gain, therefore, is not proportional to the increase in the thickness of the walls, and must thus be attributed to the use of different clays. The most significant variables in these productions are thickness and maximum diameter (Busto Zapico 2013a:74).

These productions are also more standardized than their Nasrid precedents, although interesting deviations persist, some shapes being highly standardized while others present greater variation (see Table 2). This may be related to the transitional nature of the period, in which successful shapes tended toward greater standardization while others were gradually abandoned for good. At the same time, this variability may be indicative of increased social complexity, with some groups demanding shapes rooted in the previous period while others requested new types. All the types identified during this period yield a CV below 57.7%, suggesting non-random production models (Eerkens and Bettinger 2001:497), the highest CV being related to the minimum thickness of the type *Jar IV* (42.37%). Two of the types yield a CV below 8%, which indicates small-scale production carried out by part-time specialists, with a maximum production of 6000 pieces per year per potter (Roux 2003:780). Compared with the types from the earlier period, a trend toward lower CVs seems to be apparent, which may be put in relation to a loss in the morphological distinctiveness of the types and a progressive increase in the volume of production of pottery workshops in the southern Iberian Peninsula, an increase already attested in Seville (Pleguezuelo Hernández et al. 1999:267). The mass-production model that was beginning to take shape is suggestive of highly organized production methods (Busto Zapico 2020).

Castilian-Modern Ceramic Production

Castilian-Modern ceramic productions further develop some of the features introduced by post-conquest ceramics, creating the basis of what will be later regarded as traditional Granada wares. New shapes, such as washbasins, plates, bowls, large bowls (*lebrillos*), pitchers, and salt cellars, emerged and became widespread during this period. The excavations at Lanjarón documented hybrid shapes such as double-lipped ridged dishes (Lentisco Navarro 2008). Ridged profiles have also been attested in Granada (Rodríguez Aguilera and Revilla Negro 1997), and are strongly reminiscent of Nasrid *ataifores*.

In quantitative terms, no major differences exist between sites. These productions amount to 35% of the whole assemblage in Moclín and 36% in Abencerrajes (see Fig. 3). This could suggest growing social homogeneity as a result of the Castilianization process, the gap between urban and rural areas becoming narrower in this regard. Both types of settlement had access to the same commercial circuits, and ceramic shapes therefore presented less variation. The social groups that configured demand were more homogenous, and the structure of the demand responded accordingly.

Kitchen wares were made with iron-rich clays mixed with fine-grained inclusions, making the fabric highly resistant to thermal shock. This indicates the widespread adoption of production technologies which are eminently suited to the function of the pots.

Tablewares present hard fabrics, orangey in color and rich in mineral and fine or very fine inclusions, especially schist. Other fabric include highly calcareous clays with numerous angular inclusions. Rather than to function, these inclusions are related to manufacturing methods. The pieces were subject to a single firing, which both baked the clay and fixed the glazed varnish (Ruiz Ruiz 2001:130). The glaze made the pieces watertight, covering the pores of the clay and preventing the liquids within to ooze out, while making the pot easier to clean (Ruiz Ruiz 2001:129). All bases were finished on the wheel, the smoothing out of bases with flat tools being definitely abandoned. Wheel-finish does not redistribute the clayey particles in the fabric, making it highly sensitive to contractions caused by water evaporation during drying and leading to loss of quality in the final product (Fernández Navarro 2008:167). Stanniferous glazes, already used in the previous period, became now widespread, along with the use of different colors in the decoration, especially blue but also green and black. The white stanniferous background not only highlights the decoration, but makes the pieces more resistant.

Castilian-Modern productions are heavier and more compact, following the trend already attested in the post-conquest period (Fig. 6). In general, ceramic shapes lose their individuality, with techniques and shapes becoming more homogeneous. The most significant variable is body wall thickness, followed by the thickness of handles and bases (Busto Zapico 2013a:76–77).

Shapes become significantly more standardized, again following the trend attested in the previous period (see Table 3). All types are indicative of non-random production systems, the CV being always below 57.7% (Eerkens and Bettinger 2001:497); the highest CV is related to var. 2 of the *Frying Pan III*



Fig. 6 Main Castilian-Modern ceramic types analyzed

type and var. 1 of the *Jug II* type. Tablewares yield lower CV values than the other functional groups, which suggest greater standardization. In fact, the *Bowl VII* type yields a CV below 3.5%. It has been argued that the lowest degree of deviation attainable in the absence of external restrictions is between 2.5% and 4.5% (Eerkens 2000:667), such as molds and patterns (Eerkens and Bettinger 2001:497). Other studies suggest that expert potters operate within a CV range between 2–3% and 6% (Longacre 1999:49–53). CVs between 3 and 6% are generally associated with a medium range in terms of scale and specialization, in which potters produce between 4000 and 14,000 pieces per year (Roux 2003:780). This could suggest the concentration of production in a limited number of medium-sized workshops in which the idiosyncratic features, and the added value, of individual production have no place. From the seventeenth century onward, the shape and characteristics of ceramics became entirely driven by market preferences, following a well-established canon. This could also be flagging an increase in productivity to meet market demand.

We can draw an analogy between the evolution of pottery production in Granada in this period and the exponential growth of the ceramics industry in Seville in the fifteenth century; in the 1400s, Sevillian pottery production reached proto-industrial levels and established the technological and typological foundations of early modern wares (Busto Zapico 2020). In Granada, which resisted the Castilian advance for longer, the process took off at a later date, around the middle of the sixteenth century, and was not consolidated until the seventeenth century. Again, something similar may have happened in America, with the gradual introduction of new wares and production methods (Rice 2013; Steen 1999).

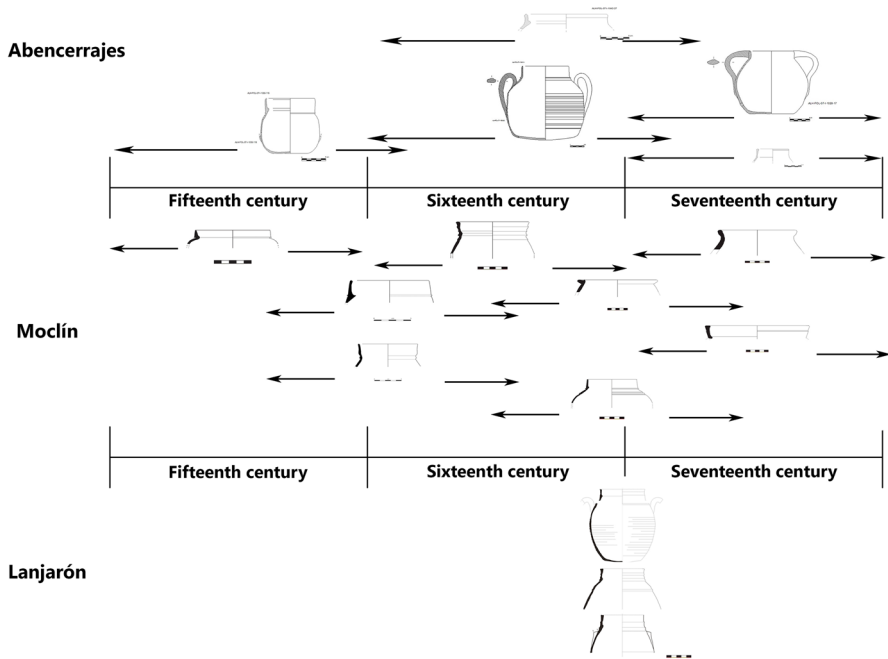


Fig. 7 Formal evolution between the fifteenth and seventeenth centuries: Jar

Discussion: Ceramic Production and Social Change

Ceramics can be an excellent marker of the processes of social change undergone by the south eastern Iberian Peninsula, most notably the Kingdom of Granada, in the Late Middle Ages and the Early Modern Age. Changes attested in the ceramic repertoire may be directly related to the transformation of production processes and also of the emergence of new social relations. The conquest of the last remnants of al-Andalus and the “Castilianization” of the territory that followed, in which the Mudejar-Morisco conflict played a major role, has been analyzed with reference to three archaeological sites with different characteristics and chronology in order to shed some light on the pace and scope of social change.

During the Nasrid period, most pottery workshops in Granada were situated in two districts, the Albaicín and the Realejo (Rodríguez Aguilera and Bordes García 2001:57). Immediately after the conquest, the Castilians maintained existing production structures, but changes were soon under way (Rodríguez Aguilera and Bordes García 2001:57). The ceramic record shows that the conquest of Granada and the Mudejar revolts that flared out in the early sixteenth century led to a rupture with Nasrid ceramic traditions. The written record suggests that most members of the urban potters’ guild were Moriscos at least until their expulsion, but that a large number of workshops became the property of Christians already in the early sixteenth century (Rodríguez Aguilera et al. 2011:26). Pottery production,

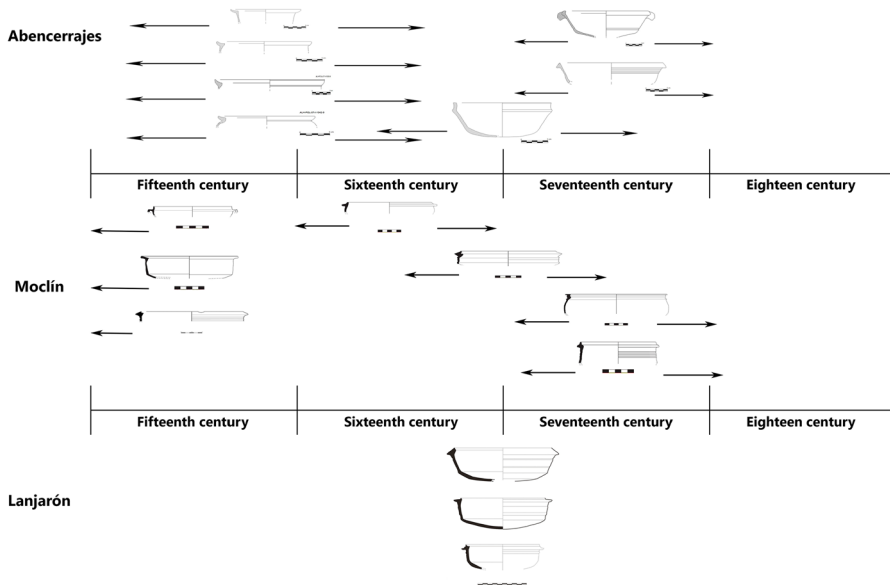


Fig. 8 Formal evolution between the fifteenth and seventeenth centuries: Frying Pan

at any rate, appears to have remained largely in Morisco hands, either working in their own workshops or leasing them out from Christian landlords (Rodríguez Aguilera and Bordes García 2001:59). The written record also attests to the gradual substitution of “Old Christian” potters for Morisco craftsmen throughout the sixteenth century (Rodríguez Aguilera et al. 2011:26). This change is accompanied by a change in the location of ceramic workshops, which in the sixteenth century moved up the slopes of the Albaicín toward the district of Fajalauza, and a possible reduction in the number and size of these establishments (Malpica Cuello 2000:36). There is little doubt that these two phenomena had a direct bearing on techniques, types, and decorations. The period is characterized by a substantial shift in power relations, and this is reflected in ceramic production (Rice 2013:674–675).

Despite these changes in production models and the ownership of production structures, the main factor of change must have been demand. A major variable related to demand are the culinary traditions of the social groups that purchased and used ceramic wares. Some commensal customs must have survived over time, which explains the continued production of a number of kitchen and tableware types, but it is certain that new eating habits also made their appearance. This is reflected in the emergence of new types of tableware or in the substantial increase in the frequency of various pre-existing types (Figs. 7, 8, 9).

Although the study is still at a preliminary stage, it would be advisable to increase the dataset to confirm our first conclusions. Thus far, the record suggests that that these changes were more intense in urban contexts than in rural

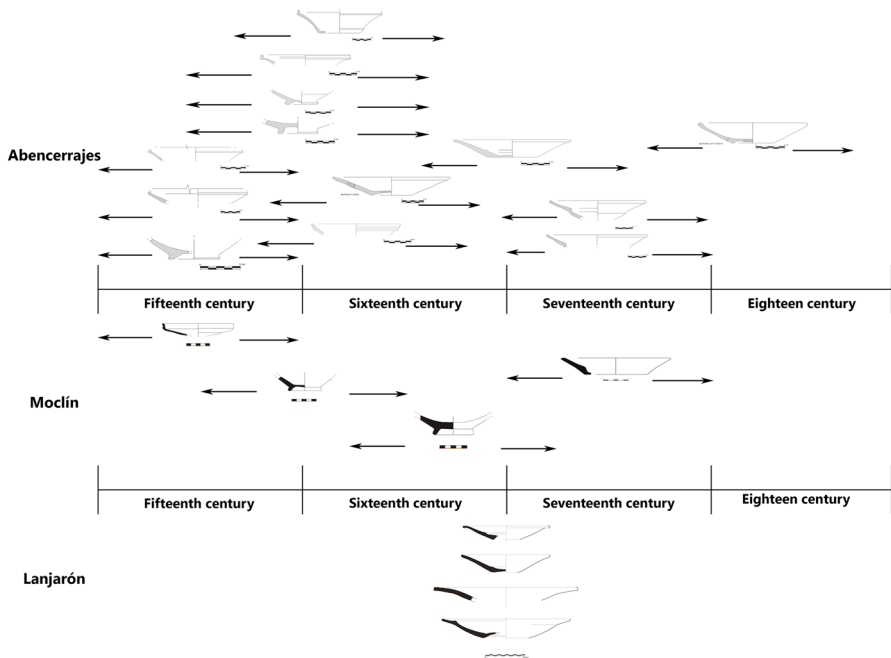


Fig. 9 Formal evolution between the fifteenth and seventeenth centuries: Dish

settlements. The sixteenth-century record in Moclín, a rural fortress, for instance, shows a significant degree of continuity from the previous period, while in Abencerrajes, in the heart of the urban sectors of the Alhambra (the madina), change, between the late sixteenth and the early seventeenth centuries, is much more abrupt. In Lanjarón, on the other hand, the assemblage is eminently “Castilian” in nature, surely as a reflection of the function of the site as a military garrison.

Characteristically Nasrid shapes and decorations that survived into the sixteenth century are predominantly found in everyday use wares, perhaps because they were mostly used by the humblest social groups (as probably documented in Moclín), while more affluent members of society, “nobles”, “state agents”, and “collaborationists” (Barrios Aguilera 2008:137–141), demanded recognizably “Castilian” wares (as perhaps reflected in Abencerrajes).

Castilian habits, and ceramic repertoires (Rodríguez Aguilera et al. 2011:43), appear to have become the norm by the late sixteenth century. The expulsion of Moriscos decreed by the Crown probably suffices to explain this phenomenon. From 1572, Moriscos became a residual demographic group in the south eastern Iberian Peninsula, accounting for 10% of the population at the very most (Barrios Aguilera 2008:127). As noted, archival records attest to a parallel process which involves the change in ownership and organization of pottery workshops (Rodríguez Aguilera and Bordes García 2001:60). These changes led to new products and ceramic types.

From the sixteenth century onward, the ceramic wares being produced in Granada found their reference in other regions of the Iberian Peninsula, especially the south and Levante, a clear sign of cultural homogenization accentuated by the reach and widespread character of trade in ceramics.

The process was completed in the early decades of the seventeenth century, when the Moriscos were finally expelled from the Iberian Peninsula, the beginning of a diaspora that can be traced archaeologically (Fennell 2003). Some consequences of this expulsion were the seizure of Morisco-owned workshops and the replacement of Morisco potters by “Old Christians”; in the city of Granada, this process dragged on between 1571 and 1610. The segregation and ultimate expulsion of Moriscos had multilayered consequences (López and Retamero 2017), including some affecting ceramic types, the transformation of which becomes abrupt at this stage. It may be said that the seventeenth century witnessed the demise of Morisco material culture and its replacement, at least as far as pottery is concerned, by other productions (Rodríguez Aguilera and Bordes García 2001:76).

By the early seventeenth century, most pottery workshops were located near the gate of Fajalauza, and the sector was entirely dominated by Old Christian craftsmen (Rodríguez Aguilera and Bordes García 2001:58). It is, however, reasonable to think that some of the potters of Morisco ascendancy managed to slip under the radar of the authorities and thus remain in the city (Rodríguez Aguilera et al. 2011:26). At any rate, the expulsion of Moriscos “had far-reaching consequences for the city’s cultural and social fabric” (Rodríguez Aguilera et al. 2011:8), including a whole craft tradition rooted in the Nasrid period and its associated social customs, including alimentary habits.

Conclusion

This work aimed to offer a wide overview of the changes documented in ceramic repertoires in the Kingdom of Granada between the fourteenth and the seventeenth centuries, through the detailed analysis of three distinct archaeological sites. The shifts attested in the ceramic record were related to the profound social transformations undergone by the south eastern Iberian Peninsula during this period. This technological change could be related to political fluctuations and the population movements typical of a frontier environment (Živković et al. 2021a, b). These transformations had far-reaching consequences on ceramic types and production techniques. Workshops and workshop practice also changed significantly, either through the substitution of former production models or by their adaptation to new market demands. From this point on, workshops implemented novel techniques, such as the finishing of pot bases on the wheel, and standardized their wares to increase productivity. This new production model, in all probability structured according to guild-based criteria, was consolidated by the seventeenth century. To date, no rupture in production is detected between the Middle Ages and the Early Modern Age, but rather a smooth transition.

This work has argued for the existence of three distinct ceramic groups (termed as Nasrid, post-conquest, and Castilian-Modern wares), and has analyzed the

process of change that led from one to the others. Nasrid types were produced non-randomly, but free from clear external restrictions, such as the use of molds and patterns (Eerkens and Bettinger 2001:497), perhaps because during this phase aesthetic qualities were more highly regarded than in later periods, leading to greater individuality. Potters could be deliberately trying to make their products recognizable, increasing the variability of shapes and profiles (Eerkens and Bettinger 2001:497). Production was small scale and was carried out by non-specialists. Post-conquest types were similarly non-random in nature, but the evidence suggests that their production was undertaken by craftspeople with a certain degree of specialization capable of producing around 6000 pieces per year, which can still be regarded as small scale. The production of Castilian-Modern wares can be regarded as mid-range in terms of scale and specialization, with potters producing between 4000 and 14,000 pieces per year, probably within the boundaries set by external restrictions.

Future studies should undertake the full morphological and decorative analysis of these wares using assemblages from multiple sites; the characterization of technological change through archaeometric analysis; and a systematic archaeological examination of production locales. This work did not aim to present the full picture or to bring the matter to a head, but only to display a few ideas resulting from our ongoing research.

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