RESEARCH ARTICLE

OBSERVING THE EVOLUTION OF ARGARIC CIVILIZATION THROUGH THE MORTUARY RECORD

Observando la evolución de la civilización argárica a través del registro funerario

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Figure 1. Map of the southeast of the Iberian Peninsula. Location of the Argaric settlements studied: 1) Gatas (Turre, Almería), 2) Lorca (Murcia), 3) Cerro de la Virgen (Orce, Granada), 4) Cuesta del Negro (Purullena, Granada), 5) Cerro de la Encina (Monachil, Granada), 6) Caramoro I (Elche, Alicante), 7) Tabayá (Aspe, Alicante), 8) Illeta dels Banyets (El Campello, Alicante).

ABSTRACT. *This brief paper offers a preview of the analysis of a time series consisting of 6 chronological samples comprising a total of 57 Argaric burials from southeast Iberia: Almería (Gatas), Murcia (Lorca), Granada (Cerro de la Virgen, Cuesta del Negro and Cerro de la Encina) and Alicante (Caramoro I, Tabayá and Illeta dels Banyets). The results obtained show the economic, social and political evolution of Argaric civilization from its beginning at the end of the third millennium BC until its final collapse in the 16th century BC.*

RESUMEN. *Este breve artículo ofrece un avance del análisis de una serie temporal integrada por 6 muestras cronológicas que comprenden un total de 57 enterramientos argáricos ubicados en el sureste de la península ibérica: Almería (Gatas), Murcia (Lorca), Granada (Cerro de la Virgen, Cuesta del Negro y Cerro de la Encina) y Alicante (Caramoro I, Tabayá e Illeta dels Banyets). Los resultados obtenidos muestran la evolución económica, social y política de la civilización argárica desde su inicio a finales del tercer milenio antes de nuestra era hasta su colapso final en el siglo XVI AC.*

INTRODUCTION

A first approach was made years ago (PIE 2016). That research proved that the fluctuations of Argaric economy can be inferred from the mortuary record. In addition, the effect of the collapse of this Bronze Age civilization settled in southeast Iberia was also isolated. However, only three chronological periods could be analyzed at that time. In the present study, it was possible to duplicate this periodization in order to know in much more detail the evolution of the Argaric world.

METHODOLOGY

In order to obtain accurate results, 57 Argaric burials from southeast Iberia (integrating a time series of 6 chronological samples), with calibrated ^{14}C absolute dating, have been selected: Gatas (GA, Turre) in Almería (Buikstra *et al.* 1992; Castro *et al.* 1993–94, 1995), Lorca (JM, CI) in Murcia (Martínez *et al.* 1999; Martínez & Ponce 2002a, 2002b); Cerro de la Virgen (CV, Orce) (Molina-González *et al.* 2014, 2016), Cuesta del Negro (CN, Purullena) (Cámara & Molina 2011) and Cerro de la Encina (CE, Monachil) (Aranda & Esquivel 2006; Aranda & Molina 2006) in Granada; and Caramoro I (CA, Elche) (Jover-Maestre *et al.* 2018), Tabayá (TA, Aspe) (Hernández-Pérez *et al.* 2019) and Illeta dels Banyets (BA, Campello) (López-Padilla *et al.* 2006) in Alicante (Figure 1).

These are the 6 chronological samples selected: 1) *Early Argar I* (*c.* 2122–2058 BC, N = 4): GA-01, JM-2A, TA-1, CV-16; 2) *Early Argar II* (*c.* 1967–1907 BC, N = 6): GA-33/N, CI-5, JM-2B, CE-13, CA-E, TA-3; 3) *Middle Argar I* (*c.* 1899–1809 BC, N = 9): GA-24, GA-26, GA-33S, CI-3, CN-27, BA-5, CV-6B, CV-14, CV-22A; 4) *Middle Argar II* (*c.* 1797–1705 AC, N =

21): GA-32, GA-36, CN-5, CN-18, CN-20, CN-21, CE-14A, CE-14B, BA-1A, BA-1B, CV-4A, CV-5, CV-8, CV-6A, CV-4B, CV-11, CV-12, CV-22B, CV-24, CV-32, CV-34; 5) *Late Argar I* (*c.* 1695–1600 BC, N = 12): GA-31, CN-8, CN-13, CN-22, CN-23, CN-30, CE-21A, CE-21B, CE-22A, CE-22B, CV-29A, CV-29B; 6) *Late Argar II* (*c.* 1573–1420 BC, N = 5): GA-20, GA-21, CN-3, CE-15, CV-1. In total, 57 burials were selected from the following sources: Gatas (10), Lorca (4), Cerro de la Encina (8), Cuesta del Negro (11), Cerro de la Virgen (18), Alicante (6).

Thanks to the advanced development of the *contextual valuation method* (PIE 1991, 1993, 1996–97, 2012, 2013), we can infer some social phenomena recorded in the mortuary goods by measuring a series of parameters that have been published and can be consulted in open access (PIE 2017, 2018a, 2018b, 2018c, 2018d, 2019a, 2019b, 2019c, 2020a, 2020b, 2021, 2022a, 2022b): *relative wealth* (R) through funerary expenditure (which makes it possible to isolate the fluctuations of economy), *social inequality* estimated by coefficient of variation in percent (D), *social conflict* (C = D/R), *social cohesion* (O = R/D), *represented population* or *sample size* (P), *level of available resources* (A = P/C), *resources per capita or inhabitant* (A/P), *relative wealth index* (iR = R/R$_0$), *social inequality index* (iD = D/D$_0$), *social conflict index* (iC = C/C$_0$), *social cohesion index* (iO = O/O$_0$), *index of represented population* (iP = P/P$_0$), *level of available resources index* (iA = A/A$_0$), *White's index of culture change* (W = iA·iR), *collapse risk index* (K = iC/iR), *war risk index* (G = iC/iA), *urbanism* (U = (P·A)/C); *urban development index* (iU = (iP·iA)/iC), *state of a society index* (Z = log [(iR·iA·iP·W·U)/(iD·iC·K·G)]), *free energy or reversibility of the social process* (E = ΔD − R·ΔC, where ΔD = D − D$_0$ and ΔC = C − C$_0$), *regulatory mechanism of stability* (iR − iD), and *stability of the social process* (Q = iO − iC).

Table 1. Social parameters of the El Argar time series (*c.* 2122–1420 BC).
Calculations with decimals are approximate in some cases.

ARGAR (BC Period)	R	D	C	O	P	A	A/P	iR	iD	iC	iO	iP	iA	W	K	G	U	iU	Z	E	iR-iD	Q
Early I (2122-2058)	28,50	45,28	1,59	0,63	4	2,52	0,63										6,3387					
Early II (1967-1907)	25,83	153,96	5,96	0,17	6	1,01	0,17	0,91	3,40	3,75	0,27	1,50	0,40	0,36	4,14	9,38	1,0133	0,16	-4,20	-4,24	-2,49	-3,49
Middle I (1899-1809)	62,96	99,38	1,58	0,63	9	5,70	0,63	2,44	0,65	0,26	3,78	1,50	5,66	13,81	0,11	0,05	32,5100	32,08	7,02	221,31	1,79	3,51
Middle II (1797-1705)	16,32	75,93	4,65	0,21	21	4,51	0,21	0,26	0,76	2,95	0,34	2,33	0,79	0,21	11,37	3,72	20,3729	0,63	-3,19	-73,62	-0,50	-2,61
Late I (1695-1600)	244,36	109,16	0,45	2,24	12	26,86	2,24	14,97	1,44	0,10	10,42	0,57	5,95	89,11	0,01	0,02	721,5986	35,42	10,05	1060,97	13,54	10,32
Late II (1573-1420)	28,00	165,49	5,91	0,17	5	0,85	0,17	0,11	1,52	13,23	0,08	0,42	0,03	0,00	115,47	420,12	0,7157	0,00	-14,26	-96,65	-1,40	-13,16

R: Relative wealth; D: Social inequality; C: Social conflict; O: Social cohesion; P: Represented population; A: Level of available resources; A/P: Resources per capita; iR: Relative wealth index; iD: Social inequality index; iC: Social conflict index; iO: Social cohesion index; iP: Index of represented population; iA: Level of available resources index; W: White's index (culture change); K: Collapse risk index; G: War risk index; U: Urbanism; iU: Urban development index; Z: State of a society index; E: Free energy (reversibility of the social process); iR–iD: Regulatory mechanism of stability; Q: Stability of the social process.

RESULTS

The results obtained (see Table 1) provide us with a synthesis covering all the periods of the Argaric civilization. This study brings that information to the attention of the scientific community. A more extensive paper extending the present analysis will be published at a later date.

The first period of the Early Argar (21th century BC) shows the lowest level (45.28) of social inequality (D) of the entire time series analyzed and an incipient urbanism (U = 6.34) that is truncated in the later period.

In the final period of the Early Argar (20th century BC) the available resources (A) and their distribution per inhabitant (A/P) are drastically reduced (–59.92% and –73.02%, respectively). The activity of the economy (R) falls slightly (–9.37%), social inequality (D) grows exorbitantly (240.02%) and there is an outbreak of internal conflict (C) that reaches the maximum of the entire Argaric series (5.96). Urbanism (U) also suffers a significant decline in its development (–84.01%) and instability (Q) spreads (–3.49). The state of society (Z) is clearly adverse (–4.20) and there is a risk of war (G = 9.38) and collapse (K = 4.14) in the 20th century BC.

During the first period of the Middle Argar (19th century BC), there was a big increase (464.36%) in available resources (A), a clear (143.75%) economic growth (R) and a high level of urban development (iU = 32.08). Inequality (D) and conflict (C) are also reduced (–35.45% and –73.49%, respectively), favoring a social stability (Q = 3.51) where there is no risk of war (G = 0.05) or collapse (K = 0.11). In addition, the high increase in reversibility (E = 221.31) and the W index (13.81) indicate a favorable political and cultural change, respectively.

However, in the final period of the Middle Argar (18th century BC) there was a great economic crisis (R, –74.08%) accompanied by a significant increase in social conflict (C, 194.30%). Urban development (iU = 0.63) also undergoes a huge fall. In the background of this depression could be a possible subsistence crisis (responsible for the demographic decline in the subsequent period), because although the available resources (A) are relatively decreasing (–20.88%), the enormous growth of the population represented (P) causes a significant reduction (–66.67%) in resources per inhabitant (A/P). The Argaric world of that time offers an apparently chaotic panorama where the general state of society (Z) is worsening (–3.19). In fact, a great insta-

bility is manifested (Q = –2.61), the risk of war (G) increases (3.72), the danger of collapse (K) reaches an alarming level (11.37) and the social process is irreversible (E = –73.62); all this indicating a deep political change in the heart of this Bronze Age society of southeast Iberia. That is to say, the social instability (Q) generated seems to be out of control. Therefore, the 18th century BC is a conflictive and negative period for the development of Argaric economy.

The Argaric society reached its maximum development and complexity during the first period of the Late Argar (17th century BC). There is a great abundance of resources (A), now reaching the maximum (26.86) of the entire time series analyzed, as well as their distribution per inhabitant (A/P = 2.24). This time recorded the maximum growth of its economy (R = 244.36) and urbanism (U = 721.60), as well as its minimum internal conflict (C = 0.45) despite the increase (43.76%) of social inequality (D). There is also no risk of war (G = 0.02) or collapse (K = 0.01). Although there is a marked demographic decline (–42.86%, due to the possible subsistence crisis of the preceding period), the population represented (P) is still significant. All of this reflects an extraordinary cultural transformation (W = 89.11). That stage is by far the most flourishing and stable (Q = 10.32) of the Argaric world, which experienced a great political change (E = 1060.97); this supports the hypothesis of the birth and development of an Argaric State that could have solved the subsistence crisis of the preceding period by centralizing power to manage production, thus unifying all previous (local or supralocal) chiefdoms in the same political entity.

Finally, during the 16th century BC, the decline and collapse of the Argaric civilization took place. Available resources (A) plummet, reaching the minimum of the entire time series (0.85), perhaps as a consequence of the adverse environmental factors that occurred at that time (Carrión *et al.* 2010: 469, 470). Both the represented population (P, –58.33%) and the economy (R, –88.54%) collapse and social inequality (D, 51.60%) and internal conflict (C, 1213.33%) increase significantly, especially the latter parameter. At this time, the Argaric world shows its maximum instability (Q = –13.16) and its worst situation (Z = –14.26). Furthermore, the risk of war (G = 420.12) and collapse (K = 115.47) are tremendously alarming and suggest a generalized period of violence, in which a deep adverse political change (E = –96.65) took place and may be referring to a possible civil war between the chiefdoms —to obtain resources and ensure their survival— that

could have constituted the Argaric State before its political decomposition, due to the probable inability to resolve the very serious subsistence crisis that was taking place. We have material evidence of all this in the Argaric settlements of that time (Lull *et al.* 2013: 298).

CONCLUSIONS

It is appropriate to speak of an Argaric civilization because the complexity of this society, especially during the 17th century BC, could have reached the form of an archaic state, probably based on a tributary system, which could have integrated or unified the pre-existing Argaric chiefdoms through a centralized power, justified by the need of overcoming a possible previous subsistence crisis recorded in the 18th century BC. The present study provides arguments that support this hypothesis through the mortuary record.

This novel approach has shed light on the economic, social and political evolution of Argaric civilization from its beginning at the end of the third millennium BC until its final collapse in the 16th century BC.

So far, we have been able to observe and isolate three periods of expansion (21th, 19th and 17th centuries BC) and three periods of retraction (20th, 18th and 16th centuries BC) in the evolution of Argaric economy. Each expansive moment is followed by a regressive one in an approximate interval of one hundred years.

Naturally, despite the reliability of this methodology, a permanent revision of the results obtained is recommended, which will depend on the future increase of the samples analyzed in this time series by means of new Argaric burials with calibrated absolute dates.

Although the results obtained are very revealing and should be taken into account by those who investigate the Argaric civilization, they will be revised as the set composed of burials with calibrated absolute dates increases. Obviously, the larger the chronological samples that integrate the time series of El Argar, the more reliable will be the inferences that can be drawn from their grave goods.

Much remains to be done, although this study is an important first step and traces the path to be followed later, when it will be possible to rigorously expand the size of the calibrated absolute chronological samples.

Acknowledgments

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