Theoretical and Methodological Issues in Evolutionary Archaeology
Toward an unified Darwinian paradigm

Questions théorétiques et méthodologiques en archéologie évolutive
Vers un paradigme Darwinien unifié

Edited by
Hernán Juan Muscio
Gabriel Eduardo José López

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Contacts :
Secretary of U.I.S.P.P. - International Union for Prehistoric and Protohistoric Sciences
Instituto Politécnico de Tomar, Av. Dr. Cândido Madureira 13, 2300 TOMAR
Email: uispp@ipt.pt
www.uispp.ipt.pt

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INTERDEMIC SELECTION AND PHOENICIAN PRIESTHOOD – DARWINIAN REFLECTIONS ON THE ARCHAEOASTRONOMY OF SOUTHERN SPAIN

José Luis ESCACENA CARRASCO, Daniel García RIVERO
Departamento de Prehistoria y Arqueología. Facultad de Geografía e Historia
Universidad de Sevilla. C/ María de Padilla s/n, 41004, Seville, Spain
E-mail: escacena@us.es / garciarivero@us.es

Abstract: In their expansion towards the West, the Phoenicians put into practice the astronomical knowledge gained in their temples. As the holders of this scientific experience, the priests contributed to the colonial expansion as hypermutators of behaviour: first they acquired the celestial knowledge, then they applied it to nautical orientation. From an evolutive perspective, this implied a very adaptive mechanism for demographic growth. However, this system required the encoding of the positive memetic mutations in order to prevent them from transmitting to Greek seafarers that competed with the Phoenicians within the diaspora.

Key words: Evolutionary archaeology, Interdemic selection, Priesthood, Temples, Archaeoastronomy

Résumé: Lors de leur expansion vers l'Ouest, les Phéniciens ont mis en pratique les connaissances astronomiques acquises dans leurs temples. En tant que détenteurs de cette expérience scientifique, les prêtres ont contribué à l'expansion colonial comme hypermutateurs du comportement : en premier lieu ils acquéraient le savoir célestial, puis ils l’appliquaient à l’orientation nautique. D’un point de vue évolutif, ceci impliquait un mécanisme très adaptatif pour la croissance démographique. Cependant, ce système demandait la codification des mutations mémétiques positives pour empêcher leur transmission aux navigateurs Grecques qui rivalisaient avec les Phéniciens dans la diaspora.

Mots clés: Archéologie évolutive, Sélection interdémique, Clergé, Temples, Archéoastronomie

THE THEORETICAL FRAMEWORK

Mainstream interpretation considers religion as a mechanism of reproduction for social structures and economic inequalities which, since the Neolithic, have shaped human groups. This reading however fails to explain why religious behaviours became generalized in all cultures if they only benefited restricted groups within each community: the elites. Moreover, because of the general rejection of biology by historians as a field that contributes towards historical research, specialists in humanities usually ignore the connections between faith and antistress mechanisms (Tobeña 2005: 212) or the immune system (Punset 2004: 17). This situation is exacerbated by the recent relationship between Darwinism and Archaeology. Indeed, this field has only recently begun its breakthrough (cf. Rindos 1984; 1988; Maschner 1996; Hart and Terrell 2002).

Religions collaborate in the reproduction of the social structures of which they are part, but this does not demonstrate that the beneficiaries of such mechanisms of replica are necessarily the highest groups on the social scale. If the mere existence of these elites is evidence of inequality, from a Darwinian perspective it can be argued that the internal hierarchization of a community is narrowly related to intergroup competition over resources. This evolutive pressure corresponds to the concept of “interdemic selection” put forward by V.C. Wynne Edwards (1963). This leads to accept that natural selection can in some cases act upon human groups as units of selection in such a way that the beliefs of each group becomes one of the factors that reinforces the ethnic boundaries between sympatric communities that compete for the control of the environment. In most social animals, this phenomenon has caused a spontaneous bias towards intragroup stratification over a time span of millions of years, without there being any scientific reason for which to exclude Homo sapiens sapiens from this trend.

Following on from these premises, it is likely that the Phoenicians of the 1st Millennium BC – and not only their upper social classes- benefited from their national religion in their competition with other groups that followed their footsteps in their Mediterranean expansion, particularly the Greek community. The Canaanites tactics, obviously not exclusive to this population, were based on a design of demographic expansion by means of a colonisation planned in the temples, in which the maritime routes were plotted and the correct location of the new enclaves decided. In this matter, the knowledge of the sky of the clergy constituted a key tool, without which it would have been impossible to carry out this kind of astronomical navigation and the establishment of the closed commercial circuits between East and West. This role had not been assumed by the Canaanite priests prior to the 1st Millennium BC. We could thus be faced with an exaptation of the kind proposed by S.J. Gould and E.S. Vrba (1982). However, this term should not imply any special recognition of the originality of the changes. In fact, if the Darwinian concept of evolution denies the teleological dimension of the exaptation, nothing emerges for anything and everything fulfils previously another function. Indeed, any thing of nature, be it a somatic organ or a pattern of behaviour, would be an exaptation of a previous adaptation.
Studies of the Phoenician colonization based on this perspective of the issue are completely inexistent. First, because it is widely considered by specialists in social sciences that the evolutive theory does not serve in the analysis of the more recent periods of human history, and second, because archaeologists have been reticent to interpret as cosmic symbols or as astronomical knowledge much of the documentation that they are faced with. Although Iberian Protohistory is now more open to accept the astral orientation of the sanctuaries and other cult structures, the Darwinian analysis of such questions has never been carried out. On the contrary, it has even occasionally been argued that Archaeology is a Lamarckian science (cf. Querol 2001: 35).

Since Darwin published his work on the origin of species, his theory was immediately applied to human evolution, thus leading to his later book on our ancestry. There was no reason for man to be an exception to the rule. The Darwinian approach has constituted since then a form of understanding designed to operate with individuals and groups, in both their somatic or physiological aspects and their forms of behaviour. The inclusion of behavioural aspects is the point of disagreement with all other theoretical positions in historical analysis. Evolutive Archaeology would suggest on the other hand that change through selection is of universal application, that it explains the past and the present, the somatic, the physiological and the behavioural, and that ultimately culture – and technology as a part of it- would evolve in the same way.

GENES VERSUS MEMES?

Recently among Darwinists, some degree of controversy has emerged over the question of whether genes are the basic motor of human evolution or whether they have been overtaken by memes (cf. Alexander 1994: 74; Blackmore 2000: 143-177). The Phoenician diaspora shows, none the less, a symbiotic cooperation between the two types of replicants. As any mutualism, the alliance was beneficial for both parties, thus contributing to the demographic expansion of their descendents (the Canaanites), first throughout the Mediterranean and later throughout the Atlantic. In any case, it appears that the mutations experienced in the centuries of this process of diffusion were never deep enough as to adapt the Semitic culture to ecosystems different to the subtropical conditions in which they originated. For this reason, the Phoenician dispersion, as many others migrations (Diamond 2001: 88-89), found ease in its horizontal expansion but was unable to move along the meridians, once out of the Mediterranean, further than the latitudes tolerated by the Mediterranean agriculture that constituted the basis of its subsistence: the Portuguese coast to the north and Morocco to the south.

The opposition between genes and memes as motors of change by means of their own mutations constitutes another trap in which non-epistemic values interfere in the scientific analysis. It stems from the influence on logical analysis of a dichotomic conception of man that divides the body (somatic part) from the soul (origin of behaviour). In contrast, for Darwinian analysis, that only aims to understand how life functions and not to show the direction in which it should be heading, it is only possible to think of the human individual in terms of a undividable self. From this point of view, natural selection would be unable to discriminate between body and behaviour, nor to act upon the former and not the latter, for the simple reason that there can be no body without behaviour nor vice versa. By means of the application of astronomical knowledge to nautical orientation, the genes of the Phoenician populations reached a previously unknown rate of expansion. Moreover, in every new colony, where a large number of new genetic replicas took place, the Phoenician memes also proliferated, reproducing their social organization, beliefs, eating habits, language, family system, political regimes, technology, etc.

THE PHOENICIAN CLERGY AND ASTRONOMY – A DARWINIAN ANALYSIS OF THE CANAANITE DIASPORA

Some of the keys of evolution are now being discovered in microbiology. The concept of the individual itself has even become questioned in microscopic life (Margulis 2003: 118). Symbiosis that exceeds more than mere mutualism, or beings that only prosper as collectivities, sheds reasonable doubt over what may be the minimal units of selection. In microscopic life, variation increases through contingent mutations but also through the horizontal exchange of genetic material. At first, this mechanism could resemble a Lamarckian evolution since these acquisitions are hereditary, however what this really creates is a fertile field upon which natural selection operates. The horizontal shift of genes, frequent among bacteria, thus offers a valuable model for the analysis of the similar human cultural transmission. Equally, as microbial life usually prospers in communities and the exchange of genetic material takes place to a greater extent within these communities, its study provides paradigmatic examples by which to explain human phenomena of group selection in which behaviours of restricted permeability of memetic information can be observed.

Interdemic selection appears when the members of a population contribute to the descendency of the group in a non random way, that depends upon their behaviour. Thus, Nature opts for the behaviours that favour demographic growth, choosing those that increase the offspring. However, for this selective mechanism to take place the level of variation between individuals of the same group must be less than that between the separate groups (Boyd and Silk 2001: 220). We can accept that this condition of memetic distance was fulfilled in the Western Mediterranean territories. Indeed, the existence
of multicomunitarian situations in the Phoenician colonial provinces (in Tartessos for instance) is now considered the most likely setting. As a result, these social (and in this case cultural) groups offer themselves to natural selection as true “units of choice” that enter into evolutive competition with other “units” that represent the other choices. In our case, interdemic selection does not appear to have operated only upon conflicts of demographic growth between the resident population of each territory and the Semitic group, but also between the latter and the groups who would, from other parts of Eastern Mediterranean, later attempt to open routes towards the West: the Greeks.

Behavioural studies see religious conducts as an ideal field for evolutionary experimentation (Burkert 1996; Dennett 1998; Lincoln 1981). In this sense, it is usually the case that beliefs are more easily transmitted at a young age to the members of the same culture, than to adult members of a different culture. Despite this, the issue has been dealt with the other way round by most of the specialists that have studied the Semitic colonisation of Tartessos. With the exception of J. Alvar (1993) few have questioned the permeability of the indigenous populations faced with a foreign religious universe.

Religion fulfils several evolutive functions, some of which have been examined from a Darwinian perspective. However, for Darwinian analysis it is of less interest to question how and why religious conducts emerged, since they probably did so as a subproduct of symbolic thought. It is thus of greater value to understand why beliefs constitute today a common practice in all cultures. This in itself says a lot about its positive contribution to the reproduction of individuals and populations. Indeed, the optimism offered by faith in a provident god strengthens the immune system in the same way as any other placebo. This is because of the connections between the nervous system and our defences (Sagan and Margulis 2003: 317) and could explain many supposedly miraculous healings. Moreover, religions constituted an element of ethnic cohesion in ancient societies, in which national beliefs were predominant. Although it may appear to be unrelated, this observation has much in common with bacterial autopoiesis, that is with the capacity of even the simplest organisms to create a boundary, a membrane without which the awareness of singular/plural and I/we is impossible. Indeed, in clear disagreement with many philosophical schools, some biologists have defended the existence of this type of self-consciousness in microbial life (Sagan and Margulis 2003: 313-314), unlike the anthropocentric perspective that only recognises this trait in man or at the most in some of the so-called superior animals (Eccles 1992: 193).

The evolutive function here understands the ministry of Phoenician priests as producers of adaptive memetic mutations for their believers. This Darwinian perspective is innovative: indeed, although the “scientific” knowledge of the Canaanite clergy has been pointed out, the biolo-

The sanctuaries of Ba’al Tsaphon in ancient Ca’ura (Coria del Río) and that of Astarte at El Carambolo (Camas), both located in the province of Seville. Of particular interest is the astronomical orientation of these sacred sites.

The temple played an important role in the Phoenician colonisation. The gods guaranteed the economic agreements met therein (Bunnens 1979; Aubet 1994: 142). The written texts and archaeology show that the foundation of the sanctuaries preceded in many cases that of the colonies themselves (Aubet 1994: 141). This behaviour is not exclusive to the Canaanites; it is the case also of the Greeks. In Tartessos, Phoenician sanctuaries have been known of for a long time, but recently two new particularly important sites have been discovered: the sanctuary of Ba’al Tsaphon in ancient Ca’ura (Coria del Río) and that of Astarte at El Carambolo (Camas), both located in the province of Seville. Of particular interest is the astronomical orientation of these sacred sites.

The sanctuary of Ba’al at Coria del Río has revealed a clay altar in the shape of a bull skin whose longitudinal axis is directed towards the East to the sunrise of the summer solstice and to the West to the sunset of the winter solstice (fig. 3.1). This orientation, that obeys the pattern observed in many Iberian, Greek and Phoenician temples (Esteban 2002: 94), was deliberate given that its axis is somewhat deviated from the axis of the room within which it is located. The same orientation was adopted by the oldest of the five temples, although the four later phases modified the norm due to urbanistic and topographic requirements. However, the heliostropic orientation was maintained at least in sanctuary III dated to the 7th century BC. Similar cases to the altar of Coria have been documented in many other Protohistoric altars, for instance that of Oral (Abad and Sala 1993: 179). At El
Fig. 3.1. The sanctuary of Ba’al at Coria del Río (Seville, Spain) has revealed a clay altar in the shape of a bull skin whose longitudinal axis is directed towards the East to the sunrise of the summer solstice and to the West to the sunset of the winter solstice.
Carambolo, a luxurious building, occupying the entire hill top, has been discovered. Unlike the adjacent houses, it is also orientated towards the sun rise and set (its entrance faces East and its back entrance West). Although this complex originated in the 9th century BC with a more simple design, this solar orientation was present since its foundation and was respected in a later phase of enlargement (fig. 3.2). The *ex voto* of Astarte found at El Carambolo suggests that this temple may have been dedicated to this Phoenician goddess. However, the orientation of the building, with its entrance towards the sunrise of the summer solstice, suggests the greater importance of the male god for those who designed and ordered its construction, that is those who played a greater role in the cult: the priests. This could be a legacy of more ancient situations, since, despite the popular preference for Astarte-Anat in Ugarit in the late Bronze Age, the official Canaanite theology gave more importance to Ba’al (Liverani 1995: 452).

The first objective of the helioscopic disposition of the building may have been to fix the days in which to celebrate the festivities of the vital cycle of Ba’al. According to the later tradition that associated this god with Adonis, especially linked to a particular Ba’al of Byblos (Ribichini 2001: 105-106), the death and resurrection of the god were celebrated during the days of the summer solstice (Du Mesnil 1970: 108; Garbini 1965: 44) when the cereals were ripening and when the spring growth died back, struck like the god himself by the summer heat (Marlasca 2005: 458). The regulation of the calendar could thus be efficiently timed. The control of chronological time was in fact one of the abilities of Ba’al, assimilated to Cronus-Saturn from an early date (Bloch 1981: 127). The Phoenicians of Tartessos gave particular importance to this divine entity for which a temple was built in Gadir.

Fixing solstices in Antiquity was not without problems. For Ptolemaic science, the immobile nature of the sun implied a serious challenge for the fixing of these dates with precision. The documentary history of astronomy maintains that the solution was reached in the Middle Ages, when the Islamic observatories carried out more precise measurements at other times of the year. However, archaeology shows that many prehistoric cultures were familiar with the solstitial phenomenon. In the case of the Phoenician altars of Tartessos, their immobile nature certainly helped the calculations. The greatest difficulty would then have been in determining the correct solstitial orientation during their construction.

The evolutive importance of this astronomical knowledge is related to the advance of the Phoenician colonial wave throughout the Mediterranean. In biological terms, the success or failure of individuals, of populations and of species can only be measured by their rate of reproduction and the alopatric expansion. This scale permits the classification of the mutations (genetic and memetic) as positive, negative or neutral according to whether they contribute much, little or nothing to the demography. In the same way, a Darwinian perspective would recognise that a population with a wide scope of diversity would be better equipped to face future changes or unforeseen situations, and this if evolution was only an adaptive response to ecological succession. However, since evolutive processes are also characterised by genetic and behavioural modifications that can transform the environment to the advantage of the individual, population or specie that originated the transformation, the fact that some groups possess a subpopulation of hypermutators is an incomparable evolutive weapon. If the group has a mechanism that produces variation, the conditions of its own expansion become particularly ideal given the possibility that among the changes produced the ideal memes may coincide.

Consequently, the Phoenician clergy could have been, within its own society, one of the most dynamic sectors in the production of scientific memes. Thus among the symbolic, ritual and mythical complexity, that reminds us of the random creation of mutations within the genotype, astronomical knowledge that would be beneficial for the entire community emerged. The reason behind the evolutive benefits of such logical acquisitions explains why the sanctuaries were at the forefront of the expansion wave of the Phoenician colonisation.

During prehistory, navigation throughout the Mediterranean was generally limited to coast hopping. Out of sight of the coast, it was very difficult to establish return journeys; indeed, these contacts were more likely in the Aegean and other parts of the Eastern Mediterranean with frequent islands. For this reason, there is hardly any evidence of the Mycenaean to the West of Italy. Megaliths reveal knowledge of the cosmos since the Neolithic (Hoskin 2001) and it is likely that in the Copper Age some cultures were navigating with the stars and were able to carry out journeys through high sea. In any case, the collapse of the Chalcolithic world led to the loss in practise of this possible nautical tradition. In the 2nd Millennium BC, ships still guided themselves by the coastline. If they were lost, they used birds to locate land (Luzón and Cóin 1986), a technique similar to that employed by Noah (Gen. 8: 6-11). The mapping of routes in the West initiated with the Greek periplos of the 6th century BC that was the inspiration for the *Ora Maritima* by Rufius Festus Avienus. However, the 1st Millennium BC brought about a drastic change: the Phoenicians introduced astronomically guided navigation (Pliny, *Nat. Hist.* VII, 209; Strabo, *Geog.* 1, 1, 6). The new system made it easier to plan journeys by sea, thus motivating intercommunity contacts and the subsequent increase in diversity in many regions. Evolutive theory knows well that the rate of change increases in proportion to variation, since greater variability provides natural selection with more alternatives (Ayala 1994: 67). Any historian familiar with evolutionism will recognise this as the reason behind the drastic and rapid changes in various Mediterranean cultural contexts that took place in the 1st Millennium BC.
Fig. 3.2. The Carambolo compound is also orientated towards the sun rise and set. Although it was originated in the 9th century BC with a more simple design, this solar orientation was present since its foundation and was respected in a later phase of enlargement.
The use of new nautical procedures was made possible by the existence of observations which, under the theological appearance of the knowledge of the divine beings (Ba’al was assimilated to the solar disc as a god and an omnipotent star, Astarte was identified with planet Venus), the Phoenician clergy had acquired in the temples. For this reason, among others, the populational expansion required the creation of sanctuaries in the main colonial centres. For a similar reason, many of these cult centres were built in coastal locations, places that helped the fluid transmission of information between seamen and priests. Moreover, the number of sanctuaries located along the coast displays their utility and explains why many of these sacred places were not located with the urban areas. This interpretation also explains why the colonial foundations enabled by maritime expeditions were accompanied by sacred oracles.

The rhythm and quantity of memetic mutations of this kind are directly proportional to the effort invested by the community, measured as the number of people and the time employed. Today, this ratio could easily be calculated since the budgets dedicated to research by states and other institutions are well documented. However, regarding the idea that evolutive theory can only explain the pleistocene past and, at best, only in terms of corporal modifications, few modern historians have taken into account the natural processes involved in this matter, that translate in terms of long term reproductive benefits for the group. In this sense, if it is costly in the short term to exempt part of a population from the direct production of material goods, evolution would have tended to develop means of avoiding the failure of such a decision. As we shall show, this condition was met through the adoption of boundaries that restricted the transmission of new knowledge to other communities that had no made the effort of investment.

T. Chapa and A. Madrigal (1997: 189-190) have reviewed some of the main exemptions of priests in several cultures of the ancient world. The common denominator was the exemption from military obligations. However, priests were also dispensed from agricultural tasks, work on board ships and many other tasks involving manual labour. To maintain this subpopulation merely as memetic hypermutators would have been expensive if their achievements had not have been worthwhile. The parallel emergence of means of encrypting the memetic mutations is thus predictable, with the purpose of stopping the adaptative results of some of the mutations from crossing the group boundaries into other populations.

A generic boundary was the spontaneous tendency towards the ramification of religions. By creating “heathen”, those who do not follow the same beliefs, each religion shapes, intentionally or not, a series of intercommunitary boundaries. It is possible that this splitting tendency is but a manifestation of the 2nd law of thermodynamics, which recognises that throughout the cosmos, entropy is constantly increasing and is a principle that also affects life on our planet (Atkins 1992: 33). In any case, the memes selected by priests of religions that consider each other as mutually “pagan”, and false with respect to the authentic credo, possess little possibility of penetrating in those who do not profess the same faith. The biblical contempt towards the beliefs of the Canaanites is an example of such a boundary. The fundamental hindrance to address this question is the sparse archaeological record that they leave behind. But something can be done.

Today, patenting is the mechanism that establishes the ownership of a scientific or technical discovery. The bond between invention and patent is so strong that one cannot be imagined without the other. This protection guarantees that the author or sponsor of the discovery will benefit from the corresponding earnings1. In the case of the astronomical knowledge of the Phoenician clergy, the possible leakage from this community was avoided in great part thanks to writing, essentially because among its uses, the ceremonial was limited to specialists of the cult2 (Oppenheim 2003: 222). At first sight, this affirmation may seem paradoxical since graphical systems are used to communicate. However, given that their use was very restricted in ancient cultures, putting a message into writing ensured its limited circulation. This observation has been made by specialists in various prehistoric writing forms in Hispania who underline their “somewhat esoteric” character (De Hoz 1989: 549). Because of their capacity to close the spectrum to which new knowledge is passed, it is not surprising that several oriental graphical systems emerged in temples, although their use was not restricted to this function. In Tartessos, perhaps the oldest example of writing precisely comes from a sanctuary. It is the text inscribed at the feet of Astarte of the Carambolo, in which the devotees give thanks for a granted favour. The text contains no practical knowledge of astronomy nor anything that may be considered as scientific, but its presence in a sacred site suggests that it may have been written and understood within this sphere. We shall now turn to the restrictive geography of the use of writing, that

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1 Some ancient traditions my have enclosed mechanisms of this kind. For example, in the case of Greek mythology and specifically the myth of Hephaestus, a possible interpretation of the tradition according to which the “Smith-god hobbles” -that spreads through very different regions such as Western Africa or Scandinavia- suggests that in ancient times the smiths were crippled intentionally to avoid them going to enemy tribes and passing on their knowledge (Graves 1981: 88). The nine year stay of Hephaestus in the cave of Lemnos could be related to with this secret objective, once metallurgy arrived to Greece from the Aegean Islands.

2 It is worth recalling the passage prior to the initiation of Lucius in the Metamorphoses when, accompanied by the priest in charge of the cult of Isis, he enters one of the most secret rooms of the sanctuary: «Then that kindest of men took me by the hand and led me straight up to the entrance of the great temple. After the ceremony of opening had been celebrated with the prescribed ritual and the morning sacrifice had been completed, he brought out from the secret part of the sanctuary some books inscribed with unknown characters. Some used the shapes of all sorts of animals to represent abridged expressions of liturgical language; in other, the ends of the letters were knotted and curved like wheels or interwoven like vine-tendrils to protect their meaning from the curiosity of the uninitiated» (Apuleius, Metamorphoses, XI, 22).

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is turn leads us to agree with those who argue the illiterate nature of the majority of the Andalusian prehistoric population (Chic 1999: 179).

If writing may, willingly or not, hide memetic mutations, its diversity itself may be read from an evolutive perspective as a further insistence in this direction. Thus the political mosaic characteristic of the oriental city state systems, which was replicated in the Phoenician colonial territories, constituted the ideal ecosystem for this evolutive radiation, limited only by the need of a common language and graphical system for the commercial relationships. The resource that avoided in the ancient Near East the unlimited circulation of scientific advances was the use by the priests of a language that the rest of the community did not understand, in many cases an ancestral form of the everyday language used by the population. This practice is known from an endless list of Asian cases and from the Egyptian world. However, given the lack of evidence, it is impossible to confirm if that was the case of the Phoenicians of the 1st Millennium BC. Without confusing writing with language, the graphical system known as Tarsesian, probably originated in religious spheres, coping some signs of the ancient Phoenician alphabet, more archaic that those used by the Canaanite colonos when they arrived to this territory in the 9th century BC. Perhaps the contradictions pointed out by J. de Hoz (1986: 76, 80-82) between the earliest dates of the colonisation of Hispania and the dates of the expansion of graphical systems can find an answer in this explanation of the evolutive role played by the Phoenician priests, according to which they would have used a liturgical writing different from that commonly employed in the time. However, it is impossible to say whether they also used a different language. A similar cryptographic procedure was used in Egypt of the pharaohs (Hornung 1992: 33-34) and is used by the present-day Coptic Christian priests in Ethiopia.

It seems obvious that if the Phoenician implantation in Iberia was so deep, this was enabled directly by the extraordinary development of their maritime routes. In this expansion, the temples were particularly important because therein was developed the astronomical knowledge necessary for navigation. If the science of the sky enabled the Phoenicians to acquire important knowledge about the position and movement of the stars and the organisation of the calendar, in parallel it served the exclusive expansion of their own group. As predicted by the Darwinian perspective, there could have existed barriers that hindered the access of “heathen” (members of other communities) to these sacred places since these were where the transmission of knowledge and practical applications took place between the priests and the seafarers. The custom that only admits the entrance to the temples to those that profess the same religion is still today practiced in some confessions. The most plausible evolutive explanation for this lies in the limits established by natural selection for the horizontal memetic transmission of positive mutations, something that is well-known in the case of the interindividual genetic transference of bacteria and plasma. This limitation does not however necessarily signify that non-Phoenician people could not enter the sanctuaries where the astronomical experience was stored and from which the oracles for the foundation of new colonies were emitted, that is those that were during some time at the forefront of the demographic expansion. This could have been the case in some of the more humble temples but is less likely in the case of those where the knowledge was safely kept. It is therefore quite unlikely that the indigenous people of Tartessos could have accessed the Carambolo for example, the most important Phoenician sanctuary excavated in the West until the date. However, when the sea routes were common to Phoenicians and Greeks, in the second half of the first millennium B.C., the role that evolution had reserved for the astronomical knowledge of the priests went out of use, partly because there were not many new areas to explore: neither virgin territories nor accessible routes. In the Hellenistic period, the temple of Melkart in Cadiz was opened to Greek scholars (Marín and Jiménez 2004: 227-228). This explains that the mqm lm (“resuscitator or the divinity”), the priestly duty that accumulated most astronomical expertise (Escacena 2006: 146), lost the importance that it had had during the phase of colonial expansion. However, since one of the singular characteristics of the clergy since its origin was to be the motor of variation, especially obvious in the diversity of its functions, it was precisely this heterogeneity of ecological niches that insured its later existence, evermore linked to what has been named “ethical religion” in the place of “cultual religion” (Alonso 2003: 460-462).

CONCLUSIONS

The adaptative mechanisms that preserve the positive memes for the exclusive use of the group emerge for strong evolutive reasons and revalidate the well known Darwinian experience by which natural selection rarely acts upon the entire species but upon parts of it. These fractions, known in biology as populations, correspond to terms used by historians and archaeologists such as ethnic group, nations, people or human group. The comparison between the Phoenician clergy and bacterial subpopulations that act to their own benefit as hypermutators, equipped with random genetic changes, some of which could become adaptative in new contexts and manage to maintain the growth of the population, suggests that the horizontal transference of genes and memes does have boundaries. Also in relation with human behaviour, natural selection, in this case as a mechanism of group or interdemic selection, has created inhibitive filters to the free circulation of memes from the inventor populations towards other distinct groups.

The most frequent posture among specialists is to consider the priests of ancient oriental cultures as a key piece in the maintenance and reproduction of social
inequality (Liverani 1995: 119). Moreover, for Evolutive Archaeology, the assessment of the historical importance of the ancient clergy must be carried out from the standpoint of its contribution to demographic growth and to the subsequent dispersion of the communities of which these specialists were part. These two variables (demographic growth and geographic expansion) represent ideal indicators of the fitness of individuals and populations. From this perspective, the Phoenician clergy played an important role in the diaspora of its community: it was the holder and guarantor of the astronomical knowledge necessary for long haul nautical navigation, as well as the researchers in this scientific enterprise. Not in vain, the foundation of many important colonies was accompanied, when not preceded, by the appropriate consecration of sanctuaries. It is not at all meaningless from an evolutive point of view that there are known cases of colonising expediions preceded by their respective oracles, such as the oracle of Posidonius recorded by Strabo regarding the foundation of Cadiz.

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Bibliography


