

EMERGING DISTRIBUTION NETWORKS OF ROMAN POTTERY IN THE ANCIENT MEDITERRANEAN: THE SIGILLATA CLAY LAMPS OF PROCONSULAR AFRICA

Marcio Teixeira-Bastos¹

Abstract

This paper surveys the use of Network Science, especially the role of Archaeological Networks to the study of Archeology and Ancient History. Network thinking and network science are valuable methodologies and analytical techniques to apply to the study clay lamps in the framework of Roman economy. The recent application of network analysis in Antiquity and Archaeology has demonstrated that there are a variety of approaches to recognizing network patterns or thinking about phenomena as products of networked processes. Provincial connectivity is one of the most debated aspects of Roman economics, and ceramic consumption patterns in the interior and coastal regions of Africa Proconsularis have proven to be very different. The dominant tendency to turn to the communities formed and structured around native identities, especially those based in the major urban centers and larger areas, seems to establish itself as an argument for the economy and exchanges of the Roman Empire. This types of networks helped to spread ideas and religious symbols through clay lamps. Africa Proconsular demonstrates evidence that the ceramic workshops emerged as networks in order to established themselves seeking to meet the Mediterranean demand and religious consumption.

Keywords

Network Science; Archaeological Networks; Classics; Africa Proconsularis.

Resumo

O presente artigo examina o benefício da utilização da Ciência das Redes, do pensamento sobre redes, e das metodologias e técnicas analíticas aplicadas ao estudo

¹ Postdoctoral Researcher – São Paulo State University, Assis, Brazil. *Visiting Scholar at Stanford University, Archaeology Center, School of Humanities & Sciences.*

<https://archaeology.stanford.edu/people/marcio-teixeira-bastos>

E-mail: márcio_quisleu@yahoo.com.br

da Arqueologia e História Antiga, com especial foco para a economia romana, produção de cerâmica, e a representatividade étnico-religiosa na materialidade. As recentes aplicações das técnicas e análises de redes em Antiguidade Clássica e Arqueologia, demonstram que existe uma variedade de abordagens que permite reconhecer padrões e pensar sobre os fenômenos (humanos e não-humanos) como produtos dos processos em rede. A conectividade provincial é um dos aspectos mais debatidos em economia romana e tem o potencial de permitir abordagens de grupos (*clusters*), nesse caso religiosos, através de suas materialidades em redes de contato e consumo, com extroversões na macro-economia romana. Os padrões de consumo de cerâmica no interior e nas regiões costeiras da África Proconsular demonstraram ser muito diferentes. A tendência dominante de voltar-se para as comunidades formadas e estruturadas em torno de identidades nativas, especialmente aquelas assentadas nos principais centros urbanos e áreas maiores, parece se estabelecer como um argumento sólido para as negociações na economia do Império Romano. A África Proconsular demonstra evidências que as oficinas cerâmicas através de suas áreas produtores e redes emergentes, estabeleceram-se procurando tanto engajar-se nos amplos negócios do Mediterrâneo Antigo, quanto atender tanto a demanda religiosa de consumo.

Palavras-chave

Ciência das Redes; Arqueologia das Redes; Antiguidade Clássica; África Proconsular

Network Analysis and Archeology

Methods of Network Analysis have been used by archaeologists since the 1960s, but only in the last decade has a growing number of scholars arguing that Network Science has the potential for innovative contributions to Archeology and History (Brughmans, Brughmans et al., 2015, Isaksen, 2013, Knappett, 2011, Knappett 2013, Peeples *et al.*, 2014, Collar *et al.*, 2015). Archaeologists are more fortunate than historians when it comes to the application of network theory, precisely because materiality can be quantified and its origin can be given in space. The intensity of roman provincial connectivity is one of the most discussed aspects of the Roman economy, and both archaeological and written sources, attest to a wide diversity of scenarios in the ancient Mediterranean, demonstrating that connectivity has never been homogeneous, consequently some regions were more integrated than others (Woolf, 2016).

The recent application of network analysis in Classical Antiquity demonstrates that there are a variety of approaches that allow us to recognize patterns (which otherwise we could only intuit) and to think about the phenomena that are products of networked processes. In this sense, Network Science can be simply defined as “the study of network models” (Brandes et al., 2013: 4). In addition, it is characterized as an interdisciplinary academic field that proposes theories and methods, including application of the theory of gratefulness of Mathematics, static mechanics of Physics, inferential modeling of Statistics, data mining and information visualization of Computer Science, structure of Sociology, among other theoretical-methodological aspects of approach. A network model represents a conceptual process by which researchers begin to peer into a given phenomenon under investigation, implicitly or explicitly, in order think through the network concepts and the forms they assume.

A certain level of abstraction is necessary to visualize, in conceptual terms, “past commerce” in terms of network, with the objective of analyzing groups and / or individuals in their agencies, under the social paradigm of multiple interactions and through the flow of social goods. It means we can represent the “nodes” and the connections between them, forming sets of “connections” (Fleming *et al.*, 2017: 15-16). The study of connectivity, in terms of concepts, and the data representations of networks, lead to a fruitful exploratory phase of application of Network Science in Archeology (Collar, et al., 2015: 4-5). Archaeological sites and cities can form a vertex linked to other cities or sites through roads and seaways. This approach considered stimuli of connections or bonds that help to identify which cities/sites are more central (hubs), which were more peripheral and how densely connected would be in the role system. The network science allows, in this sense, to represent emerging patterns regarding the flow of commercial information and interchanged goods among the entities represented. The use of this type of analysis, called Archeology of Networks, not only allows the translation of archaeological data into network data, but also allows to test hypotheses and analyzes that explore new frameworks of understanding in relation to a certain context, consequently different hermeneutics tactics of interpretation.

The study of clay lamps is related to the researches in broad framework of Roman pottery, Craft and Commerce in the Roman Empire. In this sense, aligned with the most recent research in archaeological ceramics (Brughmans and Poblome 2016, Bes 2015, Carrignon 2015). The question of how frequent and intense the economic contacts would be in past, in addition to the specific case studied, is a topic of growing interest, fostering data sets that include archaeological, epigraphic, and written sources. The *Orbis*² project, for example,

² <http://orbis.stanford.edu> (The Stanford Geospatial Network Model of the Roman World), EUA.

accumulates a set of data that allows generating inferences and exploring the cost of mobility throughout the domains of the Roman Empire. Another highlighted project is the *Pelagios*³, which provides a set of features that allow the design of data in dynamic maps dedicated to different historical periods. These maps are open source and free for use in research, teaching and / or general interest.

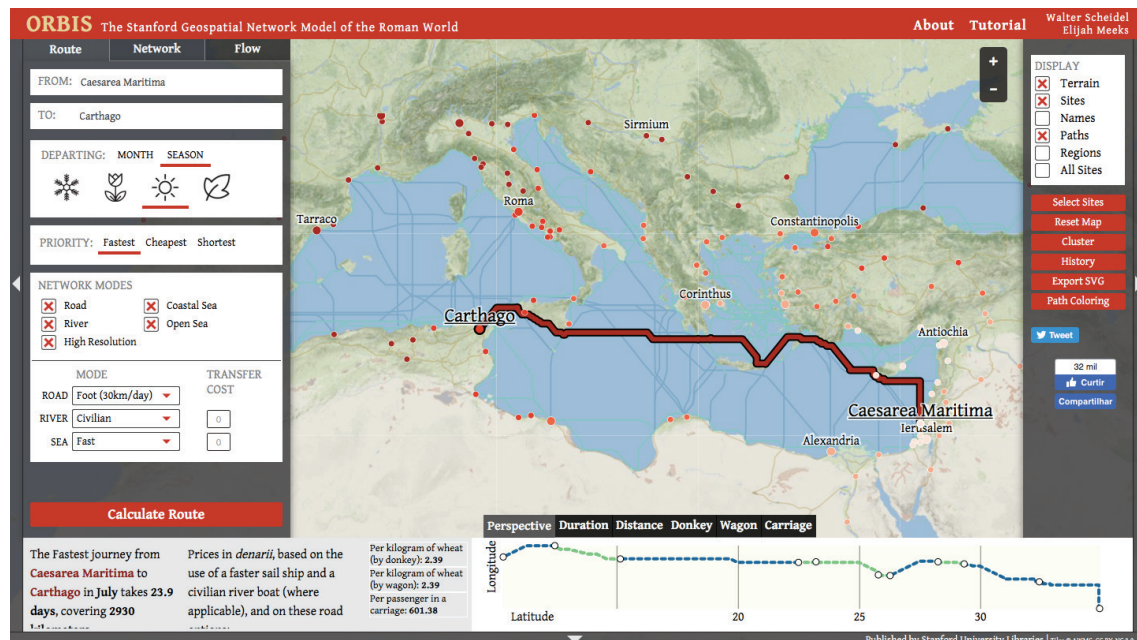


Fig. 1. Projection of the route between Caesarea Maritima and Carthage using the ORBIS – Geospatial Network Model of the Roman World.

As Greg Woolf points out (2016: 43-44), network thinking can be very useful in addressing religious change from new directions, helping to formulate more precise descriptions of social change. Important is to highlight the process involving socialization and the routinization of attitudes, as well as ritualization of actions. Let's say a process of learning, according to a particular way of imagining and describing the cosmos. The theory of networks allows us, therefore, to approach the question of religious change, in this sense, from two models of change – the role of conversion as propagation of idea and also as contagion. In the perspective of contagion, in addition to proximity, religious “recruitment” may be associated with the process called “brainwashing”, in its most objective sense, associated with “a shortcut to a set of specific social psychological processes, of which some or all can be operative when the “mental craft” is employed to influence a person or persons” (Taylor, 2004: 95-165).

³ <http://pelagios.org/maps/greco-roman/> (Digital Map of the Roman Empire) Lund University, Sweden.

The above-mentioned observations reinforce the idea that political orders were naturalized and related to the cosmological, public and ceremonial in Antiquity. The temple being the focus of the collective and civic religion, characterizing its authority in the so-called polis-religios. These social institutions depended heavily on group power for their success and could be highly coercive. Religious cults are usually hierarchical and commonly dominate the religious hierarchies and landscapes of the Roman provinces. The brainwashing, as a social phenomenon, fosters brain synapses with constant trajectories and automatic stimuli, which can be considered the result of the interactions between the transmitter and the victim of the process; therefore, highly coercive and personal. Helping to create its own agenda or acts as part of a broader social system of management. These attributes have no independent meaning, actually play a large role in subjectivity, and become more important when the group invests them with the power to distinguish their members from outside the group (Ahuja, *et al.*, 1993, Ahuja, *et al.*, 2004, Burke and Kendall, 2014).

This phenomenon demonstrates that the ideology of a religion will always be part of the explanation of the conversion. Regardless of the persuasiveness of an ideology, or the transcendence of a vision, the question of conversion rather than the quality of religious stimulus can be understood as a social process conditioned by networks of people who promote religious change (Collar, 2007: 155-158). It is a consensus that during the first millennium of the Common Era the connection between political identity and religious identity was gradually transformed into the same entity. Jews, Christians, and Manichaeans have attracted the attention of imperial authorities and Roman citizens, just as the available evidence on Samaritans, worshipers of Zeus Hypsistos, Bacchus, Mitra, Syrian deities, and Egyptian cults. Parallels are still found in philosophical groups such as the Epicurean and Neoplatonic. It is presumed, therefore, to accept that among the smaller communities the collective worship remained important and that also not all religious changes in this period were revolutionary.

Network thinking allows us to consider these major social changes more clearly. At the city level, through religious patronage, improvements were paid in synagogues, large temples and religious centers to attend periodic festivals and proselytes (Woolf 2016: 49-50). The flood of people to attend the festivals in the cities and visit the shrines formed essentially two superimposed association networks and a third type of network, can be identified, promoted by the interaction among the civic elites of some regions to meet the *koiné* and the *concilia provincial*, besides other businesses and interests. As well indicated by Greg Woolf, the impact of all this activity on the creation of provincial-regional elites still remains little explored.

An increasing number of papers dealing with network analysis have emerged and researches using Social Network Analysis focuses on the study of individuals (people who are bonded as “knots”) and their relationships, established through strong or weak links ties, with other individuals. These relationships can be based on kinship, friendship, crafts, or long-distance contacts. Typically, social network analysis allows mapping individuals (nodes) in relation to their centrality (centrality of the node) in order to associate them with established sets (in this case clusters). It has become common to identify stronger bonds from the weaker bonds, those in which the interaction happens less frequently. Again, the pattern is that some individuals tend to be more central, others more peripheral. As Foucault’s prelude notes, “the problem is at the same time to distinguish the events, to differentiate the networks and the levels to which they belong and to reconstitute the threads that bind them and which cause them to be generated, one from the other” (2007: 6). In this sense, it is possible to approach the different networks of domination that cover each other, protect each other and interfere with each other. It is not in this sense “to conceive the individual as a kind of elemental nucleus, primitive atom, multiple and inert matter that power would strike and over which would apply, subjecting individuals or shredding them”; but effectively to understand that “what makes a body, gestures, speeches and desires, identify and constitute as individuals is one of the first effects of power” (p. 90-103).

The thinking of Bruno Latour (2005) invites scholars to explore the multiple network of relationships between human beings and non-human agents, as well as the roles of each in the sequences of change. The so-called Actor-Network Theory (TAR) originated in the area of studies of science, technology and society since 1980 and is also known as “sociology of translation”. It seeks to account for new paradigms of communication and consequently embraces the material culture agency as a catalyst for change. Anna Collar (2013a, 2013b) has shown that the proximal point analysis (PPA) to generate networks from distributions is a powerful heuristic tool, allowing us to imagine types of connections to explain their dispersion, and the different types of connections necessary to preserve the integrity of alien traditions among those who did not share them in other regions. Each node, in this case, connects to the nearest three, and thus denser distribution areas form clusters. The “small-world” is a global network phenomenon that arises from the local network interactions and through nodal points that certain communities would be closely linked (Collar, 2013a: 224). Most individuals may be involved with many aspects of the local social network, called the “strong-link” type, but may also be involved in long-distance, so-called “weak-link” relationships. When it comes to the “complex” transmission of new ideas or the dissemination of religious ideas, material culture can act as a manipula-

tive nucleus and foster referential for network decisions. Jews integrated with local communities early in the Hellenistic-Roman period became embroiled in many aspects of Greco-Roman culture and adopted Hellenized names and practices (Collar, 2013b: 223-246).

Roman environment strengthened interpersonal ties between Jewish communities and the destruction of the Jerusalem Temple (בית המקדש, *beit hamiqdash*) drastically changed the lives of the Jews of the Roman Iudea / Palaestina. Tension has resulted in the reactivation of the “strong-ties” networks of the ancient Mediterranean, built on a new understanding of shared ethnicity among Diaspora Jews. Josephus located the essence of Judaism of his period in the Temple rites in Jerusalem and lamented the destruction of the literary works of the Jewish Diaspora, such as the Fourth and Fifth Sibylline Oracles, for example (Collins, 1986: 152, Goodman, 1994: 45). The changes taking place for the majority of diaspora Jews have had the effect of the influx of Iudaea-Palaestina refugees and / or prisoners of war, as well as the greater mobility of merchants and who have witnessed the transformation of the Jerusalem Temple tax to become the specifically Jewish treasury within the boundaries of the *Orbis Romanorum*. The connectivity of Jewish networks was renewed by the expulsion of the Jews from Jerusalem and the consequent regional and Mediterranean dispersion during the 3rd and 4th centuries CE ended up reconfiguring the local and extra-provincial networks of contacts: highlighting the connections with Phoenicia and creating a network stronger contacts and new connections with Cilicia and North Africa (Collar, 2013a: 234).

Christianity, in turn, has spread primarily within the areas of Jewish settlement and there is a fundamental distinction between the spatial and temporal distribution of the emergent “new tradition” in relation to other phenomena of Roman society. It is important to note that Egypt has played an important role for emerging Christianity, therefore, a nodal point of affluence and propagation of its thought. It is important to remember that the idea of trinitarianism was represented by Athanasius of Alexandria in the face of the idea of Arianism shared by Eusebius of Caesarea in the Roman Palaestina (Ramalho, 2013).

Network Theory has the potential to analyze the way information has been disseminated. Obviously, social structures are not static, but they flow through information and energy, as well as fluctuations that can lead to sudden changes in the scale and complexity of a certain phenomena. The network approaches seek, in this sense, to specify the origin of a social structure, representing the emerging networks that are produced by the flow of information. The use of network thinking for the transmission of

religious ideas, images and practices makes possible, in addition to the contagious approach, also explicit the general understanding of the phenomenon by which innovations are disseminated through a network, comparable to the adoption of new cultures and new technologies (eg Stark, 1996, Mann, 1986).

The most common application of network theory has been the way to consider cultural interactions across significant distances. A heuristic strategy that encourages us to think in terms of relationships between entities-people and materialities-things, from the assumption that all kinds of new ideas and materiality are constantly being generated, and we are constantly in the process of selecting and adaptation (Knappett, 2011). The argument deals with two distinct stages of thought, the first being that of the origins of religion and the second about the type of natural selection of religious forms. The first concerns the susceptibility that the human kind in general has by this type of representations, characteristics of the cognition that evolved due to advantages that transmitted. The second stage is more important because it focuses attention on the processes of cultural selection that have made certain forms of worship more successful than others, considering which aspects (or affordances) that were considered particularly suitable for export, as well as what types of social environments were particularly susceptible to such appeals. Mapping and network analysis in Archeology offers an important part of the answer, but they always need to be complemented with more specific contextual and regional archaeological information. Conceptualizing archaeological data as network data, therefore, allows the data to be analyzed using different techniques and methods of Network Science, treated in more detail and worked out by other authors (eg Newman, 2010, Scott and Carrington, 2011, Wasserman and Faust, 1994).

Geographic views are especially useful and deserve mention as they place the network in an archaeologically recognizable context. Maps are organized by geographic coordinates, and many also include views of organized networks. This visual juxtaposition of geographical aspects and other network layouts allows us to analyze the potential impact of geography on social relationships in the data sets under investigation. It supports the creation and aggregates dozens of different databases holding the ability to generate a multifaceted view of the classic world. This collection of evidence is a critical step in understanding the Roman economy and other representations in antiquity as well as its use. In the Roman Mediterranean, in addition to the emergence of new networks of commerce and contact, we are always dealing with the heterogeneity and homogenization of the cultural and religious landscape as well as with the complexities of these relations. Many loans between religious groups have been provi-

ding for the creation of new cultural boundaries, and thus mysteries, astrology and the use of sacred texts, have been examples of appropriate religious technologies not only to make a new group more distinct from another, but also to the flow of goods and commercial information. Religious pluralism implied the creation of differences and their constant signs and acknowledgments.

Manufacturing Centers and Intraregional and Interregional Distribution Standards

The general understanding that Rome enjoyed an economic system that was “a huge conglomerate of interdependent markets” has been widely debated. Temin’s approach (2001: 169-181) makes reference to Polanyi, which essentially regards to the categories of exchange (redistribution, reciprocity and market). The author notes the existence of coinage, prices, interest rates, contracts, interests and profitability, also other economic behaviors. In their view, even the domestic agricultural enterprises were aware of their economic forecasts of the negotiated prices, central to the market transactions, according to the offers and demands that were economically connected. The Roman Empire would be, in this sense, composed of an economy of markets, all interconnected, some more than others, depending on the region.

Most scholars agree that a complex mix of mechanisms that worked at various levels was responsible for differences in the patterns of distribution and consumption of pottery during the Roman period. Descriptive conceptual models were proposed to explain the functioning of trade and markets in the Roman imperial structure, which would be more in the style of ‘market-bazaar’ in the period approached (Bang, 2008: 4, Bes, 2015; Brughans and Poblome, 2016: 398). Completely different from the style of entities integrated in large scale production and with specialized information, facilitated by an extensive and efficient communication network, as it happens in the present day. The Roman market, on the other hand, seems to have functioned much more as a fragmented system with relative standardization, of which merchants and traders themselves had a certain type of knowledge, often limited (which would favor opportunism and speculation). In this way, Roman commerce would eminently establish itself from the social network of personal trust and strong community ties maintained; as well as the changing demands of local and regional consumption, without forget the environmental uncertainties of transport and market transparency.

Peter Bang (2008: 200-201) suggests that social networks have allowed the specialization of inter-regional intermediaries, and this would have fostered integration of political and trade spheres. He further argues that traders had the dominant tendency to turn to communities formed and structured around native identities, especially those based on the major urban centers and larger areas of the Roman Empire. Unlike Bang, however, Temin (2014: 4) believes that Roman markets have been integrated and strongly interconnected, even over great distances. The economy of the early Roman Empire, though not as articulate as the present day, evidences sufficient materiality to point out that it was organized as an interconnected market system that would resemble Europe and the Americas during the 18th century CE (Tchernia, 2016: 74). A key element of this integration was the Roman army and its supply, required in large quantities of products (Scheidel, 1997, Scheidel, et al., 2002, Scheidel, et al., 2007). The production and transportation of olive oil from the province of Hispania Baetica to Britanniae after the Roman conquest increased imperial demand and seems to be a very illustrative example (Remesal Rodriguez, 1986, Remesal Rodriguez, 2011: 60). Basic goods were distributed among Roman military assaults, but it seems likely that the trade network expanded to supply civilian settlements and consumer goods were distributed to urban centers using military redistribution networks. The Roman economy was formed by provinces with specialized productions that demanded a large-scale trade.

The production of African Red Slip (ARS) supposedly emerged in the northern region of Tunisia, specifically in the vicinity of Carthage, in order to supply the intra-provincial market (Hayes, 1972: 296; Hayes, 2001; Fleming 2018: 431-445). Analyzes at the regional and supra-regional levels allow access to a growing awareness that large-scale production prospects are increasingly capable of explaining or at least improving understanding of certain political, social and economic phenomena in Roman Africa. As pointed out by Bes and Poblome (2007) it is a change of attitude towards the times and methodologies of studies of Roman pottery. The initial ceramic production in Proconsular Africa imitated models in Italian *Sigillata*, and the evidence is that the first forms of ceramic with red varnish (ARS), dating from the end of the first century CE in the necropolis of Tipasa and Sétif (Guéry, 1979, Guéry, 1987: 132-133), allow us to conclude that changes were adopted in the initial designs and the models evolved with time in the mass-manufacturing process of these ceramics, according to the intra-regional and inter-regional demands. Different forms of African red slip pottery were distributed from the region of Carthage and its influx of contacts. The actual circulation and distribution of the African pottery depended essentially on the location of the production centers, some strategically positioned on the coast and others in the interior of the province.

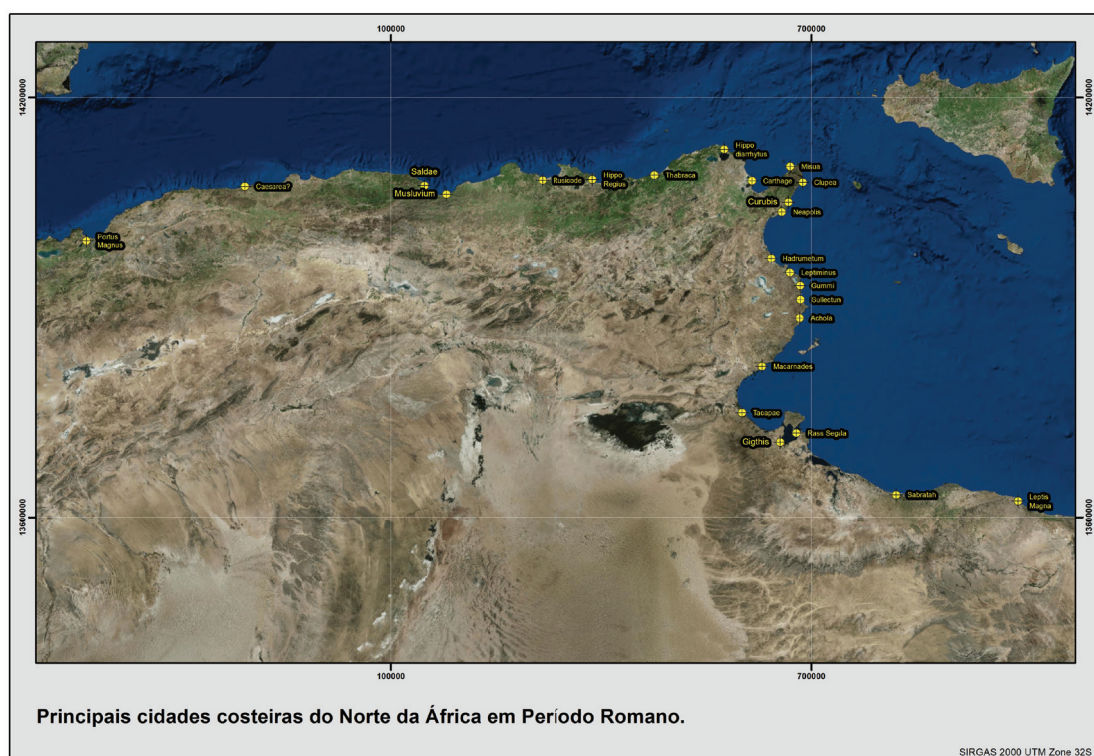


Fig. 2. Main coastal cities of North Africa in the Roman period

By the 2nd century CE onwards, the production of red slip pottery became autonomous, with the emergence of new forms, called Hayes 27, 29-33 and 43-44 (Hayes, 1972: 15; Heslin, 2008: 62). Apparently, during the early 3rd century CE, local production overcame imports (with the increase in average vessel size) and an intra-provincial market distribution concentrated in the production of workshops in the eastern and central regions of Tunisia. Away from the manufacturing centers of the northern region of Carthage, during the end of the 3rd and beginning of the 4th century. EC, the producing centers of Kasserine, Henchir-es-Srira and Sidi Aich, supplied the local markets and their products were diffused through the east of Tripolitania, as well as in the western region of Bizacena and Numidia. Therefore, the African manufacture of red slip pottery (ARS) grew quantitatively, also in geographical importance in the course of the 3rd century CE in the Ancient Mediterranean. This pattern became even more condensed from the second half of the 4th century. and beginning of the 5th EC. During this period it is considered that North Africa was fully part of the *koiné* of ceramic distribution throughout the Ancient Mediterranean (Bonifay, 2005a: 566-568).

In this sense, the African red-slip pottery established a substantial domain from the 2nd and 3rd centuries. EC, spreading its production and extending temporarily until the middle of the 4th century EC, with large scale and

supra-regional exportation, which continued for at least three centuries. A second distribution flow of African pottery seems to have occurred during the 5th century. and beginning of the 6th century. EC. From the 7th century EC onwards the ARS findings are rarer. In these circumstances, the control of the sea routes certainly helped to consolidate the mercantile domain for demand and commercialization of pottery. Cultural factors played a major role in controlling these trade routes, although natural factors also affected the fluctuations of traded goods on certain sea routes.

The contacts between settlements and sites, but mainly cultural exchanges and commercial relations, occurred under different motivations and in different cultural contexts, suggesting that a relative intensity of distribution of goods would have connected regions at different levels, such as the Proconsular Africa and Palaestina. The patterns of exchange and inter-flow between provinces seem to have occurred both on the sea routes in the contact between coastal cities and on the land routes connecting the Roman Empire (Bes and Poblome, 2007: 8-9). The fine African pottery of red-slip appears to have been marketed throughout the Roman Empire and was widely popular. The idea that most fine-pot producers were small-scale workshops located on rural properties or on the outskirts of the cities from which they distributed their products corresponds to an apparent reality in many parts of the East and also in the West (Lewit, 2011: 314-315).

Eventually, these local and regional ceramic industries expanded to produce on a larger scale, not only to increase production but also to export ideas and symbols to a much wider market. Reynolds (2010: 90-93) points out that African red-slip pottery in Beirut became 51% of fine ceramics sampling in the middle of the 3rd century. EC. to more than 91% of sampling during the middle of the 4th century. EC. Jewish and Christian symbols were portrayed in the central part of African ceramic lintels, replacing those icons and themes that were dedicated to Greco-Roman polytheism, helping to change and establish different degrees of cultural interaction and consumption between Palaestina and northern Roman Africa.

The consumption of lamps and the meanings attributed to this practice (which relate to the metaphors of light and the rituals of enlightenment in society) have developed under the order of a particular set of exceptional stimuli, among which the rise of Christianity and the Jewish Diaspora networks, which have exerted their own dynamics for the contexts of consumption, becoming, in many cases, indicators of clientele in the Mediterranean exchange flow patterns (Lapp, 2006). Bonifay (2005b) attempted to reconcile the ceramic typology of red-slip pottery and petrographic research in order to locate ceramic workshops in Proconsular Africa. The archaeologist concentrated

his efforts in three neighboring towns of the Pupput necropolis, Sidi Jdid and Nabeul (in the northern Gulf of Hammamet) and the site of Rougga-Bararus (near El Jem). During the excavation of the urban necropolis in Pupput (Hammamet) in activity during the 2nd to 4th centuries CE, about 600 clay lamps (African Red Slip) were found. In Sidi Jdidi (Aradi) the lamps were found related to the illumination of three Christian basilicas, dating between the 5th and 7th centuries CE.



Fig. 3. North African red-slip clay oil lamps.

The contextual analyzes of the above-mentioned sites therefore allow the author to classify the lamps under investigation into three main categories: African lamps with round and / or heart-shaped beaks (Deneauve 1969, Deneauve 1972, type VII and VIII), lamps (derived from the Deneauve VII, Deneauve VIII, Deneauve XI B [= Rossiter group 6]), and the lamps in *Sigillata Africana* (Types Hayes II A, Hayes II B [sigillata africana groups C and D]) (Deneauve, 1986: 141-161).

In the north and center of Tunisia, the activities of ARS workshops from the 1st to the 7th centuries CE were clearly attested. It seems that until the end of the 2nd century CE, the most active ovens were situated in Proconsular Africa, perhaps in the vicinity of Carthage (Oudhna). In the 3^o -4^o CE, a new wave of production emerged, originating in the center of Bizacena and particularly El Mahrine regained its importance and exported throughout the Mediterranean (Bonifay 2004: 47-8). During the 5th CE, the ARS of the Vandal period was produced by units in the center of Bizacena (Sidi Marzouk Tounsi), the

region of Carthage regained its hegemony in production and trade throughout the middle of the 5th century CE. In Nabeul (Neapolis) were found oil lamps in a fish salting factory presenting a continuous stratigraphy of the 1st to the 7th centuries CE. Finally, in Rougga (Bararus) the lamps were found in the reoccupation of the forum, corresponding to levels that cover the period between the 7th – 8th centuries CE.



Fig. 4. Jewish and Christian iconography in ARS clay oil lamps.

There is substantial evidence of production on the Tunisian coast, mainly for the Carthage region, but also for the region of Clupea / Kelibia, Neapolis / Nabeul, Pupput, Sidi Jdidi, Leptiminus, Bararus / Rougga and Jerba. Basically the coastal contexts of ceramic production are rare in Algeria, and it is only possible to mention Caesarea / Cherchell, the village of Nador, Tipasa, Driaria el-Achour, Rusguniae, Hippo Regius / Annaba, and the rescue excavations at Icosium / Algiers. The information available from Libya comes from Sabratha and Leptis Magna and is also documented for inland regions: Setif, Tibessa, Maktar, Ucchi Maius, Althiburos, Hadra and Lambésis. These archaeological evidences of ceramic workshops are supplemented by several studies conducted both in coastal and inland regions of North Africa. In Tunisia, there are Roman period pottery workshops also around Dougga, Segermes and Passerine areas; in Algeria, around Diana, Cherchell and Veteranorum / Zana; and in Libya, in the center of Tripolitania (Bonifay, 2013: 530-531).

Omnipresent in all the recognized ARS workshops in Tunisia (eg. El Mahrine, Sidi Marzouk Tounsi, Henchir es-Srira, Hencir el-Gellal Djilma and Oudhna),

the tradition of red-slip in the production of ceramics from Africa can be highlighted through its cooking tools, the so-called saggars. Saggars are cylindrical boxes of clay, mouth wide at one end and narrow at the other, in which the pottery must be placed to be cooked. Comparison with techniques used in modern earthenware workshops suggests that saggars were stacked on top of one another, forming towers in the kiln. The only saggars so far excavated in Oudhna indicates that within a saggar there was room for about 12 lamps, and that about 180 saggars could be placed inside an oven, giving a total charge of burning of more than 2000 pieces.



Fig. 5. Saggars, cylindrical clay boxes for the pottery production.

From the second half of the 6th century the sophisticated fabrication process of these lamps, which comprised the over-modeling of a clay archetype, to produce the definitive gypsum molds, was progressively abandoned (Mackensen, 1993: 101-105). At the end of the 7th century CE, a new decorative style with linear patterns appeared and Hayes II-type liners show evidence of blurred decoration, most likely caused by continuous use of the same molds (Bonifay, 2004, 81). Imported skylights are rarely found in North African archaeological contexts; evidence is from the late Byzantine period (7th century CE onwards). Due to a small quantity, the distribution of lamps can not be compared, although continental patterns versus coastal consumption patterns may provide interesting assumptions about consumer goods in the interior and coast of Proconsular Africa (Bonifay, 2007: 152). African Red-Slip have reached regions over 450 km away (for example, production of the Sidi Marzouk Tounis workshop distribution for the Setif region). The oil lamps produced in central Tunisia were imported on a large scale until the end of the 5th

and beginning of the 6th centuries CE (Bonifay, 2013: 554). Local and regional African ceramic products have interacted in the major settlements and major Roman cities located along the network of roads and port inflows of the Ancient Mediterranean.

Consumption and Identity through Materiality

Around 350 CE the ancient Mediterranean market was flooded by African pottery, the marketing of olive oil, *salsamenta* (which includes both *garum* and solid salted fish) and wine, seems to have associated pottery with the large production and distribution of food and roman provisions. Transportation of amphoras cargoes were sometimes supplemented with kitchen and table ware. From the 5th century CE it is possible to attest to the wide distribution of amphorae from the Punic tradition in Sitifensis, the coastal Bizacena and the northern part of the Gulf of Hammamet (Bonifay, 2007; Capelli and Bonifay, 2014: 240). A continuity can be observed in the Eastern Mediterranean regions with the Phoenician tradition, after the Greek-Roman amphorae (type LR) had ceased in Cilicia. The production of Gaza amphora (types 4 LR and 5-6 LR) continued to be found even during the Islamic period, testifying materially to the long period of inter-flow and contact (Bonifay, 2007: 145).

Ceramic consumption patterns in the interior and coastal regions of Proconsular Africa have proven to be very different. In fact, cities near the coast demonstrate a very local pattern of supply (eg Aradi / Sidi Jdidi), while large inland cities received various imports from the Mediterranean (eg Thysdrus / El Jem) especially during the 4th century CE. Evidence indicates that Carthage's workshops would supply "classical" ARS ceramics and late Roman amphorae from the eastern Mediterranean through the ports of the Mejerda valley to remote farms and towns like Uchi Maius and Aïn Wassel near Dougga. Despite the distance from the coast, the pre-desert region between Leptis Magna and the limes of Tripolitania were apparently open to imports from the Mediterranean, as evidenced by the supply of pottery at the Gheriat el-Garbia fort, about 250 km from the sea (Bonifay, 2013: 552).

In this sense, the local production inspired by the forms of Roman italic tradition were not restricted to the consumption of the interior zones and attest in a very narrow strip of the North African coast. The region of Carthage and the region north of the Gulf of Hammamet maintained their own quantities and models being traded on the African coast. A considerable number of clay molds from central Tunisian ARS lamps were found in Tiddis, Djemila and Timgad, unvarnished materials; and the sites of Tipasa and Hippo Regius attest to local productions with characteristics very different from the ARS oil lamps

from the 4th to 5th centuries CE (for example Atlante VIII and those with the inscription 'officina assenis'). Over the same period, Tripolitania has its own ceramic workshops for the production of clay oil lamps.

In short, the African market was strong in the interior (small towns had local productions and markets) and the coastal regions capitalized strategic position to interconnect the Mediterranean basin with the regions of the interior of North Africa, through the supply and trade of wine, olive oil and fish products, as well as high quality ceramics. Thus, an inter-provincial trade (later 'intra-diosesano') apparently existed and points to a strong internal exchange (Bonifay, 2013: 557, Wickham, 2005: 720-728). As pointed out by the archaeological evidence, the interior regions received not only the oil lamps and tableware from the center and south of Bizacena, but also wine and grains that arrived from the coast of the Mediterranean on a large scale, at least from the 3rd century CE onwards. The east-west road network with mountain ranges that divide the landscape into latitudinal ranges, and navigable rivers certainly enabled the development of such trade exchange relationships in the particular geography of the Maghreb during Late Antiquity. No doubt shipping by sea, mainly from Carthage, Zeugitana and Bizacena (east and west), favored the growth and supply of African ceramic production (with the apogee of distribution of African Red Slip). Lamps, much-needed products, were operated at low costs, accessible on demand for social tastes and clientele, which in turn helped to foster cultural inter-flow and exchange relationships through objects. Helping to forge networks between Palestine and North Africa.

Conclusion

African red-slip pottery were often produced in the interior, as part or near of the regions of olive oil production, as it was present in the coastal region, where the manufacture of kitchen ceramics, pots and amphoras for storage and shipping take place. Although Oudhana and Sidi Khalife are well-known sites in the North African interior with the presence of ovens (at least 30-45km distant from the coast), the pottery workshops of El Mahrine and Sidi Marzouk Tounsi, although they are sites at least 100 km away to the interior and separated by mountain range, show evidence of high-scale pottery production and distribution. This indicate that, in the African case, pottery workshops concentrated near the agricultural companies of the production of olive oil, as a way of access to the residues and oil for fuel use in the burning of the pottery. On the coast, the sites of Carthage and Lepitiminus (perhaps Sabbath and Leptis Magna) show evidence that allows the concentration of the heat conditions required for large fine pottery productions (burning above 700 ° C), as well as having specialized artisans to control the techniques of manu-

facture and to be part of the market. Thus, the production of African red-slip (ARS) pottery was mainly located in places in the interior of Tunisia, where the rich production of olive oil was transported to the coast, initially in bottles, presumably to reduce the weight and to transport more quantity, and later on amphorae manufactured near the ports of the coastal cities for distribution through the Roman Mediterranean (Lewit, 2011: 320).

Northern Africa provides evidence to conclude that Eastern signs and symbols were appropriated by the local christian tradition. A large number of clay figurines were found in Carthage, many depicting a mother goddess, referring to the Punic tradition, sitting on a breastfeeding seat. Later these images and allegories were appropriate to the Christian image of Mary, mother of Jesus Christ. This association is in iconographic interaction with the representation of the goddess Tanit, of which the most famous example, almost in real size, comes from the Thinissut sanctuary. The same iconographic archetype in relief was used in the decoration of Christian basilicas, especially in relation to the mother goddess. Two examples, one from the region of Bou Fichta, and one similar in Nabeul, show two women, each with a child on their knees and two thrones. Similar objects were still produced in the ARS workshop of Oudhna during the 6th century CE, with molds made of gypsum (Bonifay, 2004, fig 43).

Late oil lamps in Sigillata Africana (type Atlante X) are affiliated with the central African sigillata C of central Tunisia (Hayes Type IIA) and the African sigillata D of northern Tunisia (type II B Hayes). The well known conventional products (groups C2 and C3) from central Tunisia date from the 5th to the beginning of the 6th centuries CE, whose manufacture is attested by a workshop operating in Sidi Marzouk Tounsi. The stratigraphic of Sidi Jdidi and Marseilles show variants of the types mentioned, with a diversity of object decorations that cross the mythological (Achilles and Heitor) and biblical scenes (eg, Adam and Eve, Abraham's sacrifice). Topics such as the vine watcher, animals, plants, vases, ornaments and abstract geometric forms, as well as Christian iconographies including the representations of the saints of the church (Oudhna, group D2) are also noted. The Christian signs most evident in these lamps are the monogrammatic cross and the chi rho (which curiously looks to be more liked in the North African lamps than the Palestinian ones). Examination of the oil lamps found in Rougga shows that the production of these lamps in Bizacena was not limited to the 5th to 6th centuries CE but was active during the 6th to 7th centuries CE, producing types altered from the models considered as "classical." The continuity of themes, the transmission of information, and the way in which decorative patterns were incorporated, make it clear that North African craftsmen imitated other goods (eg Hayes forms 82-85, 90-105), inspired in themes and signs from the Middle East.

North Africa really became Roman, as far as ceramics production was concerned, only during the 2nd century CE. During antiquity, Roman tradition was to some extent more vibrant in Africa than in many other regions of the ancient Mediterranean. The well-known ARS workshops can now be recognized through archaeological research for the regions of Mahine, Oudhna, and Sidi Marzouk Tounsi. All these workshops are late and have the same dating. The comparative perspective suggests that the most common forms have not changed since 4th to 7th CE and the period between the 5th and 7th centuries CE was the apex of manufacturing the African red-slip ware (ARS), recalling previous forms of imperial types. Import substitution suggests production techniques, involving the same plaster molds, although the decoration relative to gods and goddesses has to some extent been replaced by crosses (Bonifay 2007: 147-50). Nevertheless, the figurations of animals were represented in the oil lamps of the region.

The influence of the Eastern Mediterranean can be attested also in the clay lamps from the Byzantine layers. Evidence shows that most of the oil lamps found in Carthage derives from Byzantine levels (Bonifay, 2004: 429). A phenomenon also apparent in the stratigraphy of Carthage is that the molded clay lamps survived until the 5th century CE. The late models remained in use until the beginning of the 6th century CE. It seems reasonable to assume that these clay lamps became accessible through the inter-flow network between the coastal zone of North Africa (Carthage), the coastal zone of Phoenicia (Tire) and the coastal zone of Palestine (Caesarea Maritime, Apollonia, Yafo, Ashkelon, Gaza), mainly. The iconographic themes of the African red-slip clay lamps were derived from a variety of previous lamps and iconographic motives that spread widely throughout the region, and between the provinces of Syria and Palaestina from the 3rd CE (Orssaud and Sodini, 1997: 63-64, Tal and Teixeira Bastos, 2015: 345-368).

The shift from the ceramic industry to the center of the city is a well-known as a Byzantine phenomenon. During the 3rd and 4th centuries CE, the ARS industry appears to have been closely linked to large rural properties, and the ARS workshops linked to the city area were consequently considered a further development, precisely because of amphora production and storage potteries. The end of the 5th or the beginning of the 6th century CE, prior to the Byzantine conquest, seems to have marked a return to the previous situation, and the northern workshops prospered once again. The most important workshops of the period were no longer located in Mejerda (El Mahrine), but in the valley Oued Miliane (Oudhna) and Carthage (Mackensen and Schneider, 2002, 2006). Workshops around this city were apparently the last to produce and export ARS until the end of the 7th or early 8th centuries CE.

The shift from North African production to the center of Bizacena in the second half of the 5th CE may also be linked to political circumstances and Christian religious persecution under the new ruling class in the so-conquered Vandal territory. The presence of Jews in North Africa beyond material culture is often attested by the ancient Christian and rabbinical literary polemic. Collections of oil lamps decorated with menorah are particularly associated too with the Jews of northern Africa (Lund, 1995; Barbera and Petriaggi, 1993: 63, 88, 284, 285). The outlook is that Jews exhibited a range of cultural practices in North Africa that exceeded the current rabbinic “orthodox” academic assertions and taxonomies (Stern 2008: 305-309).

The Jewish presence in Carthage and elsewhere in Africa is corroborated by inscriptions that contain names and adjectives (eg. *Iudaeus*) which are particularly used. Jewish symbolization enabled scholars to identify as Jewish burials in Gammarth and Oea, and funerary stelae isolated throughout Proconsular Africa, Mauretania and Tripolitania are also associated with the Jewish presence in North Africa. However, funerary shingles, bowls, and lamps depict biblical scenes and figures from Jonah’s representations, Adam and Eve, suggest that these symbols were manipulated either by Jews or by Christians. However, it is remarkable, as suggested by Stern (2008: 306), the question that “objects with biblical figuration that do not explicitly have ‘Jewish’ markers should necessarily be labeled ‘Christian’? Can words used in an epitaph emulate both Christian and Jewish notions about the afterlife?” It should be noted again that the Jews of northern Roman Africa lived in deeply complex cultural settings and their material evidence reflects and sustains this assumption.

As in Roman Palestine, Jews gave their children local names, used vernacular Latin to celebrate their dead, and built their cemeteries according to local African custom also. Thus, in many cases, North African Jews and / or Berber Jews marked themselves in a similar way to their neighbors materially speaking, while maintaining connective relationships in the Jewish networks of the ancient Mediterranean, especially in Palaestina, renewed during the 3th -4th centuries CE by the dispersion of the Jews and the emerging contacts through networks. The clay oil lamps of Proconsular Africa and the remaining archaeological corpus presented support these possibilities and present assumptions. The cultural-religious identities of Jews in North Africa were complex, with distinctive cultural identifications that varied, opened to accept interpersonal relationships and inter-group relations demonstrated by the materiality in the *Orbis Romanorum*. The emergency of distribution networks of Roman pottery had a key role during these process of religious affiliation and cultural identity.

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