Frontiers in Economic History

Marcella Frangipane
Monika Poettinger
Bertram Schefold *Editors*

# Ancient Economies in Comparative Perspective

## Material Life, Institutions and Economic Thought

Springer

# Frontiers in Economic History

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Editors

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*Editors*
Marcella Frangipane
Department of Sciences of Antiquity
Sapienza University of Rome
Rome, Italy

Monika Poettinger
Polimoda
Florence, Italy

Bertram Schefold
Department of Economics
Goethe University Frankfurt
Frankfurt, Hessen, Germany

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# Introduction


**Marcella Frangipane, Monika Poettinger, and Bertram Schefold**

This volume hosts the results of the encounter of several different academic disciplines at the 25th conference of the Italian Association for the History of Economic Thought (AISPE) held in Rome in December 2017. The conference explored the possibility and hermeneutical value of comparisons, across time and space, of economic facts and ideas. On this occasion the editors of this volume felt that the time had come for renewing the collaboration between economists and historians of antiquity, a collaboration that had rarefied, at least in Italian academic intercourse, since the 1990s. Many colleagues from different countries, universities and departments readily answered the call and participated in the conference. The ensuing discussions exposed the necessity to recreate a common language and a set of shared concepts that would render research results and methodological approaches understandable and fruitfully comparable. To this end, in the years following the conference, the work of participants followed two different paths.

Firstly, economic historians and historians of economic thought were called upon to outline, on the one side, the changes that the new archaeological findings and the increased amount of data available made necessary in studying ancient economies; on the other side, to describe the interpretative theoretical schemes that past and present economic thought made available to understand and classify the new research findings. Specific attention was dedicated to methodologies that allowed comparisons across time and space. The results are collected in the first section of this volume.

M. Frangipane (✉)
Department of Sciences of Antiquity, Sapienza University of Rome, Rome, Italy
e-mail: marcella.frangipane@uniroma1.it

M. Poettinger
Polimoda, Florence, Italy
e-mail: monika.poettinger@unibocconi.it

B. Schefold
Department of Economics, Goethe University Frankfurt, Frankfurt, Germany
e-mail: schefold@wiwi.uni-frankfurt.de



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J. K. Davies, in the first essay of this collection, describes with detail how the traditional approach to analysing economic processes in antiquity, based on political entities, has proven less and less convincing. Even language constraints—typical of a research based on literary sources and epigraphs—should be overcome, particularly when examining economic phenomena like long distance trade, the formation of prices, demand patterns, etc. The same holds for obsolete geographical sub-divisions and artificial temporal limits. For the economic history of antiquity—defined as the study of complex systems into which humans continuously adapt their technologies, their institutions and their needs and wants—to become a 'big history', though, the use of the conventional methods of economics and other social sciences appears inadequate. Davies thusly proposes to include in the models the influence of seven variables—excluded by economic modelling so far—that he deems essential in understanding ancient economies: the exceptional individual; the population as a collective agent; the natural environment; ideas of the supernatural; the availability of convertible resources; memory, imagination and the sense of identity and male aggressiveness and violence. Bertram Schefold, instead, underlines yet another major flaw in the study of the performance of past and present economies: failing to account for economic knowledge as a relevant pre-condition of growth. While theorists in the past have considered technological advancements, human capital and even moral beliefs as factors of growth, the development of a specific semantic, the spreading of dedicated knowledge and the creation of institutions related to economics have never been included among them. While the ancient sources of Western modern economic thinking can so be traced back to classical thought, a thorough study of the implicit and explicit economic thinking in ancient economies has not been systematically pursued, leaving a major gap in the understanding of the origins of the corresponding economic institutions, policies and actions. Marco Bianchini, then, in his own essay, specifically addresses this last point, by describing some conceptual and methodological tools for the historian of the economic thought of antiquity. Notwithstanding the fact that there was no systematic economic theorising at the time, Bianchini identifies in the collective nature of the economy and in the eternal and ubiquitous scarcity of resources the two facts that justify the existence, even in antiquity, of some form of economic thought, represented in social norms, institutions, policies, etc. He further defines the centres of regulation that preceded the emergence of the market: the village, the war lords, the temple, the palace and the agorà. All of these performed economic functions and took economic decisions. To allow comparisons between the corresponding economies, Bianchini affirms that a clear identification of the boundaries of their power and influence and a thorough study of the way they defined debt practices would be needed. In the last essay of this section, Monika Poettinger finally recollects the origin and consequences of the famed Meyer- Bücher debate that took place in late nineteenth-century Germany. Otto Neurath, having completed his dissertation under Eduard Meyer, tried to solve the debate by devising a new economic science that not only allowed comparisons across time and space but depended on them to offer valid alternative models to the democratic process of choice. Neurath held a specific sympathy for ancient economies characterised by in-kind exchanges,

the absence of monetary transactions and an extensive state control over production. There was nothing primitive in them. The happiness of people, in his view, had nothing to do with monetary values, but was better represented by indicators as the suicidal rate, the availability of goods and cultural recreation and the amount of energy and resources at disposition to an economy. These quantities are easily summarised in an index that could be calculated for ancient and modern economies, allowing extensive comparisons.

While economic historians and historians of economic thought suggested available options to make ancient economies understandable and comparable, historians of antiquity, archaeologists and epigraphists, specialising on different epochs and on different civilisations, shared their findings according to a few generic economic themes that were discussed diachronically. These extensive studies are collected in Part II to IV of this volume. The second section addresses the question of development models. By development models are here to be understood the unique interaction of men with a complex and given environment and the resulting technological structure of production, the extension of social and economic interchange, the institutional framework and the stratification of society as determinants of the redistribution of resources and income, and lastly the patterns of consumption. These complex economic systems—as underlined in many of the contributions—could be controlled or heavily influenced by political structures—political economies—but could also be privately managed in a communal or individualistic way subject only to social norms or complex legislations. The diachronic study on the emergence, the growth and decay of these economic systems allowed for fertile discussion, leading to the identification of several economic and non-economic factors that impacted on them positively or negatively. Many of them corresponded to the desiderata of the research program launched by J. K. Davies, others retrieved and elaborated concepts related to the Marxian definition of modes of production or to the new institutionalist economic history.

Marcella Frangipane, in the first essay of the second section, analyses findings relating to 5th and 4th millennium BCE Mesopotamia. By describing the 'political economy'—an economic rationality applied mainly to political ends—of the time, she identifies two completely different development models. One, based on a relative equality in the starting points, would maintain a communitarian management of the economy if not for external induced changes. The other, instead, based on an unequal distribution of resources to begin with, would develop an aristocratic form of government both on the political and the economic side. In all cases, though, wealth—best described as the supply of foodstuff for the population in general—acquired meaning and significance only in relation to power. The 3rd millennium saw these political entities develop into states defined by precise geographical boundaries more than by spheres of influence. The exercise of power over the economy became, then, more complex, including trading and manufacturing activities and the management of taxing systems, while the private element in the economies acquired, for the first time, some relevance. Giacomo Benati proposes, instead, to apply the method and concepts of the New Institutionalist Economic History to the history of

the ancient Near East. As a first step in this direction he calls for a more systematic quantification of all economic data available, according to a social scientific approach. The aim of this data collection should then be to analyse the structure and performance of the ancient economies to underline the processes of change and growth over time. But other datasets, aside from those pertaining to economic and institutional variables, should also be included for this kind of reconstruction to be conclusive. Among them, Benati cites paleoclimatology, human skeletal records—to shed a light on human diseases and population dynamics—and violence and rent-seeking activities. Such studies, although taken singularly could appear reductionist, would contribute to better understand the complexity of ancient economies. Kristian Kristiansen and Timothy Earle, in their essay, reconstruct the main characters of the European bronze age economies of the 3rd and 2nd millennia BC. To do so they redefine the Marxian concept of mode of production as a unity of economic, social and political processes that represent dynamic human systems. In fact, Kristiansen and Earle not only postulate the coexistence of more than one mode of production at the same time and in the same space—albeit only one could be dominant at any given time—but that modes are systems constantly changing and creating novel relationships of power and inequality. Thanks to this hermeneutic concept they can explain the dynamic that in bronze age Europe existed between population growth, subsistence shifts, new property relationships, expanding warfare and emerging trading networks, all of which underlying large-scale migrations and population replacements. Frederick Mario Fales, then, by discussing the hydraulic networks of seventh-century BC Assyria, gives an example of the useful interaction of modern technological tools, as remote sensing technology, general models of landscape archaeology and more traditional textual analysis in explaining the aims and instruments of the economic and political control of Assyrian rulers, usually depicted by historiography as solely dedicated to warfare. He demonstrates, in fact, the existence of precise economic policies of the Assyrian Empire devoted to the management of resources, specifically water, coupled with the political-ideological ambition to leave a 'perpetual' imprint of imperial power in a liminal region in the north of the country. Annalisa Marzano, in the final essay of this section, describes the functioning and spread of technologies in the Roman economy with an approach that instead of looking for proof of prejudicial theoretical conclusions, analyses data to, then, draw some conclusions on the innovative capacity of the economy, even in presence of abundant slave labour force. This is the case of water mills, widely diffused in various estates scattered across the Roman empire at a time, around the second- century BC, when slaves were abundant. The complex organisation of fish salting, instead, proves how the Roman empire created the conditions for highly specialised production and organisational ventures, unsurpassed until the industrial revolution. The absence of law enforcement in the economic sphere, though, obliged merchants and investors to rely on personal ties and kinship networks, limiting the scope of operations.

The third section collects research specifically dedicated to understanding, in different epochs, the influence that the extension of trade had on economic systems. Trade, and the related necessity for some means of exchange, invariably emerged, from these studies, as factors that changed and determined development models and

growth performances. This happened in production, due to the induced specialisation processes, and in demand, standardising consumption preferences, diffusing new products, changing the perception of luxury. Trade also triggered merchant migration, and followingly diffused payment practices and currencies, and artisanal migrations, causing the spread of certain technologies and the sprouting of production centres along trade routes. Trade was obviously dependent on political stability but also, in many cases, from the politicised demand of local elites. The interdisciplinary approach of the discussions that led to the present volume also underlined more than once that specifically the analyses dedicated to trade called for a renewal in the time and geographical boundaries that the historiography of ancient economies has construed over time. Long-term trade cannot be understood by limiting studies to institutional entities, like states and empires and by accepting a periodisation dictated by their growth and decay. Language can also constitute a barrier in the research for relevant sources. Archaeological findings have been, in this sense, often more helpful, as will be seen in the individual contributions, than many epigraphic or literary source.

In the first essay of the third section, Nicola Ialongo analyses how market exchange in pre-literate Bronze Age Europe (c. 2300–800 BC) was based on relative weights in respect to copper. Through statistical tests, he proves the existence in Europe of a weight based long distance trade network that was as efficient as its counterparts in the Near East. A trading network that, even in absence of a currency and of monetary values, was conducive to extensive market exchanges. The corresponding weighing technology is firstly documented in southern Italy around c. 2000 BC, then spread between Italy and central Europe in c. 1400 BC and reached the Atlantic coast around c. 1200 BC. At this date the technology and the corresponding set of relative prices were widely adopted everywhere in Europe, and a payment system, based on fractions and multiples, had become customary. The convergence over time of local payment systems on this one based on weights, proves that merchants travelled with their own weighing equipment, negotiated with other agents from elsewhere in Europe and established stable relationships that proved fruitful in the long term. According to Ialongo such systems proved stable through time. Interestingly, the creation and diffusion of this payment system happened in absence of state institutions. While Near Eastern states actively regulated weight systems, and by their disproportionate presence in the economy influenced the equilibrium of the system and the values on which the equilibrium was based, the European case was, for Ialongo, comparable to an ideal model of free market. In his essay, Marco Bettelli, instead, testifies how participating in trade activities engineered the diversification of local productions in protohistoric Italy. He makes his case by analysing the evidence of the diffusion and provenance of Mycenaean pottery. This kind of pottery implied the use of the wheel, a technology that was up to then, unknown in Italy. At first this pottery was imported by Italian communities through long distance trade, later local productions sprouted, proving the existence of artisans' migration flows sparked by the increased demand generated by trade. Potters' wheels so diffused from the South to the North of Italy. Foreign artisans, in turn, passed their knowledge to native craftsmen who then produced pottery according to Mycenean technology but with distinctive local

decoration styles and even new uses. The fact that the technology vanished in the North of Italy, while remained in use in the South hints to the complex interaction of luxury productions with a specific elitist demand that depended on social stratifications, gift exchanges and other non-economic variables. While trade operated in favour of the diffusion of technologies, artisanal migrations and the creation of local production, demand was, instead, still deeply embedded in cultural values. Enzo Lippolis, in his essay, analyses the Hellenistic globalisation between the fourth-and the first-century BC and its effects on Mediterranean economies. In his view, the increase in trade caused not only the integration and specialisation of production, but also a cultural homogenisation that ultimately led to the feasibility of a holistic political rule. The effects of the creation of a Mediterranean wide system of trade were far from univocal, given that consumer preferences changed overtime. Some wares lost in time their value as luxury and were substituted by others. Their production, from being technologically refined and disseminated across many production centres, became centralised, low quality and dedicated to mass consumption. Demand, then, was often ancillary to political requirements, as in army provisions, or to prestige, as in the case of the wine from Rhodes. Lippolis so argues in favour of a more attentive and global study of the interrelations that the growth in trade brought to Hellenistic economies, and for a reassessment of the long-term economic trends of this historical period. Present studies suffer by being dedicated to a very limited amount of goods, so much so that they derive a negative judgement on the performance of an economy by the problems affecting only one specific production, influenced by the international specialisation process or by a change in consumption patterns, without looking at the general picture. Lippolis affirms that even a reassessment of the temporal boundaries might be necessary, dating the birth of this complex trading system back to the Archaic Age and to the Greek colonisation process. Marco Maiuro, in the final essay of this section, also tackles the controversial period of Hellenism. The Hellenistic world is—he admits—less conducive to structural analysis, given the plurality of actors and the fact that many economic variables have not yet been quantified with any grade of accuracy. Maiuro even argues that the Hellenistic period doesn't have a precise direction, in terms of growth or decline, as other historical phases. Nonetheless Maiuro, by the example of Rhodes, tries out the usefulness of a neo-institutionalist approach to understanding the functioning of the local economy. In fact, he claims that the specialisation of the island lays not so much in any specific production process but in the capacity of its ruling class to take economic advantage of the conflicting nature of the relationships among all the other actors, offering a global service, in terms of protection from piracy and diplomatic intermediation, that lowered transaction costs in the whole Mediterranean trading network.

The last section of this volume is dedicated to debts, slaves and finance. As stressed by Marco Bianchini, the definition, perception and regulation of debts was a main feature of ancient economies and its diversity marked the difference between development models. Debts were also, in many cases, directly linked to enslavement, since the debtor who could not repay his debt could be sold as a slave, forced to work for the creditor for a period, or constrained to sell his belongings to the creditor. Many of these elements recurred in various ancient economies in similar form. At

times, they led to permanently altering the distribution of wealth, specifically the possession of land, polarising a society. Given the importance of the question, generally law regulated debts. Different economic systems applied different protection levels either to the debtor or to the creditor. The other side of the medal, credit, held a similar importance in defining development models and economic performance. Loaning money or extending credit in form of supplies could be a prerogative of religious institutions, states, private citizens, private banks or slaves. Interest payments could be admitted, restricted or prohibited. Debts could have an expiration date or could be remitted. The monetisation and financialisation of an economy would then invariably bring changes into the regulations of debt and credit practices. Another paramount feature of different economic systems is the regulation of slavery. Being overtheorised, the question of slave labour and of its effects on development models needs a reassessment, as argued by many authors of this volume. In this case also, a long-term diachronic analysis might prove helpful.

The fourth section is introduced by an essay dedicated by Cristina Simonetti to the edicts of debt remission in Babylonia in the first half of the 2nd millennium BC. Simonetti admits the complexity of the economy and the society that this kind of laws addressed, but at the same time questions the efficacity of these measures. The edicts seem to her a futile attempt to stop a process of change that would in the end prevail. Mononuclear families would fail to sustain themselves on increasingly smaller patches of land and would so be constrained to go into debt. Major landlords would then buy their land for a small amount of money or otherwise their creditors would enslave them. The edicts tried to stop this process of feudalisation, freeing debtors from their debt, nullifying forced sales contracts and rendering freedom to enslaved debtors. While reflecting the changing distribution of wealth in society, the edicts proved inefficient, at least according to the retrieved evidence. In the subsequent essay, Rita Sassu analyses the administration of public finances done by major temples in pre-Hellenistic Greece from the seventh- until the fifth-century BC. Sassu argues that during this period, hoarding processes, centred in sacred spaces, were part of the complex administration of the public funds of the polis. She so traces an evolutionary trajectory which, identifies, in the first phase, the sacred space as the seat where public funds were hoarded. A later stage, characterised by the increased use of coinage, was marked by a definite financial policy, with an increased distinction between public finances and sacred reserves. All the while temples siphoned resources in forms of donations, but also levies, war booties and tithes, often transforming coins into artefacts, de facto limiting the amount of currency in circulation. These resources could then be used to finance the construction of temples or the many sacred festivities but could also be called upon by the polis for financing war campaigns. Until the diffusion of private banks, the Greek sanctuaries acted also as credit institutions. They so represented important actors in the process of economic growth, in a context deprived of an analogous secular institution for the management of public finances. Chantal Gabrielli, in her essay, describes, according to all available literary sources, the problem of private and public debt and the corresponding phenomenon of usury under the Roman republic. The Roman economy evolved continuously from non-monetary exchange to a financialisation

during the relatively short period of time under consideration, while it expanded throughout Italy. The question of debts evolved accordingly, as shown by the corresponding legal prescriptions. While at the beginning of this process, the origins and the available solutions to private debt were quite comparable to Babylonian times, very quickly the question of debts connected to military service became socially relevant, while the institution of nexum vanished. In the last period of the Republic, the problem of default at state level repeatedly presented itself, all the while speculators spread their activities. Noticeably, financial activities remained all the time in private hands, while the state intervened only through legislative regulations. Egidio Incelli, instead, dedicates his research to the analysis of the relationship between freed slaves and entrepreneurship in the Roman world. After reviewing the existing historiography, he confronts the widespread perception, or preconception, that the lack of social recognition for entrepreneurial ventures hampered the development of the Roman economy towards industrialisation. Going through many examples he concludes that even in the most striking cases, the aim of entrepreneurs was still that to sell their ventures and transfer their patrimony into aristocratically acceptable investments. The resilience of the socio-political model of the empire, based on landed aristocracy, proved to be unchallenged even by the spread of entrepreneurial capacities among freed slaves. The same theme is discussed by Francesca Reduzzi Merola. She examines the diffusion of Roman law over all citizens of the empire in the third century, and specifically the homogeneity from then on, across all provinces, of contracts regarding slave sales. By retrieving the information about the acquiring of a slave on part of another slave, without the buyer acting in representation of a master or of the state, Reduzzi aims to demonstrate that, at this point, slaves enjoyed freedom of action in economic matters, rendering the Marxian hypothesis of a slave mode of production untenable.

We hope that the extensive interdisciplinary research presented in this volume will demonstrate that the interaction between economists and historians is still useful, specifically to define some themes in which 'big history' might be practiced, in terms of long diachronic analyses. If the present attempt has any merit, we have to thank all colleagues who participated in the AISPE congress and in the subsequent painstaking process that led to the publication of this volume. In this context we also wish to thank all anonymous referees who helped to transform a quite amorphous material into worthwhile writing. Our gratitude goes also to all translators and editors of the individual essays and of all the volume. The publisher shall be thanked in the person of Johannes Glaeser, who continued to believe in this venture in difficult times, through COVID restrictions and impediments of every kind. AISPE must be thanked in the person of the organiser of the Rome Congress, Antonio Magliulo, and its actual President, Manuela Mosca. We wish to furthermore dedicate this volume to two archaeologists whose extensive knowledge and love for teaching we cannot but miss: Enzo Lippolis, whose enthusiasm for hazardous comparisons and economic theorising has been decisive in the success of the congress in Rome; and Karl Schefold for the teaching that history might be scientifically practiced on poetical objects, but history might also be in itself a form of poetry.

# Methodology for the Economic History and the History of Economic Thought of Antiquity

# Ancient Economies: The Challenge of Mapping Complexity


**John K. Davies**

## The Present-Day Challenge[1]

The 'challenge' identified in my title can be simply stated. Those of us whose professional training and research work have focused on the Greco-Roman Mediterranean now have a substantial body of information about the economic activities of the entire pre-Islamic Old World. That information comes from a huge range of literary, epigraphical, papyrological, and archaeological sources in a variety of ancient and modern languages. It is continually being enlarged and updated, and has been used by an international range of scholars for over a century, indeed with ever-increasing intensity and sophistication since the 1950s. Its potential, whether as a database or as a display case, of economic activity within societies is limitless,[2] and three recent developments make this a good moment to review where we are.

The first is a recognition of the complexity presented by those data. It has become clear from a host of publications that thematically simple portrayals of the economies of that Old World, such as Finley's influential sketch (Finley 1973) or the more recent preoccupation with detecting aggregate or per capita 'growth' (real though it was),[3]

[1] It is a privilege to have been invited to participate in this Congress, and I thank the organisers for the compliment and for the platform that they have thereby given me. I do so because this Congress provides a valuable opportunity for those of us who are economic historians of antiquity to take stock of where we are, of where we hope to be going, and of how well equipped we are to get there. I thank Zosia Archibald (Liverpool) and David Lewis (Edinburgh) most warmly for encouragement and for specific improvements to the text, and Walter Scheidel (Stanford) for information about reviews of Scheidel et al. (2007). I also thank two anonymous referees for their very helpful comments and suggestions, which I have incorporated as much as space allowed.

[2] Though the entry by S.L. Engerman for 'Economic history' in Kuper and Kuper (2004, 271–274), shows no awareness of that potential.

[3] Imprimis Morris (2004), with Bresson (2016, 203–206).

J. K. Davies (✉)
Department of Archaeology, Classics and Egyptology, University of Liverpool, Liverpool, UK
e-mail: jkdavies@liv.ac.uk



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cannot serve as more than single components of a far more complex portrayal of the economic activities of the world that we study. It was symptomatic that the manifesto for a major conference in 2015 which focused on the Roman economy saw it as a 'complex adaptive system, consisting of independent agents that interact {with} each other by constantly adapting themselves'.[4] Such terminology reflects the world of mathematicised applications which the study of complexity has acquired in relation to chaos theory and many-body systems (e.g. in Lewin 1993 or Auyang 1998, or in the work of the Santa Fé Institute), but the challenge remains of linking such applications meaningfully to the data that we have for antiquity.

The second development was the publication of the *Cambridge Economic History of the Greco-Roman World* (Scheidel et al. 2007). A contributor to that volume such as myself should offer comment only with great circumspection and with full and deserved respect for editors and fellow contributors, but the importance of the volume is such that some observations must be made, and enough time has elapsed since its planning and publication for distance to permit some objectivity. One begins inescapably by comparing it with its predecessors in the writing of ancient economic history as a large-range art form, from Rostovtzeff's two great pioneering compilations (Rostovtzeff 1926, 1941) through Heichelheim (1938) to Vittinghoff (1990). Such comparisons reveal the scale of change, whether in the use of non-written evidence, in the use of intellectual templates derived from economics, or in the degree of emancipation from politically defined spatio-temporal frameworks. True, some critical remarks will follow later in this essay, for the volume remained hybrid, part antiquarian and part social-scientific, but it and its more substantial reviews (especially Bang 2009; Étienne et al. 2011) have provided scholars of the specialism with an invaluable point of reference, both as a systematic assemblage of material and as a shop-window of newer approaches. One awaits with great interest the publication of its competitor, the *Oxford Handbook* (Bresson et al. forthcoming), which on the evidence of Bresson (2016) is likely to take the transformation further. Indeed, it is already being taken further for the Roman world in the various detailed thematic volumes that are now appearing (13 so far) in the ambitious series *Oxford Studies in the Roman economy*, for which Bowman and Wilson (2009) provides a programmatic lead.

Moreover, the *Cambridge Economic History* is now over ten years old. That is not normally a long interval within the discipline of Classical Studies, but in this particular area of scholarship life has moved on with disconcerting speed to generate a third, more radical development. This is the disposition to reach out from economics on its own in order to embrace the analytical terminologies that have been developed by the other social sciences and to employ as many of them as can be used to good effect. The main multi-purpose tool here is now 'Model', the adoption of which within the specialism may derive from its use by the geographers[5] and was already explicit in the title of a conference held at Stanford in 1998, the papers delivered at which were published as Manning and Morris (2005). 'Model' has

[4] Cf. Poblome and Verboven (n.d.).

[5] Finley (1985, 182–183), citing Chorley and Haggett (1967): add Gregory et al. (2009) s.v. model.

been followed by 'Agency', 'Connectivity', 'Game Theory', 'Identity', 'Mobility', 'Network', 'Rationality', and the hybrid 'Actor-Network Theory'. The most recent addition to the toolbox has been 'Behaviour' (cf. Lewis 2018), appropriately so in the light of the recent award of a Nobel Prize in Economics to the High Priest of behavioural economics, Richard Thaler, and of his entertaining exposition of the specialism (Thaler 2015). There remains, inevitably, the last-ditch expedient that is used perforce by all pre-modern economic historians, 'Proxy Data', which I have discussed briefly elsewhere (Davies 2018a, 570–571). In the near-total absence from classical antiquity of diachronic datasets that were systematically compiled for communal purposes,[6] the term reflects the laborious compilation, from the casual survival of physical and written evidence of every kind, of lists of economically pertinent phenomena (sites, objects, commodities, occupations, prices, wages, and so on), their purpose being to shed an indirect but helpful light on an economy, to begin to quantify its activities (detailed initial survey in Bowman and Wilson 2009), and even to detect growth and to calculate a GDP. The evidence of silver production through the centuries as reflected by lead isotope levels from Greenland ice cores[7] is the classic example of such indirect light: as such evidence expands and profiles of activity become firmer, the sense of building on sand is receding:

All these tools were employed in one or other of the papers that were presented in 2016 (now published as Canevaro et al. 2018) at an Edinburgh conference on the theme 'Ancient Greek History and Contemporary Social Science', to which I had the dangerous honour of giving the final address. On that occasion they gave me food for urgent thought, which is set out in Davies (2018a), and they do so again now, because it seems to me that we—the miniscule and under-equipped band of economic historians of the pre-Islamic Old World—now need to make some major decisions with long-term implications. I have space here to sketch only three areas of decision, each exemplifying the complexity that my title reflects.[8]

## Area of Decision I: Boundaries in Time and Space

The first is the question of boundaries: how do we define the tracts of time and space within which the activities that are the business of an economic historian of the pre-Islamic Old World take place? The question is real, because at least two distinct answers have been presented, and they reflect an intrinsic tension. When after the First World War historians of Antiquity began to address the challenge of

[6] The surviving census figures of the Roman Republic (Brunt 1971) come closest. The price-lists of six commodities (barley, dates, mustard, cress, sesame, and wool) that were compiled for Babylonia (with many gaps) from 652 to 60 BCE (Sachs & Hunger 1988), were not used to our knowledge for communal purposes, and the extensive data known from mid-Hellenistic Delos are the fruit of modern compilation (Reger 1994).

[7] Up-to-date report in McConnell et al. (2019).

[8] Since this paper is written by a specialist in the economic history of ancient Greece, its citations reflect that bias, but its argument is intended to apply across the pre-Islamic Old World.

economic history as a specific sub-genre, their understandable prime instinct was to follow the pattern set by economists from Smith to Weber and to write in terms of Nationalökonomie, i.e. as the study of the ways in which the economic activities of a given polity formed a system that was (or might be) influenced for better or worse by public or royal policy and by public or private institutions. Though that instinct has generated a very wide range of studies, whether of an individual polity,[9] of a closely linked group of polities,[10] or of sprawling empires, they have shared an underlying assumption that it was legitimate to transmit to the reader an impression of at least a superficial homogeneity—a claim that was strengthened by the degree of complete or prominent overlap that was visible between the circumscriptions and control systems of the polities concerned and the languages in which the dominant genres of primary source material were written. Significantly, though the *Cambridge Economic History of the Greco-Roman World* did its best to distance itself from such polity-based presentations, its very title reflected a conception that was ultimately based on language, and some of the omissions which one of its reviewers in *Topoi* noted (Zurbach 2011)—Tyre and the Phoenician diaspora, the Black Sea, temperate Europe, and Mesopotamia—may also have reflected a subconscious language-based sense of otherness: as a contributor I acknowledge my own complicity.

A second, very different answer took longer to emerge. In essence it looked behind the procedures and pressures that were characteristic of a Nationalökonomie towards what was economically and humanly primary, namely the patterns of detectable demand and supply, and therefore also of the activities and movements that they generated. True, such activities might be local or regional, and might therefore be more or less compatible with the descriptive framework that was appropriate for Nationalökonomie. However, other activities generated by the processes of satisfying demand might involve triangular trade, or managed exchanges, or the use of force, or—and especially—long-distance transits that crossed linguistic, political, and cultural boundaries.[11] In such cases, the historian would be observing or detecting movements (of persons, goods, or services) that ranged far beyond the reach or control of any Nationalökonomie and were therefore spatially unbounded and independent of political or fiscal constraints. They might also very well be conducted in whole or in part in languages and within cultures that are not normally accessible to historians whose approach to antiquity lay through Latin and Greek,[12] but they would still

[9] E.g. of Corinth (Salmon 1984) or Ephesos (Davies 2011).

[10] E.g. of Israel-Judah (Silver 1983), of Delos and the Cyclades Islands (Rauh 1993; Reger 1994; Constantakopoulou 2007; Chankowski, 2008; Constantakopoulou 2017), or of Greek city-states in general (most recently Migeotte 2014 and Bresson 2016).

[11] The five studies of 'Trade beyond the frontiers' now published in Wilson and Bowman (2018), 443–624 are welcome illustrations, though they unfortunately lack a complementary study of trade across the Rhine-Danube frontier.

[12] For example, I am very conscious that my study of the flows of myrrh and frankincense from Yemen to the Aegean (Davies 2016a) lacked direct access to Aramaic or to the South Arabian languages.

comprise elements of a single complex but very loose web of interaction that might extend 1000 km or more beyond 'the Greco-Roman world'.[13]

Such traffics require a wholly different genre of description and analysis. They are not adequately reflected by tracing the flows of a single commodity from the place(s) of extraction or production or capture,[14] since their role in that complex web cannot then be fully evaluated. Nor will analysis in terms of institutions be sufficient, for reasons that are spelled out more fully below. Indeed, it is increasingly apparent that the challenge requires the creation of a genre that is capacious enough to encompass the entire range of activities described in the previous paragraph. It has taken several generations to crystallise, for though Rostovtzeff's study of the Hellenistic world deserves our unqualified respect as a pioneering enterprise, even he found it impossible fully to emancipate his survey from Nationalökonomie.[15] Indeed, it is only in the present century that examples of what is now called 'big history'—heavy-weight volumes which cover large-scale themes in full scholarly detail—have shown what can be done. The books of Michael Jursa and his colleagues (Jursa et al. 2010) and of Anthony (2007), Broodbank (2013), and Cunliffe (2015) make an unassailable case for annihilating the language-based academic boundaries between 'Archaeology', 'Classical Antiquity', and the 'Ancient Near East' (the latter boundary being still exemplified, alas, in the structure of the conference reflected by the present volume), and instead for seeing such flows of goods and services and the institutions which they generate as the basic formative ingredients of a far larger zone of interaction. They thus incorporate but transcend the boundaries of the debate about 'Mediterraneanism' that has been rebooted post-Braudel to such effect in the last twenty years by Horden and Purcell (2000), Harris (2005), and Abulafia (2011). They also transcend the sense of familiarity that can be provided by the language of written sources: it cannot be a chance that the books of Anthony, Broodbank, and Cunliffe were written not by historians but by archaeologists who were less constrained by the loom of language.

How large is that zone of interaction? For brevity's sake I have to state my own view, not argue it: namely, that if it is to embrace the long-distance movement of materials and peoples and technologies that came to transform that world into a single loosely interlocking system, it has **geographically** to embrace a huge tract of AfroEurAsia, a region bounded effectively by the Arctic and the Atlantic to West and North, less effectively to the South by the Sahara and less effectively still to the East by the Russian steppes and the deserts of Iran: and **chronologically** it has to extend at a minimum from the Phoenician-Greek expansion of the Early Iron Age to the

[13] An extreme exemplar, from a recently excavated grave of the C2-C3 CE, is on display in the Museo Nazionale of Palestrina, in the form of a woman's diadem with sapphires that may have come from Cambodia or Thailand.

[14] *Imprimis* the distribution-patterns of this or that genre of ceramic products.

[15] My own experience of close engagement with his text a generation ago (Davies 1984), in attempting to characterise the economic behaviour of a multi-lingual, multi-cultural, multi-polity but heavily interactive Hellenistic world, opened my eyes to the importance of the task but also to its extreme procedural intractability.

partial caesura after the Islamic Conquest.[16] That is a formidable prospect. We are all accustomed to thinking locally or regionally, in terms of the 'Athenian economy' (e.g. French 1964), the 'Seleukid royal economy' (e.g. Aperghis 2004), or the 'economy of Roman Britain' (Fulford 1989), and of course practicality will dictate that much work on ancient economies will continue to be carried on in similar local or regional terms. All that it is proper to advocate is that such work bears in mind the continual movements of human beings, animals, materials, ideas, and technologies that can be traced across the entire zone, movements that transgressed all political and physical boundaries and could be controlled by polities only to a very limited degree. That has implications for terminology, since that macro-region of AfroEurAsia never became a single fiscal regime even in the palmy days of the Roman Empire. Even in terms of Nationalökonomie, therefore, the use of the plural 'economies' is mandatory—a use that also offers the opportunity to envisage a far more realistic and complex map of shared, geographically overlapping, and weakly interacting fiscal and real economies in continuous slow evolution. It was therefore a pleasure to note the title of Bonn University's Research Training Group 1878: 'Archaeology of Pre-modern economies', and to see it reflected in the theme 'Archaeology and Economy in the ancient World' that was enjoined for the XIX Congress of Classical Archaeology in Köln-Bonn in May 2018.

## Area of Decision II: Our Relationship with the Social Sciences

The second area of decision concerns our relationship with the social sciences, especially but by no means only with economics. The complexity of that relationship is best sketched by recognising the range of descriptive-analytical modes that are already in use among the economic historians of antiquity, varying not so much by subject-matter as by the level of abstraction. Our normal and predominant mode, for example, is the creation of an array of studies that describe specific areas or aspects of the economic activities of a region, small or large, or focus on a specific institution or aspect of supply. We may call this a 'first-level' analysis, because the primary aim of such studies is to collect and organise information while also incorporating a theoretical baseline. Such baselines are, for example, the distribution of a commodity from its origin to its end users, such as salt (e.g. Carusi 2016) or aromatics (e.g. Davies 2016a): or the sources of supply to a single major entrepot, such as the slave trade in the Aegean (Lewis 2016) or the many studies of the grain supply to Athens (Gernet 1909; Moreno 2007; Oliver 2007) or Rome (Rickman 1971, 1980; Garnsey 1988): or a specific corridor and its traffics, such as D'Ercole's study of the Adriatic (D'Ercole 2002) or Laetitia Graslin-Thomé's book on the trade-routes across Northern Syria

[16] I do not enter here into the post-Pirenne debate, but that too has now generated two exemplary works of 'big history', namely McCormick (2001) and Wickham (2005).

(Graslin-Thomé 2009), not to mention Silk Road studies[17]: or the edition of a relevant text or group of documents, such as Simon Swain's edition of Bryson's treatise on the household (Swain 2013), or the work of Clarysse and Thompson (2006) on the salt-tax records in the Ptolemaic Fayum: or persons with economic roles, such as bankers or business managers[18]: and of course the economies of specific places,[19] specific polities,[20] or specific regions,[21] and so on.[22]

This 'normal and predominant' mode has two limitations. The first is fragmentation, insofar as a focus on one commodity or one institution diverts effort from comprehending the ensemble of interaction. The second is that of specificity itself. That is because, in the absence of widely accepted criteria of assessment, the mode does not lend itself easily to the making of comparisons—a challenge the dimensions of which are well illustrated by the two extended attempts of recent years to compare city-state systems (Griffeth and Thomas 1981; Hansen 2000 with Hansen 2002). There is therefore a case for adopting a second mode, that of engaging not merely with Economics but rather with the Social Sciences in general.

It is not a step to be taken lightly. For most historians of antiquity the narrative-descriptive mode is their comfort zone, not the world of models and Gini coefficients and strategic interactions, still less the world of hypotheses that are stated in order to be verified or falsified in the light of specific categories of data in the way exemplified by Ober (2015). To step outside that zone is to run the extreme risk of making false moves in an unfamiliar environment. My own excursions into social science territory have betrayed amateurishness, and it took me forty years of intermittent engagement with economic history before I had the confidence to use an indifference curve in a published paper (Davies 2016b). Other perils also confront us: that of resorting to a single explanation or interpretative idea—a danger to which I think those wedded to neo-institutionalism have succumbed; that of being infected by the normative language which is endemic in political studies and in some economics; and that of underestimating the degree to which the powers inherent in the predominant form of polity throughout antiquity, a monarchic regime, could cut across conventional economic logic: a theme explored in Paterson (2004). It is sufficient to identify (1) the need to secure legitimacy through magnificence (which might not be an economically productive form of investment), and (2) the shocks to the productive system and to the use of capital that would be created by the selective assassination of economically powerful rivals or by massive confiscation of goods and territory.

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[17] E.g. inter multos alios, Haussig (1988) and Frankopan (2015).

[18] E.g. (Cohen 1992; Aubert 1994), or D. Jones (2006).

[19] E.g. Fraser (1972) or Clavel-Lévéque (1974).

[20] E.g. Aperghis (2004).

[21] E.g. Archibald (2013), Migeotte (2014), and Bresson (2016). The same approach is taken throughout by the editors and contributors to Vittinghoff (1990), and very largely also in the *Cambridge Economic History*.

[22] This list could be extended, e.g. by citing studies of specific technologies, of institutions such as banks and markets and temples and cults, of physical installations such as stoai and harbours, or of attitudes.

And yet there are strong counter-arguments. The more we accept that the cultures that we study were complex structures, displaying every kind of familiar and unfamiliar human behaviour, the more urgently we need to have at our disposal every descriptive and interpretative tool that we can lay our hands on and learn how to use. Ideas and models taken from economics alone, however broadly based we envisage that discipline as being, cannot easily account for much ritual behaviour, for example, let alone for artistic endeavour. A pertinent example is the economic analysis offered by Ekelund et al. (1996) of the practices developed by the medieval Roman Catholic Church in order to market 'salvation' as a 'credence good'. By treating the Church as a 'firm' and applying theories of the firm to it, they offer a most illuminating model which lends itself for adoption and application to an ancient Greek context.[23] Moreover, it is only by using a wide range of such tools, and their associated vocabulary, confidently and correctly that we can offer our colleagues in the social sciences professionally reliable access to the masses of data that we have assembled, and thereby generate the possibility of deploying that common language and of making firmly based comparisons, across the spectrum of ancient, medieval, early modern, and modern societies.

However, to endorse such counter-arguments is also to accept the need for adaptive behaviour. It can take various forms. The primary form is the requirement either to gain familiarity and confidence in a second discipline or to collaborate with a social scientist. Each expedient carries a risk, the first that of expending much time and effort, the second that of not finding a congenial collaborator,[24] but one way or another the risk of amateurishness must be minimised. A second, very uncomfortable form would comprise a collective self-appraisal, for awkward questions pose themselves: while such adaptive behaviour can be seen as an internal drive from within the specialism, it can also be seen as self-preservation on the part of a tiny segment of academic life that is aware of its own marginality and vulnerability. In basic 'economic' terms, who wants such comparisons and hybrid compositions? Is there really a 'demand'? The published version of my closing address at Edinburgh (Davies 2018a) analysed this existential Angst in greater detail, for it is well-based: the ever-increasing emphasis which research funding bodies are laying on STEM subjects (Science, Technology, Engineering, Medicine) is bound to inflict casualties elsewhere. All that can be offered here is the three 'hard truths' with which that address ended: first, that the prospect of any rapid or large-scale convergence between scholarship about the pre-Islamic world and contemporary social science (including economics) is remote: social scientists are not in general disposed to use antiquity either as a database of observed and described behaviour or as a test-bed for their theories and models. The second is that it is unrealistic to expect the initiative in reconnaissance or convergence to be taken by social scientists. The third is that whatever effort is made may yield results that are of peripheral interest but not of

[23] It is however necessary to add the proviso that their straightforwardly 'economic' approach omits all consideration of the aesthetic, communitarian, and cultural roles performed by the 'firm'/Church.

[24] But, as I noted (Davies 2018a, 576), the Edinburgh conference displayed five such congenial collaborations.

organic value to one discipline or the other. It is, I fear, a matter of how strongly the community of economic historians of Antiquity wishes to emerge from isolation and to make its data and its voices heard and noticed.

## Area of Decision III: Format of Analysis

Moreover, engagement with the social sciences will not in itself reveal which formats of analysis are likely to present the most realistic model of the economic activities of the remote and alien societies which are being studied. Here a third major decision has to be made. On the one hand the search is for a framework within which we can locate all transactions involving a transfer of value—monetary and non-monetary, private and public, legal and illegal, by consent or violence—that took place throughout AfroEurAsia from the advent of the Iron Age at least until the Islamic Conquest: doing so moreover in such a way as not merely to classify such transactions descriptively but also to build into the model a set of modes and directions of energy that are sufficient both to generate all the activities under review and to account for the structural and institutional developments that can be detected. On the other hand, any model must simplify ruthlessly and must subordinate the descriptive mode to the abstract mode, alike in language and in structure. (The distinction envisaged here is analogous to that between cartographic scale map and topological diagram discussed by Waterman 2007, 558.) That is inescapable if we are to go beyond being collectors and organisers of information, but it runs the severe risk of over-simplification.

Echoing a paper currently in press (Archibald and Davies forthcoming), I have therefore to issue a health warning against the over-use of neo-institutionalism. There are three reasons why, for all its wide application and enthusiastic advocacy,[25] it is not a panacea. The first is that institutions **channel** and **shape** human action and exchange: they do not **initiate** them. They are pathways, not psycho-physiological drives. Institutions can enable, support, and enhance—that does not admit of denial—but the stimuli that initiate action lie within individuals, singly and collectively, and for practical purposes are best summed up by the various levels of Maslow's hierarchy of needs. The second reason is that, like the proxy data referred to above, recourse to institutional analysis is a way of compensating for the lack of quantitative data: it gives us shape but not volume or trend. The third reason complements the first by being expressed in more specifically economic terms: neo-institutionalism is mostly about the supply side, often helping—but sometimes constraining or manipulating—the practice of exchange and acquisition. Institutions do indeed thereby indirectly influence demand, but they do not provide the basic input of energy which alone comprises and shapes demand.

[25] Principal discussion in Scheidel et al. (2007, 113–143) (B.W. Frier and D.P. Kehoe), with Bang (2009), Bresson (2016, 15–27), and Silver (1995) as a forerunner. I thank my referees for both strengthening and challenging my objections.

Personal experience illustrates the point, in the form of the chapter 'Classical Greece: production' which I contributed to the *Cambridge Economic History* (Davies 2007). I found that task informative but unsatisfactory, partly because the descriptive mode inevitably dominated, but mainly because the sequence Production–Distribution-Consumption inverted the causal chain: it followed the object or the service from production to consumption, but it followed neither the 'money' (in the broad sense of the term) which was expended nor the demand which generated the production in the first place: still less could it dwell on the component drives which comprised that demand, including those such as prestige, magnificence, aggression, display, and legitimation which, Thorstein Veblen notwithstanding, do not figure in the vocabulary of orthodox economics.[26] That is all the more severe a criticism when such terms described an essential component of behaviour, not least that of the monarchic regimes which predominated everywhere throughout Antiquity—except of course in those literate and noisy republican areas, the scholarly fascination with which distorts so much ancient economic history. In other words, institutionalist and other conventional approaches do not satisfactorily encompass the entire macro-region. The challenge needs a different register, more abstract but also more inclusive. Broodbank's magisterial survey comes closer, as does Bresson's with its stress on the pressures exerted by the environment, but even they do not excavate right down to the bedrock of human nature, to locate the basic springs of action.

It is therefore appropriate to end this presentation by reporting an attempt to perform such an 'excavation'. A recently published chapter of my own (Davies 2018b) discussed the operative forces of state formation in post-Mycenaean Greece and identified six such forces: that exerted by the exceptional individual; that exerted by population; that exerted by the natural environment; that exerted by ideas of the supernatural; that exerted by the availability of convertible resources; and that exerted by memory, imagination, and a sense of identity. (It is now clear to me that a seventh force should have been added, namely the force exerted by male aggressiveness and violence.) To formulate an analysis in such terms was to focus on inputs of energy as drivers of demand, and thereby to provide a model which was not predicated anachronistically upon 'the emergence of the city-state'. It could therefore be seen to apply in varying configurations of interaction in each locality of the Archaic Greek world according to local conditions, doing so in such a way as to generate the hundreds of monarchies and polities that are attested therein.

It will be clear that such an analysis is less specifically economic, and much more psychologically based,[27] than my first. Whatever the merits and demerits of that second example, I have little doubt that economic terminology on its own is not going to tell us how ancient economies worked: it will be essential to use every intellectual tool that is available.

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[26] But a referee helpfully calls my attention to Gilady (2018).

[27] But not a back-door return to Finley (1973, 1985). Using the work of Granovetter and Williamson, Lewis (2018) sets out the case that 'Finley was absolutely correct to stress the importance of social values, but he was mistaken in his assessment of what those values comprised' (ib. 40).

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# The Significance of Economic Knowledge for Welfare and Economic Growth in History


**Bertram Schefold**

## The Paradox of Economic Knowledge

If the layman respects economic science, he will probably accredit it with being able to contribute to the good functioning of the economy and to economic growth by means of economic policies that are based on sound economic theory. However, a strange cleavage exists in the science itself. If economists speak as economic politicians, they readily advise the government and public administration to take certain measures to achieve given goals by legislating on the rules of competition, by increasing private demand through lowering taxes and by similar measures. The layman will also assume that such knowledge is, up to a point, common knowledge possessed by politicians and citizens, and that this knowledge is instrumental for the promotion of growth and welfare as an indirect application of economic science. But if growth and development of national economies are assessed in the long run, the average economic knowledge in the population plays no role as an explanatory variable of economic success, nor is the level of economic science referred to. Even the economic competence of the governments is rarely addressed.

By contrast, it is regularly emphasised that technical knowledge explains much. The success of economic growth of the United States in the twentieth century is readily attributed to a special propensity to develop technology. It may indeed be true that the level of economic knowledge contributes less to the explanation of such success, but in textbooks it is usually ignored completely. And why does economic history not use this explanatory variable, if it treats the problem so famous today of why the industrial revolution and the whole modern acceleration of economic

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B. Schefold (✉)
Goethe-Universität, Frankfurt, Germany
e-mail: schefold@wiwi.uni-frankfurt.de



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development started in Western Europe (Mokyr 2017) and did not begin in the late Roman empire or in China, India or Japan in more modern times, although levels of economic integration and of the standard of living had been reached which one can compare to that in Western Europe at the beginning of the eighteenth century (Goldstone 2000)?

I want to propose five reasons why economic knowledge is neglected as a factor of growth in economic science. Then I shall treat ordoliberalism as a significant exception and show in which German tradition it was anchored. Finally, in the perspective of the historian of economic thought, I shall discuss important cases of how economic knowledge did become essential in certain phases for the path of economic development. I shall begin with current examples like that of the European Union and then go backwards in history to the ethical reflections in the Middle Ages which form a contrast with modern analysis, but which, nevertheless, were important for the growth of economic science. I shall conclude with a few observations on the peculiar economic institutions and the economic thought in Ancient Greece in order to infer what kind of economic knowledge they must have possessed. We thus go backwards in history, because the relationship between the level of economic knowledge and the characteristics of economic development can be described the more accurately, the closer we are to present times, simply because the sources describing economic reflection are much richer. Ancient Greece presents an interesting case, because we have the tradition of Greek philosophy and history writing. Economics is not among the many academic disciplines that originated there, but that does not mean that they created their economic institutions without knowing what they were doing. We shall go backwards in time in order to render this inference plausible.

We thus admit that the identification of this economic knowledge is not easy because of missing reports and incomplete texts prior to the modern period. Often, since time immemorial, it has not been articulated at all—indeed, even today it is often only implicit. Also, we must admit that the significance of economic knowledge for growth can never be demonstrated with certainty. The canals by which it works are too entwined for this. The thought experiments which might show to us what it would mean, if this economic knowledge had been either much lower or much more extensive than it actually was, cannot be grounded in solid empirical research, except maybe in rare cases. Although the question has been and is discussed passionately, we can never really know how Brüning[1] would have acted, and with what success, if he had known Keynesian theory in 1932, when it would have made the biggest difference, while Keynes's "General Theory" was published only in 1936.[2] Today,

[1] According to Knut Borchardt, Brüning's hands were tied by circumstances in 1932. On the Borchardt controversy from Borchardt's point of view cf. Ritschl (2002). Nicholas Kaldor, Adolph Lowe, Fritz Neumark, Edgar Salin were four contemporaries of the crisis with whom I could still consult on the German options; they all represented the opposite standpoint which Borchardt had put into question.

[2] Employment policies as such are nothing new. We know that in European Antiquity, in Ancient China, in the European Middle Ages and especially in early modern times attempts were made to improve employment or, in the older language, to make the poor work. What, then, was new in the Keynesian revolution? On the one hand, it opposed the theoretical belief of then prevalent

one concedes to economists like Keynes or Friedman an influence on the development of the last decades. However, also earlier, economic action was dependent on economic thought and conditioned by the institutions which were related according to the conceptions of the time and as expressions of what I still like to call the economic style. Werner Plumpe writes: "If there is no economist who would seriously deny the relevance of his own field …, it cannot be understood why these connections should not be valid for former centuries. Hence, economic historiography always has to pay attention to the coevolution of semantics, institutions and methods – and it is only in this manner able to make each of the different economic styles plausible which till this day shape the reality of the global economy" (Plumpe 2009, 51).

## Five Reasons Why Economic History Neglects Economic Knowledge and How It May Nonetheless Be Used for Explanation

### *Rules of Action*

The mainstream of modern economics, the so-called neoclassical school, the theory on which modern liberalism mainly is based, has the model of general equilibrium as its core (Debreu 1959; Arrow and Hahn 1971). Economic actors orient themselves according to the prices of goods and services and the costs of the so-called factors of production: the wages for the workers, the interest on advances of capital, and the rent of land. The head of the household who receives a wage will spend in such a way that utility is maximised at given prices and the balance between the benefits from spending the income and the disutility of working will determine the supply of labour at the wage rate, which is given for the individual. The firms will maximise profits, wealthy households will supply capital, etc. In the tension between limitless demand and restricted resources a balance is found: It is shown that there are prices of consumer goods and of factors so that households and firms can execute their plans,

neoclassical economists who proclaimed that economic crises would most likely be overcome with flexible prices in free markets. Against this, Keynes gave a proof that unemployment could be a permanent and stable state as an under- employment equilibrium. The "General Theory" of Keynes (Keynes 1967) thus was a work of theoretical criticism that might have helped Brüning to overcome inhibitions to intervene. Brüning also had political reasons to hesitate, for an increase of domestic demand and rising wages would have made it more difficult to achieve the exports needed in order to pay for the reparations. Keynes, on the other hand, created with his school the system of national accounting, oriented to employment policy, the most important tool of applied economics until today. But the predictions of the multiplier theory derived from it often failed, and newer textbooks offer a mixture of policy recommendations, which are justified with heterogeneous theoretical approaches (e.g. Mankiw and Taylor 2017). The economic mainstream thus has become pluralist to some extent, though not as much and not in the way which advocates of pluralism in economics demand (Reardon 2009; Söderbaum 2004). In the end, the modern employment policies are not so different from the old provisions for the poor.

in that supply and demand will be equal at the prices found in every single market. The analytical problems of this construction and the critique of the concept of capital (Garegnani 1960; Petri 2004; Schefold 2016b) do not concern us here; it is enough to observe that the agents do not need any economic knowledge regarding the system as a whole. It is enough for the consumers to know the benefits of consumption and the costs of acquisition and for firms to know how to organise their production and the sale of their products. In principle, they must formulate demand and supply, given all possible constellation of prices; then the market will lead to equilibrium. There is no need to create other economic institutions to increase employment (unemployment is voluntary), to influence distribution or to secure supplies. The economic system is always the same; it has no history.

Curiously, Max Weber, the most important author in economic sociology, does not pay attention to the level of economic knowledge either, although his approach is profoundly historical. What changes are the attitudes and rules of action that constrain economic behaviour in a given society and at a given period according to the ethics that prevail. He interpreted profit and utility maximisation as an expression of the modern rationality which ascribes specific ethical rules to the professions and the households, and he contrasts modern capitalism with older states in which household and firms coincided so that conflicts could appear between profit maximisation and efficiency on the one hand and the maximisation of utility according to the family ties in the household on the other. The head of the household would have to throw the younger son out of the house, if he was lazy, in the same way as a modern company dismisses the incompetent, but the familial ties would hinder him in the attempt to impose efficiency (Schefold 2011). Max Weber regarded the prevalence of ethical systems connected with religious beliefs as the essential obstacle which prevented an autonomous capitalist development in non-European cultures like the Chinese. His intensive and vast studies of economic ethics of the world religions have remained impressive as attempts to prove that the non-European cultures could not find the way to modern capitalism on account of their traditions anchored in specific rationalities, while Puritanism in the West paved the way for the transition towards modern rationality. But the level of economic knowledge and the understanding of the logic of economic processes, is, as in neoclassical thought, not an issue in his explanation of the divergence of world cultures. His perception of the economic characteristics of modern capitalism was primarily shaped by the Austrian variant of neoclassical theory, which he thus transformed into a historical theory, and, especially in his younger years, he was also influenced by classical and Marxist thought, but the history of economic thought was not used to explain development.

## *Technical Knowledge and Abilities*

If one asked a member of the historical school of economics, if one asked Marx, if one asked Max Weber or if one asked the modern economic historian, which were the causes of the special development in Western Europe that made the industrial

revolution possible, one would always be and still is referred to the level of scientific and technical knowledge as the obvious and necessary precondition for the take-off. The evolution of this technical knowledge followed a special logic. The sequence of events in the industrial revolution itself is well-known. There was the growth of population and the shortage of wood in England, the transition to the use of coal as a source of energy, the need to dig deeper in the mines and to pump out the water and the invention of steam engines for this purpose, which were quite simple in the beginning and then developed until they could not only drive pumps and looms, but could be put on rails to pull trains (Sieferle 1982). This technical knowledge had a double character: On the one hand, the knowledge of artisans was required to build the early engines. The crafts had to move away from the tradition of the guilds and to develop new skills that could be described and transmitted. Formerly, the young craftsman learned by watching and imitating, with a few words of explanation by the master. The talent of the artisan was combined with the secret of the craft which made the monopoly position of the guilds possible. It is known that the philosophers of the enlightenment before the French Revolution, in particular Diderot and d'Alembert, tried to make the implicit knowledge of the craftsmen explicit in the publication of their big encyclopaedia, so that it would become available for advanced technical constructions (Poni 2009). On the other hand, an analytical development was necessary, based on scientific methods and aimed at developing abstract knowledge. Artisanship and physics had to be combined in modern engineering. Galilei's approach to mechanics as the first discipline of physics exhibits this double character. Bertold Brecht illustrates it in his play: The same Galilei who discovers the moons of Jupiter and thus destroys the medieval worldview of the movement of planets fastened to crystal spheres also sketches lifting devices for the arsenal of Venice, where warships were being built.[3]

Joel Mokyr (2017) has described the free and transnational collaboration of the European scholars in the early modern period, with its rationalistic tendency and its roots in older worldviews, in religion and magic; he shows how in England the scientific knowledge programmatically combined with practice. The investigation of the preconditions of the industrial revolution in the late eighteenth century leads back to the late Middle Ages and to the question how a science, which was at the same time speculative and oriented towards applications, could develop from late scholasticism and the early humanism. It is not our task to pursue this evolution; we point to it only in order to make it understood that knowledge as a precondition of economic development so far has not led to the question, which *economic* knowledge was necessary. In research, one is everywhere confronted with the visible importance of technology, and one overlooks economics.

[3] It was one of the best accomplishments of Karl Marx, in harmony with his materialism, that he postulated not only a "critical history of technology", which up to this point did not exist (Marx 1969, 392) but sketched one in the section about the "production of relative surplus value" (p. 331) and in particular in the chapter about "machinery and big industry" under the heading "development of machinery " (p. 391). He had encountered a logic, by which inventions develop, in Babbage (Babbage 1992).

## *Theory of Economic Growth*

The modern theory of economic growth can be traced back to the classical period which explained the accumulation of capital and technical progress (Schefold 2017). Marx speaks in the First Volume of *Das Kapital* of three forms of increases in the productivity of labour: cooperation, improved division of labour and mechanisation. Even if workers only cooperate, for instance, by forming a chain and reaching the stones needed for the construction of a wall from one to the other, less work is required with the same raw materials, than if each stone was carried one by one. An increased division of labour also involves the production of the same commodity by means of the same material inputs but using less labour because it is used more efficiently. The introduction of machinery involved the use of more physical capital but they were predominately built in order to save labour. The classical authors analysed the process of accumulation of capital in connection with conflict over distribution between capital and labour, which Marx explained as exploitation. The neoclassicals turned to an explanation of distribution in terms of the demand for and the supply of factors of production, but it remained true that the accumulation of capital was to explain the increase of productivity. The rise of real wages relative to the prices of capital goods induced the introduction of labour-saving techniques. Robert Solow showed in the middle of the 1950s, beginning with (Solow 1956), that the mere accumulation of capital explained only a fraction of the increase in the productivity of labour, and about four-fifths of the increase in the productivity of labour was left unexplained. This led to the so-called endogenous theory of economic growth (Aghion and Howitt 1998; Barro and Sala-i-Martin 2004) which explained technical progress primarily in three different manners. Firstly, there are advantages of production on ever larger scale which are compatible with competition in the presence of external effects. The Neapolitan Antonio Serra had recognised this possibility already at the start of the seventeenth century (Schefold 2016c, 179–190) and he may have been inspired by writers of antiquity: The concentration of dealers and producers in one location steadily opens up new commercial and production opportunities, because the number and the skill of talented people increase, new forms of cooperation and enlarged networks arise. Secondly, one has also modelled the sequence of inventions of more and more productive capital goods, the application of which leads to monopoly profits, until the new machines are replaced with even newer ones. Finally, and perhaps most importantly, one has developed the concept of human capital. It is the knowledge which single workers accumulate thanks to education and experience. There arises a knowledge economy (Caspari and Schefold 2011). One distinguishes between explicit knowledge that can be transmitted in discourse and implicit knowledge that arises from experience and cannot so easily be communicated. It is a characteristic of knowledge that it cannot be privatised and cannot be sold, but spreads in free communication, for it cannot be offered without making it known, while the knowledge based on experience remains bound to individuals. It is in the public interest to increase the general knowledge, while the accumulation

of knowledge that can be held privately and be used for personal advantage can be left to individual initiative.

But hardly anybody seems to have tried to relate the level of economic knowledge to economic growth and to separate it from other scientific and technical knowledge. This is probably again due to the assumption that models of economic growth presuppose a transparent competitive economy, in which agents follow price signals as in general equilibrium theory. Hence no special economic knowledge needs to be presupposed for the individual, while the economy as a whole is led by an "invisible hand", as Adam Smith put it: the functioning of the competitive mechanism. Only one institution is characteristic of the new theory of economic growth: inventions can be patented, so that trade in patents motivates the innovators.

## *Implicit Knowledge*

Even if we insist on the importance of economic knowledge for development, we have to concede that it is not easy to trace how it spreads. The theorist must recognise that much knowledge exists only in implicit form. Nonetheless, it must be respected. Every colleague in my discipline will have had conversations with businessmen and entrepreneurs, will have discussed economic prospects with them and will have had to recognise that their implicit knowledge entailed advantages for the evaluation of the current condition compared with the abstract model data of the economist. The entrepreneur trusts in his intuition and expresses his prognosis with confidence. Implicit knowledge remains important in organisations, too. As an example, I may mention the German central bank (Bundesbank) which publishes monthly reports in order to explain its monetary policy, based on theoretical considerations and clearly stating the aims and means. The Bundesbank used to adhere to monetarism, according to which the central tool for preventing inflation is the control of the money supply. Today, the central bank seems to acknowledge that the development of the money supply is determined endogenously (Bundesbank 2017) and that monetary policy is based on fixing the interest rates at which the central bank lends (Reich 2017). It thus turns out that an old implicit knowledge of the Bundesbank has been made explicit, and the old explicit knowledge has been revised. The main concern is with good practice. All banks depend on experienced specialists. However much the universities try to deepen the analysis and to teach the right use of monetary instruments explicitly, the financial institutions, nevertheless, snatch away the specialists from each other. Obviously, the target is the implicit knowledge possessed by persons that reaches beyond what can be taught. The stock of such knowledge is restricted by the number of people with expertise and experience. The scope of economic knowledge leads to the emergence of numerous sub-disciplines, which compete with each other and rival in the attempt to convince the public by means of theory and econometrics, economic policy and applied economics, in order to demonstrate explicitly what others possess in implicit form (Caspari and Schefold 2011).

And yet much implicit knowledge in turn is determined by fundamental economic principles, which were first formulated by theorists. Keynes, at any rate, affirmed that: "Practical men who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist" (Keynes 1936, 383). Examples might be the influence of Adam Smith on the history of liberal economic policy, or the inspiration Marx left for social democratic agitation. Theory thus influences practice also in this manner, not in pure form but in conjunction with subjective experiences, and an implicit knowledge emerges in parallel with the explicit doctrines.

This knowledge is reflected in the designation of economic phenomena, once the relationships are understood intuitively and prior to the formation of concrete scientific concepts which then allow the formulation of explicit theories. The great time of the emergence of an economic vocabulary is mercantilism, in Central Europe cameralism, in-between medieval times, when economic concerns were not often rendered explicit—at least not in forms transmitted to us—and the later broad and professional pursuit of economic acquisition. We can observe how the vocabulary became more and more sophisticated, above all in connection with taxation—which kind of income may fairly be taxed, in a manner beneficial to the economy, which expenses of the state are legitimate and are reasonable? Wolf-Hagen Krauth (1984) has described for the sixteenth and seventeenth centuries how economic structure and semantics developed in parallel in the German-speaking areas (see also Seppel and Tribe 2017). Goethe's work and life still express this continuity (Schefold 2016d). Of course, the coevolution of semantics, institutions and theory continues today; however, modern economic science rarely appreciates such qualitative achievements.

The implicit knowledge of former times may seem primitive to the modern researcher; further than up to a semantic discussion they have not made it, one might say. Often, images and metaphors are used as substitutes for a conceptual apparatus. Ancient China offers beautiful and drastic examples such as: Who builds carriages wishes that others become rich and distinguished and the carpenter of coffins hopes that others die young. Thus a Chinese legalist, Han Fei, expressed that acquisition follows self-interest in the third-century BC. It is a long way from such phrases to a formula for the maximisation of profit, but the important argument in the confrontation with the Confucian image of a control of the society by rites and ethics is sharp and clear (Hu 1988, 198). Is the primitive character of such knowledge reason enough to neglect it in the explanation of historical events? Many historians seem to think so. A similar hybris was associated with early attempts at the application of Keynesian theory. It was overcome with the so-called "revolution of rational expectations". Macroeconomists believed that an extension of the money supply could increase investment and employment by means of lower interest rates. That may happen. However, in the period of rapid growth after the Second World War reductions of interest rates and increases of the money supply by the central bank had repeatedly and quickly led to inflation, because the public understood the policy and the causal nexus and anticipated the consequences of the manoeuvre. Given that employment was weaker but still high, it was primarily the level of prices, which rose, and hence it could happen that prices began to rise already when the

new policy was announced, therefore even prior to the rise of effective demand. This possibility was recognised by the medieval bishop, mathematician and philosopher Oresmius (Schefold 2016c, 75–103), when he predicted the effect of currency depreciation. The Prince who wished to ease the financing of his expenditures by issuing coins of inferior quality had to betray his people, for if he were to announce the mixture of precious with inferior metals in coin production, the merchants would raise prices instantly, in anticipation of the inevitable later consequences, and the Prince would not have gained anything; the additional inferior money would have inferior purchasing power.

Hence we have learnt to assume the possession of the same level of knowledge among the makers of economic policy and their public—why should people on the board of an important car making company know less about the economy than the directorate of the European Central Bank? Shall we therefore assume the same level of economic knowledge also among economic historians and the subjects of past economic developments? But here the analogy becomes difficult. Is it licit at all, given that there is progress in economic theorising? The modern economist, proud of his science, is inclined to deprecate the knowledge of his ancestors, and perhaps he simply does not understand it because the terminology and the ways of expression have changed. To collect and to order the explicit and implicit economic knowledge of the past and to relate it to modern economic knowledge is the empirical task of the historian of economic thought. We have had to learn that economic knowledge is not always cumulative (Neumark 1975). There are always cycles in the history of economic thought and even regressions. Conclusions about the value of old and, specifically, pre-modern economic thought can be only provisional, as long as we only know the writings of the main theoretical authors and are ignorant as to how this knowledge was shared and used. But for historical explanation it is equally important to know about good economics as well as about misconceptions that were influential in the past.

## *The Role of the History of Economic Thought*

The finding that older economic thought is only rarely considered as a determinant of economic growth may thus be explained by its character as mainly implicit knowledge that is in reality or in appearance outdated. It is all the more difficult to find out how it works in concrete circumstances. One could think of comparing different countries, for which indicators of economic knowledge are measured and related to the success in growth. But it is difficult even in the case of human capital to confirm the plausible thesis that more human capital means more growth. Knowledge is not to be measured in terms of years of schooling only, but it depends essentially on qualitative aspects, which would have to be represented by means of an indicator. I prefer, instead of moving in this direction, to support my thesis by means of comparisons between different cultures and to use for these different phases of European development and the confrontation with other cultures. Even if we are not as confident as Keynes

was that implicit knowledge ultimately is based on older explicit theories, we seek a better understanding of implicit knowledge via the history of economic thought. Implicit knowledge becomes visible, when one needs to justify oneself, for instance by showing why a price is unjust or how an employment policy might be successful. It may be rational to renounce to an application, if the retention of knowledge pays as in the case of the secret of the artisan, if one feels unable to explicate or if the explication would shatter an existing order as in the case of the debates about usury.

The examination of economic knowledge broadens our understanding of economic culture. Weber's approach was based on the consideration of the economic ethics, which he encountered when he studied religions. The modern history of economic thought does not only consider the history of ethics, but, in principle, all forms of economic thought. It starts from the observations of economic anthropology (pioneered by Godelier 1966; Sahlins 1972) and pursues the related emergence of concepts and institutions, from intuitive formations of analogies and first formal formulations of causal connections to the advanced abstract theory, which commences with the acceptance of mathematical techniques from the sciences and culminates in the development of own mathematical tools. The emergence of new theory transforms the perception of reality. As we remarked, the "General Theory" by Keynes originally was a critical approach that justified the employment policies of older times at a higher level against neoclassical theory. Once this was achieved, the modern State was challenged to provide adequate employment at all times, and "Keynesianism" came to be understood not as a theory, but as the commitment to this policy; it was an old reality in new disguise and with a new normative content. We now want to show by means of examples that economic thought and economic knowledge were not only invented to justify existing relationships of power and domination but helped to create a new economic reality. This has been emphasised in Germany especially, so that one could speak of a German school of economics for this reason alone.

## The Social Market Economy: Economic Order and Development Based on Consensus

The economists of the German historical school used classical and neoclassical theorising sparingly. It would not be correct to say that they were completely anti-theoretical (Schefold 2014, 2015, 2016c). The older historical school frequently used classical thought, whenever it seemed appropriate. There is a kind of implicit dialogue with Ricardo and John Stuart Mill in Roscher's work. Schmoller, as the mature representative of the younger historical school, had recourse to the Austrian theory, when he had to give an explanation of prices. But all the authors of the historical school regarded it as more important to grasp the complexity of economic development, in which technical progress, the accumulation of capital, the rise of education—including economic knowledge—and moral improvement changed hand

in hand with culture, while the economy underwent a qualitative transformation. The economist not only had to understand the process, but also to support it by the establishment of new institutions. Schmoller's social policy belongs here, the concern of German public finance for common needs, the affiliation of law and economy in university courses and in the practice of economists as advisers and experts. Many attempts have been made in recent years to restore such interdisciplinarity, but with limited success. The historical school continued the tradition of cameralism in these endeavours. A liberal element was introduced under the influence of Adam Smith, but the orientation towards concrete problems like those of public finance and the establishment of institutions beneficial to welfare continued as under cameralism. Thus even old cameralists like Klock (2009 [1651]) in the seventeenth century and younger cameralists like Justi in the eighteenth century[4] discussed measures to improve infrastructure and, for every sector, the establishment of academies, principles of regulation and of finance. This legacy determined the dedications of professorships in economic faculties of the Federal Republic of Germany until recent times. There were chairs for agricultural policy, for transports and logistics, for business education, for general economic policy, with a special emphasis on the finances of the state and without the dominance of microeconomics and macroeconomics.

The synthesis with theory came about with ordoliberalism. Eucken, its main representative (Eucken 1940), criticised the hostility of the historical school to theory, but he took the task of creating the appropriate institutions seriously. He used the instruments of general equilibrium theory and of monetary theory and added the then fashionable new models for the representation of imperfect competition before the Second World War. This enlargement of the theory made it possible for Eucken to distinguish different forms of allocation (market with perfect or imperfect competition, planned economy; planning of the entire economy or only of the industrial sector and not for the distribution of consumer goods, etc.) in order to deduce systematically different ideal types of the economy, based on specific assumptions about combinations of principles of allocation and central institutions like the monetary system (money backed by gold, fiat money, etc.).

As is well-known, the theory of social market economy distinguishes between policies directed at establishing an economic order and policies trying to influence the economic processes. The economic order is concerned with the institutions that allow the market to function and specifically with the regulation of imperfect competition. Perfect competition was considered as the ideal, but limitations were recognised, for instance those deriving from the fact that enterprises have to reach a certain scale at least for technical reasons. And if a satisfactory degree of perfection of competition could not be reached in a particular sector, one could still hope for a limitation of market power by competition through substitution (Eucken 1952). Policies to influence the economic process, by contrast, were concerned with interventions in the course of economic production and consumption. In particular, Keynesian measures to stimulate the economy were seen in this light. The theorists of the social market economy trusted that the maintenance of economic order would also help to avoid

[4] On Klock as a cameralist compare Mann (1937).

crises, so that one could mostly refrain from policies influencing processes. It was thought that crises were caused above all by an over-heating of the economy during the boom and that this would arise, in an otherwise well-regulated environment, only if the economic policies of the state were too lenient.

In this theoretical universe, economic policy was largely predetermined by the framework of ordoliberal rules. A corresponding economic knowledge was to be shared not only by the members of an elite, but, in its main features, it was supposed to be a common good in a democratic society. For Müller-Armack, the Secretary of State of the Minister of Economics Erhard, the social market economy had to be based on the principle of efficiency on the part of the employed, and, at the same time, redistribution had to take place in favour of those unable to earn their living in the market for reasons of health or age. The social market economy thus was an economic style of compromise. The trade-off between efficiency and redistribution had to be recognised, and each generation would shift the emphasis from one aspect to the other—a perspective which rather alarmed stricter representatives of ordoliberalism (Quaas and Straubhaar 1995). Defining the just middle depended on the economic knowledge of the population as a whole, for that had to dictate their electoral choices, based on their trust in the leaders of the political parties.

The social market economy could thus be interpreted either as primarily a realisation of the principle of efficiency or as a welfare state, if the need for redistribution was regarded as more important. This dilemma is inevitable. With economic integration, the sizes of the companies had to increase. The theoretical models shifted from perfect to workable competition; it turned out that a so-called wide oligopoly was the best market form, to the extent, that one wished to accelerate technical process. The proposal to give privilege to this market structure was contested by an evolutionary understanding of competition (Vanberg 2009). Today, ordoliberalism is not as vigorous as in the early years of the Bundesrepublik. It missed opportunities to incorporate theoretical advances (it failed to incorporate the theoretical revolution of *Mechanism Design*, Bergemann and Morris 2012). New ideas for regulation have come up and help, for instance, to auction-off radio licences. Nonetheless, the theory of the social market economy retains some prestige and is increasingly adopted in Europe; it influences discussions within the European Community (Commun 2003). Thus, the tensions in the European Monetary Union can be interpreted as the consequence of different theoretical conceptions: The European South is oriented towards Keynesianism and permanent state interference to support economic performance, while ordoliberals would accept automatic stabilisers to alleviate crises, like the payment of unemployment benefits, but are reluctant to accept more radical measures. However, we here do not have to decide whether ordoliberal principles are correct; we only want to show that here and today there is a specific body of economic knowledge that defines and limits policies that are decisive for economic development, and this economic knowledge is only in its details confined to an elite, the broad outlines of it must be common understanding.

## Historical Illustrations of the Meaning of Economic Knowledge

### *The European Monetary Union*

There is broad agreement, not only among experts, that big mistakes were made, when the European Monetary Union was institutionalised. The economic potentials of the European regions are quite different, and since the Euro has been introduced, they cannot be compensated anymore by changes of the exchange rates. The differentials tend to increase with economic growth, and no central authority is strong enough to counteract them. National states are better able to do that by means of redistribution, differentiated taxation, by means of transfers and the allocation of expenditure of infrastructure and education. The Maastricht Treaty corresponds to principles of ordoliberalism, insofar as ceilings on the deficits of the individual states shall render them responsible for their development in open, but regulated rivalry. Since there are no exchange rates, which could be adapted, internal devaluation must replace a devaluation of the currency, if a country lacks competitive power. This means that wages and prices have to be reduced in a country whose productivity is backward; the costs of production in terms of Euros have to fall relative to the average level of costs. But precisely the countries which are slower in their development lack the corresponding political power and, often, also the will. Hence many economists and politicians in the Southern countries of the European Union oppose the ordoliberal concepts with other principles. They urge to elevate the level of activity through increased state expenditure in order to raise demand. The extensive growth so induced is supposed to improve the situation not only of employment, but also productivity, according to Okun's law, and this as a consequence of increased domestic demand. Growth shall increase per-capita output and accelerate technical progress. Economic analysis is mixed up with political valuations on both sides. A principle of solidarity is invoked in opposition to the principle of self-responsibility. The economically weaker countries argue that who is dedicated to European integration shall respond to European needs; helping the poorer countries shall in the end also benefit the richer ones in a process of general growth. Polemical exchanges use historical comparisons, which are not necessarily based on strict economic analogies, but operate with references to political arguments. Historical guilt shall be a foundation of actual obligations, although past wars and present economic problems are different domains (Varsori and Poettinger 2014).

Who is right? One should not dismiss the logic of raising demand too easily. On the other hand, one must keep the moral risks of such politics in mind, in particular as long as the political framework for Europe as a whole is not adequately based on democratic legitimation (there is a Parliament for the European Union, but not for the Euro area). This is not the place to draw political conclusions. What interests us here is the obvious fact that the economic concepts which will prevail will also have an important influence on economic outcomes. The politicians will not be able to change economic theory and will have to respect the axioms of economic theory.

They are controversial in the discipline, but they are discussed also in the media and, in the end, the judgement of citizens, mediated through parliaments and governments, will play their role. The theories themselves, as it were, represented by experts and institutions such as the European Central Bank, claim influence.

## *Monetary History, Monetary Policy and Monetary Thought in the Nineteenth Century*

A well-known and beautiful example of the entanglement of economic theory and economic policy, with consequences for the emerging institutions, is provided by English monetary teaching and monetary policy in the nineteenth century. The Napoleonic Wars had led to inflation, but not to the collapse of the currency. Instead, the British were able to return to the gold standard, though under sacrifices, and the public debt, which had increased considerably during the war, was paid back in an effort lasting for decades. The Currency School was of the opinion that the wartime inflation had been caused by an increase in monetary circulation, which surpassed real growth. They considered gold and the notes of the Bank of England as money. The so-called Bank Act by Peel left the emission of notes to the Bank of England, from 1844 onwards, provided notes were backed by gold, apart from a fixed amount of unbacked notes. Inflationary tendencies were thus in fact checked, but in the course of economic crises, which occurred surprisingly regularly every ten years in nineteenth-century England, the Bank of England had times and again to support illiquid banks. This involved increasing monetary circulation, suspending the Bank Act temporarily during the rescue operations. The Banking School replied that the expansion of production and the tendency of prices to increase depended on exogenous causes such as bad harvests, and that the consequent increased demand for means of circulation was not satisfied by gold and notes alone, but could also be fulfilled by monetary substitutes, such as bills and the notes of private banks. The amount of money circulating was regarded as endogenous, to use the modern expression. It seemed natural in this perspective that the banks in England had to aid each other during crises, if necessary, supported by the Bank of England. Peel's Bank Act eventually was not only regarded as superfluous, but as dangerous (Rieter 1971).

Thus, different conclusions were drawn. Karl Marx, at that time in London and busy with writing *Das Kapital* and a passionate observer of what went on (Marx 2004, 2017), contrasted the long upswings of the business cycle—as facilitated by a general granting of credit, mainly by means of bills, which banks discounted, if necessary—with the sharp and precipitate decline, which set in when production began to slow down, when first only a few, then many producers had difficulties to pay their debts and when in the end all got involved in a panic with rising interest rates and demanded payment in gold or in notes of the Bank of England, because they feared that instruments of credit might become worthless. The banks now took

over real values as securities and became in the course of the depression gradually administrators of production, of which they knew nothing, however, Marx thought. Walter Bagehot, by contrast, formulated the principles of the policy of a central bank, which imposed themselves under such circumstances. He recommended to the Bank of England to support banks in difficulties early, if they were illiquid but still solvent, against the provision of good securities and at high interest rates, to counteract the spreading of the credit crunch. The Bank of England thus became the "Lender of Last Resort" (Bagehot 1996 [1873]; Schefold 2017, 147–156). These principles of salvaging the banks are still valid today. Rudolf Hilferding in Germany continued to develop the Marxian vision in his *Finanzkapital*. He recognised that the influence of the banks was not temporary, but that it evolved into a regular control of industry, and he believed that workers might be able to exercise that control by peaceful means, once the direction of the economy by the financial institutions could be taken over by the working class after its political victory (Hilferding 2000 [1910]; Schefold 2017, 157–178). The historical significance of these perspectives is visible in the diverging development of social democracy and communism during the twentieth century. The influence of thought and the perception of economic logic on history is particularly striking in these cases, where inadequate and in part false theories were operative (a simplified quantity theory of money as the foundation of Peel's Bank Act, the theory of the collapse of capitalism as a dogma of social democracy).

## *Economic Controversies in the Period of the Reformation*

Influences of different forms of economic thought on real development can be traced back much further. The sixteenth century was in Germany a period of strong economic growth, which ended when the channels of trade changed and, in particular, when the Thirty Years War set in. The Duchy of Saxony had been divided for dynastic reasons as early as the fifteenth century; there was the dominion of the Albertines on the one hand, who remained catholic during the Reformation, and that of the Ernestines, who did not only adopt the new faith, but were of decisive importance in the support of Luther and his mission. The control of the silver mines and of minting had not been divided, however, so that the duchies were linked through a monetary union. Monetary unions are of precarious nature, as we know today. The Ernestine, John the Steadfast (Johann der Beständige), had high expenditures to make, not the least because of his support of the protestant faction. He wanted to devalue the coins, i.e. to depreciate them, in order to attract more money into his treasure. This induced a public controversy, which was, as far as we know, for the first time in world history, based on the exchange of printed pamphlets expressing visions in economic policy and even theory. The semantic of later economic theories was almost completely absent, the economy was not yet seen as a separate dimension of social life—at any rate, it did not get a name—and yet its functioning was already being debated. A century later, the mercantilists in Western Europe and the cameralists in Central Europe would begin seeking new concepts, in order to comprehend the economic

phenomenon of development. This has been described, as we mentioned above, as the development of new semantics (Krauth 1984).

The texts of the controversy on coinage were still quite visual and intuitive. The Albertine defended the retention of the silver money coined with a fixed seigniorage, that was used all over Europe. For was the economic welfare of the subjects not visible, did it not show in the busy building activities, in the number of castles and fortifications, in the astonishing new painting style, in short in everything that we now call renaissance? Did the production of the silver coins not facilitate the acquisition of delightful goods such as beautiful English clothes or Indian pepper, which was obtained through Portuguese trade? Did this not confirm that the order responded to God's will, and was this order not in turn the foundation of further acquisition through work and trade? Would the depreciated coins not at once be recognised as such, lead to higher prices and to injustice in the relationships between borrowers and lenders?

The Protestant Ernestine replied in his pamphlet, that a "Übermünzung", an overminting—a wonderful word—should be avoided, and if not too many coins entered circulation, a rise of prices would not be observed. He therefore anticipated the idea of a circulation of money based on means of payment of low intrinsic value. Depreciated money would have a lesser tendency to flow abroad, and this would prevent the importation of unnecessary luxury goods. He accused the foreign powers, in particular England, Venice and the King of Portugal, of trying to attract the silver of Saxony and Saxon wealth by exporting frivolous goods. The Ernestine therefore described, even before the mercantilist doctrine was well formulated elsewhere, the first principle of mercantilism: to acquire precious metals of others by means of an export surplus, in order to have a larger domestic monetary circulation.[5] Export of silver would lead to the import of commodities which would reap the population of employment opportunities and would leave farmers and artisans in misery. Depreciation therefore was meant to lead to a locally autonomous development and to return to simpler forms of life, and *that* was God's will. He therefore recognised the problematic of a one-sided development based on the export of a single commodity, here the silver. But this Lutheran did not become, like the Weberian Puritan, the exponent of early modern accumulation, but the advocate of a small-scale economy of simple farmers and artisans, protected by their Lord.

Expansionary economic powers already stood prepared to oppose this view. In those same years, the chancellor of Augsburg and humanist Konrad Peutinger defended the Fugger family, operating a worldwide trading network, against the accusation of exploiting monopoly positions. Peutinger argued on the one hand,

[5] It was in my view entirely rational and not a confusion of wealth with gold and silver, if the mercantilists wanted to create favourable conditions for the import of the precious metals, since it was not yet possible under the political conditions in Europe to introduce fiat money as in China under Mongol rule; a monetary base with intrinsic value was indispensable. But fiat money was conceivable, as we shall argue in the epilogue. And one knew that adequate money holdings facilitated trade; "*pecunia nervus rerum*", it was said, which can be translated in several ways: "money is the string between things", "money is what animates things" – one of the visions of cameralists (my transl., see Stolleis 1983, 63).

somewhat like Hayek, that big societies like those of the Fuggers might achieve something like a monopoly position temporarily, but this could never be complete. New societies would arise and replace the old ones. The artisans, on the other hand, were, according to Peutinger, guilty of abusing the prescriptions of the guilds in order to destroy economic freedom and entrepreneurial chances of efficient artisans. The German diet discussed both, the attempts to reduce the power of monopolies as well as the suspension of the guilds (Schefold, 2016c, 103–127). Charles V. then tried to impose a liberal charter for the artisans, but he did not succeed.

## *The Usury Debate*

I regard the controversies about interest and usury—which stretched in Europe over millennia—as my most important example. This may surprise. The debate branched out, it was often repetitive, only occasionally very sophisticated. A brief summary: the Jews had prohibited to take interest from members of the same tribe, but it was licit to take interest from foreigners. Among the Greeks, both Plato and Aristotle were against interest. Plato granted an exception, if loans provided for free were not paid back in time. Aristotle advanced a logical argument. He defined the function of money as being a mean of exchange. Hence it should not become the object of accumulation for the sake of wealth. He distinguished between natural and chrematistic forms of acquisition; the latter meant an acquisition of money for the sake of obtaining more money. Natural acquisition had the limited goal of maintaining the household. Regarding wealth, moderation was to be practiced as in all things. Riches were a mean to a good life. If one had too little and was poor, one was as much inhibited to lead a good life, based on philosophical reflection, as if one were too rich and had to care for what was not necessary. Money was there to facilitate exchange. Whoever accumulated it for its own sake, strove for limitless and unnatural wealth and alienated money from its destination to serve exchange. In the context of his complex considerations on money and exchange, gift exchange and commodity exchange, the taking of interest appeared as the pinnacle of chrematistic activities, since money seemed to generate money out of itself, but what was the source of such multiplication? Usury, which was "rightfully hated", was thus denounced as against nature and illogical (Schefold 2015 [1994]).

The New Testament contains the phrase "*Mutuum date, nihil inde sperantes*" (Luke 6.35): "Provide loans (for support), without hoping to get anything from there". This radical formula of early Christianity means: You shall not demand interest but also be solidary and do not expect to be paid back in cases of need. Interest was regarded as an expression of sinful greed throughout the first eleven hundred years of the history of Christianity, but it never disappeared completely, despite prohibitions. Economic growth in the High Middle Ages then made it necessary to comprehend a phenomenon that continued to become ever more important.

One juridical precondition for the prohibition of interest-taking was introduced by Gregory IX., Pope from 1227 to 1241. He issued the "Decretales" as a new

collection of canonical law. The following definition of usury, much discussed, often cited as "*Naviganti*", is due to him personally: "As usurer is to be judged who lends money to a seafaring merchant or to one travelling to a fair and who receives more than the payback (of the original sum), because he takes up the risk" (*quod suscipit in se periculum*, Corpus Iuris Canonici V, XIX, 19; in Richter and Friedberg 1959 [1879], 816). Accepting the risk probably here means, as in antiquity, that there is no payback, if the travel fails, when the risk is objective. Of course, already the contemporaries asked why the lender could not demand a compensation, because he could have made a profit by using the sum for a business of his own (this was called *lucrum cessans*, the argument of the profit foregone) and why he could not get a second compensation for the risk of losing the money (this was called *periculum sortis*). Both arguments can already be found in antiquity. But perhaps there was no clear contract, and the passage might be translated as: "because he attributes the risk to himself"; then the Pope would not have mentioned the profit forgone, because a possibility for gain did not exist for the lender, and he would have treated the risk as a mere pretext for taking interest. The scholastic author Azpilcueta (Schefold 2016c, 159–175) in the sixteenth century, to whom we shall return below, had a text in front of him which differed in only one letter. He read "*quod suscepit in se periculum*", therefore "because he has taken up the risk". This pointed clearly to a contract that had been made, and hence Azpilcueta judged that Gregory IX's proclamation was exorbitant ("*este texto es exorbitante*"), for all of Christianity knew that insurance was costly (Azpilcueta 1998 [1556]). There are three hundred years between the two versions, which involved progress in the sharing of risks.

The economic teaching of Thomas Aquinas as part of his *Summa*, begins with the discussion of the just price (Aquinas 1968, quaestio 77). The civil laws (*leges civiles*) must tolerate deviations from the just price within limits, in order to avoid bad consequences among humans who are not perfect, but Christian virtue demands the strict observance of the just price. Hence trade in the form of resale is problematic, since two prices are demanded for the same commodity. It is true that the just price itself can change, in particular according to location, to the season and the success of the harvest. A transport justifies a corresponding mark-up. If the price changes because of the season, a difficulty arises. If a trader lends corn to an innkeeper at the time of harvest, when corn is cheap, and demands the same amount back at seedtime, when corn is expensive, he is not a usurer, as long as we reckon in terms of corn: He only wants to get his corn back, but the value of the corn has risen, as if a corresponding interest had been charged. The *Decretum Naviganti* therefore stipulates that such a monetary gain is licit, if the change in price could not be foreseen, but usurious otherwise.

What was the just price (*iustum pretium*)? It did not depend on the ontological rank. A slave, as a human being, stands ontologically above the horse, but this can be more expensive. Thomas denotes the "equality of the thing" (*"aequalitas rei"*) as the condition of just exchange. He does not try to determine the just price quantitatively, but more important seems to be the honesty in the characterisation, that is, in the fastness of the commodity. Out of such descriptions would later arise the "Warenkunde", the commercial "knowledge of commodities" of businessmen and

traders who had to get to an understanding about the quality standards e.g. textiles—a big theme at the time of cameralism. Thomas recognised the labour expended and transport costs, but not the mere passage of time, as determinants of *aequalitis rei*, and the just price also depended on needs. Utility, by contrast, paradoxically from the modern point of view, determined gift exchange. The giver must take the utility of the receiver into account. If my friend has made me a great service by means of a small gift, my counter-gift to the friend should lead to a gain in utility, which corresponds to the importance of the service and not to the small gift. The saviour who rescues me from drowning and ruins his clothes should not just get a replacement for his jeans, but a counter-gift that is worthy of the courageous deed.

Thomas rendered the Aristotelian argument (Aquinas 1968, quaestio 78) more precise in order to justify the critique of usury. He distinguished between goods that are used up in consumption like bread and goods that can be used without being destroyed like a house that can be rented. Goods that are used up like bread are lent mutually, if the need arises, and the debt is cancelled, once an equivalent amount has been given back. Goods that can be used permanently are lent for longer periods of time, and one receives a compensation for that, because the other can use the good like a house that is rented. The loan of money is interpreted by Thomas as the use of a good for exchange, that is used up in the act of exchange, for it is given away to the other; money was a good to be used up by the one who owned it. If the return of the loan included more than the value of the sum originally given, the interest seemed unjust as well as illogical: It was against the nature of the thing.

Civil society could tolerate interest within certain limits like so many sinful actions, but the Christian as a human was obliged to love his neighbour and should therefore renounce to interest. Hence the Christian merchant should profess his taking of interest, when he confessed, and give it back, if that was still feasible, or leave it to the Church. This is emphasised in a handbook for priests by the famous scholastic Azpilcueta, also called *El Navarro* (1998 [1556]). The criticism of usury thus became a source of income for the Church. Another problematic argument in Thomas consisted in the statement that it was more sinful to induce someone to accept interest, who had never lent before, than to revert to a professional lender in case of need for a loan, for the professional had sinned already. Such professionals were the Jews, whose role as outsiders was thus confirmed.

Now the need arose to justify interest under special circumstances. The following three main arguments can be found in the writings of the Roman jurists, but they now were discussed more deeply. Interest could be justified in case of *damnum emergens* (emergent damage) and, as has been mentioned, *lucrum cessans* (profit forgone) and *periculum sortis* (literally: the danger of fate, therefore risk). These attempts at justification led to a process of learning of historical significance (Gordon 1975) *Damnum emergens*: If the lender was damaged, he could demand compensation, for instance, if a loan among friends had not been paid back according to the agreement. *Periculum sortis*: That was the expression for risk. The consideration that specific risks demanded compensation led to early insurance schemes. It would be too complex to discuss these—in the end risk had to be recognised. However, it can be shown that the scholastic discussion of risk helped to prepare for the understanding

of insurance and even probability theory; without it, modern European development would hardly have been possible (Bernstein 1996). This was accompanied by the development of complex means for financing, beginning with bills, then with ever new financial products (Goetzmann 2017).

The most difficult argument was *lucrum cessans*, the profit forgone. Was it not possible for everyone, who loaned money, to affirm that he could have used his money in some enterprise himself, that he could have made a profit for himself? Thomas objected that the pretended possibilities for acquisitions often did not exist in reality, and that one should not sell in any case what one did not yet have[6] (Aquinas 1968, quaestio 78, ad primum). Azpilcueta rendered the problem more precise for the case of moneychangers, who also operated as bankers. The moneychanger did something useful which was not sinful, but could become sinful, when it was exaggerated because of greed. One still thought that the natural activity of the farmer served self-preservation, which now led not to the good earthly life, but to Christian salvation. No such limit of acquisition was visible for moneychangers; insofar they were in danger. But if they now also operated as bankers, demanded an interest and defended this interest invoking *lucrum cessans*, one could see by looking at their monetary holdings whether they actually lost normal business, because they had lent. If they still had cash and they could still change money, the loaning had not led to a loss.

Only the late scholastic Lessius in Belgium overcame this argument by Azpilcueta. (Lessius 1999 [1605]) He, a highly respected advisor as a Jesuit, knew the first big stock exchange in Antwerp and understood its functioning and its economic significance. The traders, whose activity raised general wellbeing, continuously had to hold money in reserve, in order to be ready for new ventures. If the money holdings of the one were too scarce, he had to borrow from somebody else, and whenever this became a general phenomenon in the market of Antwerp, there arose what Lessius called the *carentia pecuniae*, a demand for liquidity, as we say today. That the rate of interest is determined by the demand for liquidity is modern Keynesian theory. Lessius went farther than that and emphasised that what mattered were the expectations of profit (*spes lucri*), and he began to regard capital as productive next to labour, since the use of money capital was generally productive of interest. *Lucrum cessans* thus could be said to exist in any situation. The old arguments against usury now were only directed against the local usurers in villages, and Lessius recommended to take away their business by means of pawn broking institutions, which had been in existence in Italy for a long time (Schefold, 2016c, 127–158).

We have only known for a few decades that the path from disdained usury to recognised interest has a secret history. A Franciscan, Pietro of John Olivi (1990), therefore a mendicant friar, scarcely a generation after Thomas, one who strictly held to the principles of poverty by St. Francis of Assisi and who for this reason entered into conflict with the Church, anticipated already in the thirteenth century such arguments

[6] The argument is often not understood: one can always invoke *lucrum cessans* in modern conditions, since I can lend to B instead of to A; at any rate, I can always deposit my money in a bank and obtain interest. This has not been so at all times. What is more important: lending to B is just as suspicious as lending to A. The question is whether I have a *real* investment opportunity, and that is less obvious.

as those of Lessius of late scholasticism and formulated a concept of capital, which assigned a productive function to money used as capital (Olivi 2012, D63). One of his formulations: *Illud quod in firmo proposito domini sui est ordinatum ad aliquod probabile lucrum, non solum habet rationem simplicis pecuniae seu rei, sed etiam ultra hoc quandam rationem seminalem lucri quam communiter capitale vocamus, et ideo non solum debet reddi simplex valor ipsius, sed etiam valor superadiunctus* (My transl.). "What is dedicated to a probable gain according to the fixed intention of the owner does not only have the simple character of money or good but is also beyond that of a certain character pregnant of profit, which we usually call capital, and hence not only the simple value of it must be rendered, but also the one added to it". It has been said, that the expression *ratio seminalis lucri,* the fertile character of profit, recalls the *logos spermatikos* of the Stoics, and the idea has been related to Olivi's scientific theory of *impetus* (Wolff 1994). In the same way as a stone that has been thrown carries an impetus (similar to an impulse in modern language), capital carries the impulse of a surplus value, a *valor superadiunctus,* as Olivi calls it. Not only Marx, but also neoclassical economists like Böhm-Bawerk would criticise the notion of capital as being productive, but in Olivi it was a great step forward. The static character of a medieval world directed only at producing the necessary basis of life by means of labour alone is transcended. Later authors seem to have used Olivi's argument without nominating him, presumably because his theses regarding poverty had led to his at least temporary persecution by the Church.

## *The Economic Spirit in the Early Modern Period*

Thus, in this manner, there arose a beginning of economic theory within the roughly four hundred years between Thomas and Lessius (1999 [1605]), which began to view the accumulation of capital as legitimate and useful. The difficulty of the transition is illustrated by the example of Cosimo de Medici, who possessed a cell in the monastery of San Marco in Florence, which he had adorned with a painting by Benozzo Gozzoli, representing the holy Three Kings. Their deposit of precious gifts at the feet of the Jesus child indicated the way open to the rich towards salvation. Cosimo's contemporary, the holy St. Antonino of Florence, first abbot, then archbishop in Florence and author of a grand theory of justice, in which the different economic branches of Tuscany are being described with a theological evaluation of the activities of each profession, wrote also about banking, which had become powerful. It is thought that he had read Olivi. Antonino excused the bankers, for he thought that the core of their business was not lending but the trade in moneys between different locations. This function was regarded as productive. If this business was associated with a hidden loan and if the price contained a component of interest, this could perhaps be seen as a lesser sin. However, it was not natural acquisition in the sense of work directed at the satisfaction of essential needs as discussed by Aristotle, and hence Antonino recommended that the rich of Florence should work for the community, for instance, by supporting public festivities, and they should

celebrate marriage ceremonies outside of their palaces so that the people of the city could share in the feast (Poettinger and Schefold 2013; Schefold 2018).

Werner Sombart and Max Weber would speak of a "capitalist spirit", and the former believed that it arose in Italy, though parallels existed, e.g. in Flanders, while the latter thought that at least the spirit of *modern* capitalism originated later. It manifested itself in business. The mixture of new ideas and new practices that stimulated it found an expression in writing, which we may regard as an early form of economic thought. Authors like Todeschini (2004) refer to Olivi (1990, 2012) and economic ethics. Olivi came from Provence and taught in Florence for some time. He extended the domain of legitimate interest-taking with his theory of impetus. Amintore Fanfani, the economic historian and later famous Italian politician of the Democrazia Cristiana wanted to demonstrate that there was an inevitable tension between capitalist and catholic economic ethics, which necessitated compromises (Schefold 2011). Oscar Nuccio, by contrast, in his seven volumes of the *Storia del pensiero economico italiano* (summarised in one volume Nuccio 2008) focused on the humanists, not on the church. He affirmed that the civic spirit in the Italian cities was based on the activities of the merchants; the liberal attitude towards business evolved from the desire of the emerging bourgeois to gain independence. Cosimo Perrotta (2004) objects that the Italian humanists remained tied to the economic ideas of antiquity; he thinks that they did not really understand processes of growth—indeed they hardly recognised them. According to Max Weber's theory, these authors have in common that they assume too easily a continuity between early capitalism in Italian cities and *modern* capitalism, without analysing the specificity of the latter (Schefold 2017). Weber's insistence on the difference between early and more recent forms of capitalism is not necessarily connected with his hypothesis that forms of Calvinism triggered the evolution. The difference vanishes if one reduces capitalism to profit-making. But modern capitalism becomes specific, if it is associated with industrialisation, widespread wage labour, the managed firm and other mechanisms and institutions that appear in classical, but not in late medieval economic thought.

The interpretation of the beginnings of economics in the late Middle Ages remains controversial, and the questions that result from the consideration of the transition to modernity are not easier. The significance of the path is only understood by comparing different cultures. In China the mandarins recognised that merchants were indispensable for the economy but prevented them from access to power by denying the right to participate in the imperial examinations and to gain public offices. If important economic decisions could only be taken by the emperor, who stabilised the development by operating from the centre by means of his bureaucracy, the breakthrough to an economy with an autonomous process of growth dominated by private initiative and pushed by the accumulation of capital was not possible. The financing of important enterprises and of the state requires lending at contractual interest rates—another theme would be the emergence of the modern tax state and the growth of state credit (Reinhard 2017). The corresponding institutions had to be secured in the West after the experience of the controversies surrounding interest because of a changed economic knowledge and through the creation of legal systems for contracts, for the establishment of companies and, in particular, for the creation of credit. Weber was

wrong when he disregarded this aspect, the growth of economic knowledge, in his explanation of the relative backwardness of China, when modern capitalism began to spread, and when he let his explanation rest only on the inhibitions associated with Confucian economic ethics. What we should understand is how these ethics, the economic knowledge and the economic practice were connected by a transcending ideology, which exploded only after the revolutions when Chinese economic thought began to form in relation to Western ideas. The peculiarity of the European development is perhaps even more visible in comparison with Islam, which never gave up the prohibition of interest. With special institutions such as charities, possibilities were created for the sharing of profits in order to secure, for instance, the survival of children and orphans, but the freedom of capital accumulation was nonetheless limited. Whether modern Islamic banking will be able to retain the traditional Islamic rules and combine them with new institutions of practical significance, without abandoning Mohammed's prohibition of usury, remains to be seen.

The Chinese did not prohibit interest, but they regulated its payment. Legal interest rates in pre-revolutionary China were high. If the debtor did not pay, the creditor could take him to court and have him beaten. If the "daughters" grew taller than their "mothers"—if the arrears exceeded the original debt—the creditor risked punishment, too, for he had failed to collect his money (Jamieson 1921). Such behaviour would be regarded as alarming also in Europe. There was a legal interest rate of five percent in the seventeenth century, but to demand compound interest on outstanding interest payments was forbidden. Leibniz (2000, 98–213) explained and defended this prohibition by saying that debtors should learn to be reliable and that creditors should educate them by demanding regular payments; the creditors then could use the paid interest to grant further loans to others. If the creditors had been allowed to demand compound interest, they could sit and see how their claims grew without effort and proceed to seize the property of the debtor, when the time seemed ripe for that. To avoid this outcome was the meaning of civil law. The Chinese similarly aimed at ordering the debt relationships by means of criminal law.

I therefore dare to assert that Europe owes not everything, but much to the superstition, which lies at the root of the prohibition of interest; Europe owes its economic development not exclusively but essentially to this controversy, for the beginnings of economic theorising were in the hands of the scholastic authors, who first wished to support the prohibition of interest in its entirety and then began to seek for reasons to render it less strict and to explain legitimate uses of credit. These ideas were taken up and transformed in the hands of the classical economists, who combined them with the theoretical elements of mercantilist thought, to the extent that this emanated from the practice of the merchants. Much in the same way as in the case of technical knowledge, practice and theory had to get together in order to make an industrial revolution possible, the knowledge based on experience of the traders and the sharp analysis of the representatives of the Church had to be combined; this led to classical economy with French physiocracy as an intermediate step, with the result, that the work of Adam Smith could found liberalism on the basis of a general economic knowledge, which provided a framework for systematic political reforms.

We know well how this happened in detail, but only, as far as we look at the English development from the seventeenth century onwards. The great mercantilists like Petty and Steuart[7] enter with the claim to establish a new economic thinking, which led to liberalism in steps that we know. But where is the continuity with the preceding era? One explicitly did not want to repeat old teachings and therefore eliminated the practice of mutual quotation of the scholastics and one abandoned Latin as the language, in which the early economic thought had been formulated. Petty had been educated by Jesuits and he spent years of his youth in Paris. When he came to puritan England, he did not reveal what he had learnt from the Catholics on the Continent. (Wendt 2014). Steuart as a Scottish and noble adherent of the Jacobites, had fled into continental exile. What he learnt from the cameralists, who still were reading scholastic authors on occasion, we do not know, but he spent years in Tübingen in contact with the academics there. Hence the illusion was created that our discipline originated only in England. This has the advantage for Anglo-Saxon historians of economic thought that they feel little need to learn foreign languages. To show in detail how the tradition of the scholastics came to be combined with the practical thought of the mercantilists therefore is still a project of research. Liberalism, which emerged eventually, became the precondition of the economic predominance of England, that had been protectionist in earlier centuries. Underdeveloped countries that had to catch up, like Germany, then needed a modified theory to support an industrial development based initially on protective tariffs and an orientation towards exports. In consequence, German historicism was better aware of the older traditions than others, but this is another complementary story.

Undoubtedly economic knowledge has developed in parallel with economic institutions, but our considerations serve to demonstrate that this knowledge creation was not only the emergence of ideologies designed to defend and justify the rich and powerful. We have tried here to give examples of critical discussions, the contents of which were influenced by spiritual developments, including, as in the last example, religion and humanism. The split of the confessions furthered a multiplicity also of economic ideas, as the example of the controversy over coinage has proved. Later arose that liberal pragmatism, which helped to shape the English banking institutions in the nineteenth century. The present controversies surrounding European unification finally prove that economic science remains political and is influenced by cultural visions, which should be taken seriously, and this implies that an economic teaching without history, only based on models, is not sufficient to confront the challenges with which Europe is confronted today.

[7] To treat Petty and Steuart as mercantilists does not fit in with every theory of mercantilism. Among the reasons why I regard them as such are their association of economic and political power, the explanation of economic power by the capacity to export, the desire to foster that capacity by having a growing and industrious population and the logic by which this program of growth emerges from the early form of mercantilism as the policy to secure an adequate supply of the precious metals for domestic circulation.

## Antiquity: An Epilogue

What has been said could be the introduction to a treatise on economic thought in antiquity. There, the situation is somewhat different, because the texts transmitted to us that focus on economic matters are relatively few, while we know from other sources and from archaeology of the vast economic achievements of the ancients. What kind of economic discourse made them possible? The point of the present paper is that, by going backwards in time, we gradually learn to infer the economic knowledge that must have existed in periods where the texts are relatively scarce. Two centuries of reflection on the history of economic thought have led to the reconstruction of basic economic insights of the Ancients. We learn from the effect of the ancient ideas on modern theoretical departures. Thus we may know that the relatively short, but profound remarks by Xenophon on the division of labour influenced the Smithian theory, that stoic doctrine inspired the liberal idea that self-interest, if properly understood, would advance both, the society and the economy, and we have recalled here, all be it briefly, how Platonian and Aristotelian ideas became roots of medieval economic thought. Xenophon seems to have influenced mercantilist ideas directly as well, in particular the great Italian mercantilist Serra (Reinert 2011). But the fruitfulness of these intellectual transmissions only demonstrates that there was important economic knowledge among the ancients, while it does not constitute a full reconstruction of their economic discourse. The archaeological evidence, in conjunction with what we know about later developments, lets us infer that there must have been more economic knowledge than what we encounter in the texts that have been transmitted to us and more than the doctrines about household management and the philosophical teachings about economic ethics contain. The evidence about coinage for instance, represents a challenge. It is not possible to organise the provision of money without some understanding of the monetary flows and the mutual influences of the quantities of credit and of coins. How did one conceive of the origin of coins (Brandl 2015)? How did one assess seigniorage? What about the planning of the modifications of currency systems such as the recoinage at Athens of 353 B.C. (Kroll 2011)? There are indications that the possibility of Fiat money was understood and that perhaps experiments with fiat money were undertaken (Schefold 2016a). But were these insights shared by many or do the corresponding texts reveal ideas that remained isolated?

It seems conceivable, but I do not regard it as likely, that much of the knowledge about ancient Greek economic institutions remained implicit. This book sheds new light on the relationship between implicit and explicit knowledge not the least in the Mediterranean cultures, because the clay tablets provide that much more information about daily transactions than is available elsewhere. As far as classical Athens is concerned, the case that will probably remain the focus of historians of economic thought, we encounter an extraordinary superposition of institutions, which is full of baffling contrasts so that it challenges the power of historical imagination. Democracy coexists with slavery, there is considerable commodity production, but most of what is now the service sector in modern economics is not monetised and based

on gift exchange. The state relies not only on taxes, but also on formally voluntary contributions, hence capital is distinguished as to whether it is visible or invisible. Visible capital like olive trees can be assessed to estimate the ability of a rich citizen to provide liturgies, while invisible capital (loans outstanding) remains secret (Salin 1930). Households must combine efficient production with redistribution among the family members. Wealthy persons act as bankers, but banks are not legal entities, capable of guaranteeing long-term financial contracts, independently of individuals, hence personal inheritance must be so organised as to guarantee the continuity of the business (Cohen 1992). Interest rates are high on maritime loans but low on land. Wealth helps to gain political influence, but much is being written about equality and frugality. The historians describe the contrasts, the orators defend polar views, the philosophers try to provide an orientation for citizens, who frequently get into role conflicts in contradictory situations; they analyse alternative political solutions, but they fail to perceive and to analyse the economy as a whole. Plato gets closest to a comprehensive view, but he deals with an ideal state (*Res publica*) or a second best (*Leges*). Xenophon's Socrates criticises the existing teachings about household management as instrumentalist; it is logical from the point of view of household management to use friends to increase one's wealth (Critoboulos in Xenophon's) and pleasant occupations like gardening are transformed into money-making (Isomachos in the *Oeconomicus*). Socrates in Xenophon does not conceive of a different art of household management; he only recommends a modest life and an orientation towards good work (in the *Memorabilia*). Elsewhere, Xenophon anticipates elements of modern economic analysis with insights about constant returns in artisan production and diminishing returns in agriculture. Aristotle analyses distribution and exchange and draws a borderline by denouncing chrematistic activities as unfit for the good citizen, but he admits that some of these activities are indispensable for the state.

We therefore do not lack characterisations of what it meant to participate in Athenian economic life. They fascinate, because they are complementary, challenging us to try to form a picture of the whole, to reconstruct how diverse daily transactions were planned and executed, and to derive—at least to guess—the economic knowledge that the actors possessed.

The long way which we have undertaken from present conditions towards ever more distant past experiences should help to get a better understanding of economic knowledge and economic development which was important not only today but also earlier in history and not the least in classical antiquity, with an interplay of explicit and implicit forms of economic knowledge, always tied to concrete problems posed in a historical situation, with proposals made, criticisms advanced new proposals formulated, with institutions created and dismantled; it means that people mostly knew fairly well what they were doing.

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# For a Comparative History of Economic Thought


**Marco Bianchini**

## Introduction

The present contribution bears witness to a long-neglected mood in historiography. It appears in fact that a period of historical studies that is mistrustful of wide-ranging summary and focusses on micro-analysis, has recently given way to a call for a wider vision. The great transformations currently underway around the world are making it necessary to look back at history again to shed light on the past experiences of the different cultures of the planet, compare them, and take inspiration. The history of economic thought is here understood as the history of ideas about economic exchanges between humans and nature, and between humans and other humans; as such it can be found explicitly in written texts or implicitly in social institutions; it also involves comparative analyses, because it describes persistence and variation in opinions over time and place, as well as representing conflicting points of view from the same period. The history of economic thought thus has developed fine-tuned and efficacious tools for interpreting relationships between economic life, representations of economic phenomena and cultural frameworks.

Problems can nevertheless arise when looking at evidence from cultures or historical periods where a theory of economic mechanisms is absent, or where there is no idea of the economy as a separate and autonomous context. Although historians of economic thought have occasionally worked retrospectively and extracted improbable theories from other times or unaware precursors, there have been instances of interpretations which explicitly set out to avoid undue hypothesising and prejudices. Comparative analysis is the most difficult, but also the most rewarding research tool, when used on information sources in different contexts. As a procedure, comparison is typically used in anthropology, sociology, and general history as well as the wide range of studies that have been often classified as non-orthodox economics. This

M. Bianchini (✉)
Parma, Italy
e-mail: marbianchini@gmail.com



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paper first briefly describes this sort of procedure. It then reviews some influential books in the field of social history which are useful in an exercise of comparative economic thought. There are in fact two main problems in making comparison between cultures. The first is identifying the most suitable conceptual tools, or in other words, deciding what questions to ask of sources. The second is how to deal with the wide range of skills which a broad view requires, but which an individual scholar alone is unable to master. The paper leads to two main conclusions. The first concerns the importance to identify the actors taking part in the different economies to compare economic actions and ideas across time and place. Nowadays, it seems that these actors tend to become increasingly impersonal as functions tend to be carried out more and more anonymously. The second conclusion is that the best way of proceeding successfully in making comparison appears to be the cooperation of many different specialists.

## Definitions and Conceptual Tools for a History of Comparative Economic Thought

To compare means to find differences and similarities between individual phenomena is only possible if there is some common element which makes entities commensurable. In human history, what is comparable are experiences or phenomena common to all humanity, or those occurring in a significant number of cultures.

One of these phenomena is the economy, understood as the activity of extracting from nature and exchanging between individuals means of existence not freely available. The fact that the human species has survived for millennia shows that the economy has always been a feature and, on the whole, has worked efficaciously. As has been pointed out: 'The human species occupies a wider range of habitats, uses a much greater range of resources, and lives in more diverse social systems than any other animal species. We constitute a veritable adaptive radiation […] For better or worse, our ability to convert matter and energy into people in almost every terrestrial habitat has made us the Earth's dominant species'. The reason is that humans 'cooperate on a larger scale than most other mammals'. They have evolved culturally towards the 'larger, more cooperative societies that characterize modern humans' always involving many unrelated individuals, far beyond the boundaries of kinship (Boyd and Richerson 2009, 3281–3282).

The economy has always been a collective phenomenon, involving at least small groups, because human history started precisely from small groups and cultural evolution occurred at the level of community rather than individuals or isolated couples. It would be impossible to study history and make comparisons if *homo oeconomicus* were to be taken as a solitary and self-standing unit. A human economy is not a self-standing organisation. It depends on culture, on institutions, on the social hierarchy, and on the kind of division of labour existing in a society. Social hierarchy, in turn, is based on a particular view of the world: mainly on religion which usually

contains, or at least does not exclude, a cosmology and a system of moral and juridical rules.

As a species, humans have been successful in acting collectively thanks to the adoption of long-lasting systems of social norms represented by their culture. Humans are cultural beings. Humankind has distinguished itself in its collective and creative strategies for controlling the physical environment. Inspired by their deepest beliefs, humans are able to make collective plans on a large scale and are constantly engaged in breaking their own records.

Breaking records is an unequalled advantage as well as a constant source of danger. An individual or a group can try to break their own records or overcome their own limits in different ways, including by taking over spaces, and thus threatening survival. The success of the human species is due to its skill in tempering individual instincts and channelling energies towards joint community efforts. In other words, humans have placed limits on the individual instinct in order to encourage collaborative behaviour. This has been done through social norms or institutions. Institutions appear in different forms from place to place, but they exist universally. They always issue rules laying down what is prohibited, what is compulsory for a particular purpose and what the sanction is in the case of infringement. They thus attenuate conflict in specific fields of action and help the group to make choices compatible with general survival.

Rules of this type appear as social taboos, as well as religious precepts, ethical norms, and political and legal systems. A system of rules, either explicitly or implicitly, always contains guidelines relating to resources and how these can be obtained and used. In other words, it involves an idea of the economy, or a variety of ideas of the economy. The rules and systems may conflict with one another, but they all aim at collective ends.

Institutions have the characteristic that they are a 'third party' with regard to people's conflicting interests in obtaining a specific goal. This goal might be, for example, obtaining a legitimate descendant through an approved marriage or legitimately becoming the owner of a material good. The institution is a third party in that it is delegated as a representative figure or organisation by the set of community members or is simply a shared value issued from a superior authority.

Any individual using economic resources must cope with these social rules, and understanding economic action entails first and foremost knowing what they are. Research which ignores the rules and their importance, or ignores the difference between norms and actual behaviour, can fall into two traps. On one hand, transgression of the rules or free experimentation in areas not governed by rules are both topics in themselves worthy of study and should not be ignored. On the other hand, there is the risk that important information revealing cultural differences and what is likely or unlikely in a particular culture may not be taken into account.

By their nature, regarding groups of individuals, norms must be understandable, easy to share and collective. They are the outcome of conscious reflection, the outcome of thought, and this is the case in the economy as elsewhere. Some fields of economic thought in this sense are universal and as old as the history of humankind. These include family relationships and the relationships of households

with the natural world. Other fields, such as 'unexpected results' of economic choices made by freely competing subjects have a much more recent history.

For the great ancient civilisations, as for primitive societies, and for past and present micro- and subcultures, the study of the economic thought uses numerous sources, many of which may be neither explicit nor written down, and which thus need to be reconstructed. Useful precedents in this sense have been established in fields such as anthropology, philology, numismatics, and archaeology, which have all developed methods of identifying economic and other types of norms of often illiterate peoples. It is essential to take account of this research, which provides many useful indications. One of its main lessons is the identification of an economic actor who is less 'psychopathic and fanatical' than *homo oeconomicus*. In economic exchange, this figure behaves according to three different types of reciprocity. These three types are identified by anthropologists as generalised or absolute reciprocity, balanced reciprocity, and negative reciprocity. In other words, in order to act efficaciously and effectively, any social actor, institution or economic unit, and in fact any human being, follows three types of behaviour, adopting three types of reasoning according to the context of action, inside, outside or on the border of the living space. Firstly, the entity ensures that itself and its living space are under control and work in the best way possible. Before everything else, as far as the entity is able, it will meet its fundamental needs and those of all components of the living space under its responsibility (general or absolute reciprocity). Secondly, once the inner space is in satisfactory form, it tries to take advantage of activities on the borders between inside and outside (balanced reciprocity). Lastly, the entity will defend itself against danger from outside and aim to expand its area of influence (negative reciprocity).

This very simple interpretation has important implications which are far from obvious. To study a 'political and social animal' like humankind, the researcher needs to do two things. The first is to identify the border between the inside area or living space of the individual and the outside, identifying how many and what subjects are inside and outside it. The second is to determine what the central entity is and its physical and symbolic seat of command, or the centre of regulation of this living space.

In Eurasian history, the key institutions of the last three thousand years, which have emanated the rules, and which are still substantially in force today, are the following. The first is the entire community or set of families, and the second is the ruling families, often 'war lords'. The third is the temple or the symbolic figure administrating religious life. The fourth is the owner of the central political and military power of a wide region, usually seating in prestigious and impressive buildings or in a palace. Lastly there is the city containing the *agorà*, or the physical or virtual square, which is the beating heart of a *res publica*. In other words, the centres of regulation have been the village, the war lords, the temple, the palace, and the *agorà*.

Within 'republics', Mediterranean people, and later all western people, gradually and with difficulty learned to publicly express opinion, and exercise rights and duties of citizenship. In a framework of civic norms, this gave rise, among other things, to the market. In other words, a physical and legal context was brought into existence where approved persons could trade allowed goods and services in competition with

one another in a particular form of balanced reciprocity. Contracts stipulated on each occasion how much, and where and when the sale and payment were to be made.

Eurasia in fact has known for millennia the plurality of institutions which implies a division of labour and social functions, and which goes far beyond the simple differentiation on the basis of age and gender occurring in other societies. To this day, there has been a prevailing stratification of social orders and distribution of wealth which are not part of the market and may in fact counteract it. The history of Eurasia shows that it is unwise to rely solely on interpretations based on optimising economic behaviour and that it is useful to look at other centres and norms of regulation apart from the market.

The fact that different social strata have been subject to varying rates of taxation on profit or on the output in excess of basic survival needs, and also the destination of resources thus acquired varied, means that different points of view on justice and economic fairness prevailed in different settings. There has even been social conflict, as between the worlds of Homer and Hesiod in classical Greece, the former representing warriors and the latter representing the world of peasants. The type of discontent and the opportunities or lack of them for legitimate dissent are important characteristics of each civilisation. It is significant in fact that freedom of opinion appears to be closely linked to a level of freedom in trade and thus to the birth of the market.

At this point, it is important to note that conceptually, market trading and commercial selling are not the same thing. Market trading occurs only in certain areas and only at the conclusion of a certain historical process. It is impersonal, in that the price is fixed with reference to multiple and anonymous actors, and precisely for this reason, entails a legal framework to guarantee sales. Selling off the market, on the other hand, can take place anywhere there is personal contact between members of different living spaces. The only necessary condition is that there is time and a way of building personal trust between buyer and seller or between the guarantors of the sale. In other words, trade is personalised, as is known to be the case in non-market societies. Rituals can often be involved.

Another phenomenon which is universal, alongside commercial selling and economic activity, is the idea of sacredness. Sacredness can be found almost everywhere as one of the pre-eminent and organising values of individual and collective behaviour. Great civilisations were built up around religion, in other words, around the temple and priests who regulated relationships within families and enjoyed a complex and sometimes conflictual, inevitable relationship with the military and political power. In many cases, including Mesopotamia, Ancient Egypt, China, Japan, and Imperial Rome, political figures acquired divine status and the two levels of power were interlinked.

Although there was always some type of structural hierarchy, religious and temporal authorities usually gave rise to differing ways of looking at society. They could differ significantly in their message and in its recipients, as for example, the biblical Prophets speaking to craftsmen and the poor or the Hindu *Arthashastra*, speaking to rulers.

In the Mediterranean, in the interstices between the great empires, eminent families of Greek cities, where free ports were located, discovered how to govern themselves. This gave rise to the *polis*, based on a written constitution and the *agorà* (the square or the Roman *forum*), which became an addition to existing centres of regulation.

Ruling families, seats of temporal government, temples, and polis each corresponded to specific literary genres, such as the *oiconomia*, *speculum principis*, scriptures and moral theological writings, *politica* and sets of legislation that lasted for thousands of years and often refer to material mechanisms of economic functioning. This illustrates the importance of the centres of regulation in Eurasian civilisations.

In the Mediterranean world, the *Collegium trilingue* combined the three worlds of the temple, the temporal or political power and the *agorà*. It included the political and philosophical tradition of classical Greece, Roman law, and Judaism. It was the remote experience of citizenship inherited from classical Greece which allowed the emergence of the market within the *res publicae*, and, during the eighteenth century, the appearance of producers and owners of means of production as key actors of the economy.

The process which led traditional 'sharing' economies (*metadòsis*) to mutate into economies based on competitive markets appears not to have been caused by the commodification of social relationships. This could have been, at most, one of the consequences of the process. The rise of economic competition appears rather to have been caused by the growing faith in the power of the individual to be socially trustworthy and therefore capable of economic entrepreneurship. The more the anonymous individual was considered socially and politically worthy, the less important was his *status*, and the less trade needed a specific personal reliability of actors in terms of birth or level in the social hierarchy. From the economic point of view, skills and capacities came to play a bigger role, while the importance of social origin and political affiliation declined.

This first happened in Europe in a process which, over several centuries, led to the gradual loss of importance of the aristocracy and nobility. In general, this appears to have occurred as it became possible for any anonymous individual naturally endowed with moral virtues to gradually acquire the opportunity to belong, affiliate, be related, and bear title to a personal and communal identity. This meant that individuals counted for themselves. In other words, social rank started to count for less than what the individual did or knew how to do, including becoming rich, in publicly regulated spaces and trade circuits. Legal, institutional, and specialised trade circuits became increasingly numerous and replaced functions which, if they had existed previously, had been the province of families, the village, the temple, or the aristocracy.

This increase in the number of economic actors followed a deep revolution in western thinking. Thinking at the time started to consider the entire universe or humankind as being of the same nature, with no difference between earth and sky and with no natural or moral differences between ethnic and social groups. This way of looking at the world meant that everyday economic functions could be separated from social, political and spiritual powers, and entailed that the rapidly growing economy could be driven by anonymous individuals.

This process of separation of everyday economic life from the living spaces of institutions was in turn linked to, and gave rise to, the circumstance whereby functions of belonging to a restricted group were now guaranteed more effectively by larger and more powerful communities. Functions such as protection and assurance against adversity were no longer guaranteed by the family, guild, or political and religious hierarchies but by the city or the state. Moreover, these guarantees applied in principle to all citizens simply by virtue of their being citizens.

This is not simply a matter of giving the monopoly on physical force to a Leviathan, but far less threateningly, and in more detail, it means that privilege is subordinate to civil rights, and that any citizen can appeal to the law to ensure their own rights. Civil rights and universal human rights are the creatures of city politics and culture. The temple has the role of expressing ideas of justice, and the aristocracy may draft single laws, but neither emanate civil or human rights, and both are in fact extraneous to the concepts of equality and citizenship.

Modernity led many economies around the world to depersonalise trade, but the entire world is running the risk in post-modernity today of an increasing depersonalisation of social as well as economic relationships. To understand this, it is useful to realise that the life of a society consists of a continuous system of exchanges. For humankind in historic civilisations, this network of exchange consisted of debts and credits linking people with other people. In traditional societies, aptly called 'face to face', and even in contemporary societies where there is no constitutional certainty of the rule of law, the type and amount of debt and credit depend on existing power relationships.

The religious temple and the seat of temporal power were often in agreement in deciding who could become rich through commerce or war, who could enjoy a fixed income through ownership of land and who was to live at subsistence level and give up some of the fruit of their labour. In this way temples tended to accumulate treasure, while temporal rulers ran up debts to finance wars and social stability. Debt and credit of the majority of the population were in any case regulated by a small minority who were left by the lower classes to take decisions on the basis of their high rank in society. Both sides of course lived in symbiosis.

It was only under the rule of civil rights that individuals came to have a say in fiscal matters, and enjoy relative autonomy, free to concentrate on their own lives, of course within rules and constraints, which become increasingly numerous and strict the wider the field of action. In the Modern age, individuals delegate to a political community, in which they take an active part, a whole series of functions which were previously managed in a particularistic or nepotistic manner.

The kind of symbiosis typical of traditional and simple civilisations was upset by the appearance of three institutions typical of modernity. These were the state with its parliament, bureaucracy, and the joint-stock company. In spite of the ideal principles from which it started, even this type of economic and societal organisation appeared and developed in a sort of symbiosis of functions, no longer a symbiosis between people or a question of universal rights. State legislation started in many cases to focus on the regular functions of the nation, rather than individuals or social justice.

As has been frequently pointed out, state, bureaucracy, and corporations often appear to be closely linked.

In the new context, individuals not taking part in political decisions affecting their daily life run the risk, as in the past, of political depersonalisation, of becoming more or less interchangeable cogs in machines carrying out specific functions or becoming outlaws, condemned to civic non-existence. The process of depersonalisation affecting both the economic and social and political side of the life sees a decreasing importance of the third party constituted by the intermediate institutions, a decline of individual identity and an emphasis on the centrality of functions in themselves. This depersonalisation is greatly accelerated by information technology (IT), which brings both advantages and disadvantages. On the positive side, the privileges conferred by social rank decrease and enormous energies are liberated. On the negative side, there is the danger that there can now be a relationship between human beings without their being in any physical contact. The real can be replaced by the virtual, and the machine can replace not only human labour, but the entire person. In short, automation can replace conscious decisions taken jointly by people, along with the intermediation work of institutions.

The inexorable rise of IT is today proceeding under what appears to be its own rules, not guided by any collective decisions. This brings the risk that hidden, unknown, unforeseeable and 'unintended' powers may come into being, legitimised by the simple fact that they carry out a function. The function itself, performed anonymously, can thus become a new actor or figure in society, as well as in the economy. The human being is thus turned into an instrument by what should itself be an instrument. A function, or its anonymous controller, thus comes to prevail over human operators as well as human users. It is true, as Francis Bacon noted, that nature 'to be commanded, must be obeyed'. It is also true that to obtain optimum results in providing goods and services, mechanical rules and regulations must be followed. But it is also true that human actions do not have the rigidity of physical world but have the flexible and creative nature of culture. Human existence is buffeted by overwhelming forces, unwelcome results, mistakes, and violence that need to be dealt with and managed by adaptable institutions.

## Functions

Studying the economy, without its institutional framework, provides incomplete information; the same happens to functions too. Let us consider three functions: money, political representation and the square, taking their context in account.

The use of money as a legal and symbolic tool to measure and compare debts and credits of every kind is emblematic of the importance and evolution of institutions over time. Symbolic money appeared only about three thousand years BC as an accounting measure for use by temples and governments. Its emergence was the consequence of the affirmation of a fiscal power over large territories (Wray 2017, 141–201). It was to reappear over the course of history in similar circumstances.

Legal coins in gold and silver, as far as we know, appeared for the first time in the Mediterranean area in the sixth-century BC. They were introduced by figures like Croesus, an important merchant who held combined economic, religious, and political power in an area which was strategic for long-distance trade. In ancient times such an innovation is absent everywhere similar conditions are missing.

Until recent times, legal tender was accepted because it constituted a valid unit of economic measurement and because its value was guaranteed by a third party as the state. In other words, money was guaranteed by an authority which can cover its own debts taking possession of a significant share of the wealth produced. The new millennium, however, has seen the arrival of virtual money, or pure credit, lacking any support except for electronic support, and with no external guarantee either public or private. Created by anonymous individuals, entirely without external reference, it appears to function exclusively at the service of the public. The states where it is used have no means of control over it whatsoever.

In traditional societies, adult human beings were personally responsible for their own economic actions without any limitation. In modern times, on the other hand, the individual tends towards economic anonymity and is responsible only in terms of property and up to certain limits. It looks as though in post-modern society the human being is destined to turn economically into a simple series of electronically supported notes in terms of e-money.

This appears to be the trend in society and politics as well as in the economy. There is in fact a parallel between e-money and e-democracy, which makes decisions using electronic voting on a private platform sometimes financed by elected members of parliament and aims eventually to replace representative parliamentary democracy with voting on a platform. It appears that participation in political life, voting and collective decisions could become disembodied from any identifiable human form.

The square is another example of a social phenomenon which can be misconstrued if interpreted out of context. There is in fact a risk of neglecting or ignoring the existence of different functions performed by similar virtual or physical entities in different social and political contexts. The square is an open space accessible to all that can be virtual and physical at the same time. As a non-religious or lay place for discussion of ideas and interests as well as for trade, it is a characteristic of Mediterranean and western civilisation. There appears to be nothing similar in prehistoric civilisations where people live in close physical contact, or in important cities in the Orient, and there appears to be nothing similar in areas where there is abuse of power or where organised crime or illegality takes hold. In all these types of situations, instead of the town square, there will be the open space of the village or the neighbourhood, the courtyard of the residence of a ruling family, a churchyard, or a large parade ground, which is always present in an authoritarian regime. Rather than a place for meeting or a market, the parade ground or large square in a dictatorship will be a sort of sacred site reserved for collective rituals., it is a place for display of military force where the people are an indistinct mass, rather than individuals with their own identities, and each group has their own dress or uniform to show function and level in the hierarchy. The figure of the consecrated ruler will always be present. Today, however, it is difficult to enforce this type of discipline on the contemporary

version of the square, the internet, in spite of the efforts being made around the world by authoritarian regimes. Meanwhile, in the West, the physical space of the market and politics is being replaced by e-commerce, social media, and TV, except for street trade in cheap goods or products and services which are in some way ethnic or represent identity goods.

Looking at economic functions or institutions, we note that in traditional and authoritarian civilisations, no distinction was made between the world of the economy and society and politics, and very little economic theory can be found. The economy was embedded in society. Although complex societies used advanced economic instruments such as cash accounts, minted coins, contracts, price regulation, debts, mortgage, and interest payment on loans, down the millennia, the way of thinking about these things was moral, political, juridical, and even technical, but not theoretical. The only theoretical awareness in evidence from ancient times is a clear relationship between the availability and the value of a good. The economic science appeared only in the fifteenth century, in Europe when a class of merchant bankers emerged. Within a framework of civic law, merchant bankers came to compete with each other and played a key role on the newly formed international markets where gold and silver coins were used in trade. The international market became an international republic based on money, a free port with its own rules, and was tolerated by those in power because of the advantages it brought.

Economics developed further as a science in the early decades of the eighteenth century as the European nation states were forming. In this process, the *res publica* or civic society gradually took over the functions of aristocratic power and the temple. Two new phenomena occurred. The first was that a large share of production passed from the control of war lords and the church into the hands of vast and varied groups of owners of production factors. At the same time, magical or sacred texts ceased to be the authority for views and opinions on physical and social phenomena and were replaced by a new international form of the *agorà*, the community of scientists. This was a different type of free port, an exchange of ideas, with its own rules, tolerated by those in power because, again, of the advantages they brought.

## Examples of a Comparative Approach

As in the following examples, the academic studies which have successfully compared this kind of issues across time and space have, not surprisingly, focussed on universally present social phenomena and applicable concepts.

The binary 'yes or no' nature of every type of institutional provision emerges clearly from the detailed work about incest and taboos by Fausto Ceccarelli, *Il tabù dell'incesto. I fondamenti biologici del linguaggio e della cultura* (1978). On the relationship between rules, experimentation and transgression, a fruitful source of inspiration for social sciences is the work of the medieval historian Johan Huizinga entitled *Homo ludens* (1939). The focus of this book was further pursued by Roger Caillois, who, in *Les jeux et les hommes* (1967), provided an interpretation of culture and

civilisations through the games played, taking account of the universal phenomena of playing in human experience. An equally interesting interpretation, made through a feature widely present in human experience, although not universal, is that by Philip Grierson in *Numismatics* and his later *The Origins of Money* (1975, 1977). These two publications use historical comparisons to describe how and in what different ways humankind made payments down the ages. They also discuss the weaknesses in the deeply rooted idea that merchant trading lay at the origin of money. Grierson also discusses whether it is realistic that primitive or traditional trade was based on barter. Louis Dumont makes a comparison between civilisation, social history, economy and economics in his two books on social stratification and political equality *Homo hierarchicus* and *Homo aequalis* respectively (1966, 1977). The book *Alien Wisdom. The limits of Hellenization* (1975) by the classicist, Arnaldo Momigliano, looks at the *Collegium trilingue* (Rome, Greece, Judaism) or multicultural origins of the West. The formation of a wider multiculturalism in Eurasia, or the Indo-European civilisation, is the focus of an important work by a scholar of comparative historical grammar, Emile Benveniste, in his two books *Le vocabulaire des institutions indo-europeénnes (Economie, parenté, societé* and *Pouvoir, droit, religion)* (1969). There was a key turning point in anthropology, and perhaps the whole field of social sciences, with the appearance of Marcel Mauss's l'*Essai sur le don. Forme et raison de l'échange dans les sociétés arcaÏques* (1923–1924). Mauss's work also informs a widely known work by the anthropologist Marshall Sahlins, *Stone Age Economics* (1971), which provides a preliminary introduction to the concepts of general, balanced, and negative reciprocity.

The works listed above are all milestones on the path to the comprehension and comparison of cultures. Interestingly, they share a characteristic which gives an indication of how academic enquiry can best be pursued. They are all by individual scholars who spent a great deal of their lives looking at just one subject, whether it was incest as a taboo, games, money, hierarchy and modernisation, institutions, gift, or trade forms. Focussing on a single phenomenon, and restricting enquiry to a single field, allowed these writers to fix terms of reference, refine interpretation and thus carefully select the amount and type of questions to be asked of their sources.

The large amount of information they used came partly by 'participating observation' and partly from the writings of a very wide range of experts, in all cases working in contact with a high number of researchers.

Further empirical confirmation on the validity of deep individual scholarship with access to a wide range of information comes from the success of a recent book on a single theme by David Graeber, who is far from being a voice in the desert. The popularity of his *Debt: the first 5,000 years* (2011) also illustrates the need for broad scope interpretation which is today increasingly perceived by academics and general readers alike.

The lives of two renowned scholars, Talcott Parsons (1966) and Fernand Braudel (1979), also reveal the key role of appropriate contexts of study and a wide range of contacts, as well as, of course, unstinting dedication and talent. Despite reservations which have been expressed on their work, both these social scientists left a long-lasting and fertile heritage. Each was an exponent of an influential school of thought,

structural functionalism the one and the Annales school the other, both rooted in the work of Émile Durkheim and Max Weber. Parsons and Braudel can thus be considered as individual authors as well as the personalised expression of the collective voice of a school of thought.

A collective choir-like voice appears to be the second path towards fruitful comparison between cultural worlds. In the words of Karl Polanyi and Conrad Arensberg (1957), this entails close cooperation in genuine freedom between a considerable number of specialists with personal scientific interest. Such a variety of specialists also requires editors to arrange different contributions harmoniously. This was precisely what Polanyi himself did for ten years in order to produce *Trade and Markets in the Early Empires*, and also what Ruggiero Romano did for the *Enciclopedia* published by Einaudi (1977–1984).

To use the metaphor of music-making, two main paths can be taken towards meaningful comparative history of economic thought. The first is a soloist performance accompanied by an orchestra, and the other is an orchestra led by a conductor. Both ways involve years of work, many voices and a single figure who leads them to play and sing in harmony.

## Conclusions

Leaving aside today's big-data analyses, which are blind to institutional change, comparative studies in economic thought impel us to identify protagonists, or actors, in economic systems, and distinguish between what they do, what they are not permitted to do and what they are required to do. In other words, it needs to be made morally and economically clear who the creditors and debtors are, and what their debt and credits are.

The joint-stock company appeared as an actor only in the Modern age and only in certain areas of the world. It appeared in the same period and countries that economic science came into being and where the first documents on human rights were produced. These of course opened the way ahead for the whole world. Today, the possibility that the holder of an economic debt or credit can be an electronic entity on a digital platform appears to be a distinctive feature in a world where individuals have diminishing opportunities to engage with a platform and defend themselves.

Now that the Prometheus of free initiative is going to be unbound as never before, there is an urgent need to understand mechanisms which are increasingly impersonal and often out of control. The question today about post-modernity is what will happen and what science will be required as the number of economically active individuals explodes while, at the same time, IT proves that it can oust human beings and hide anonymous and unresponsible interests.

One of the answers, at the moment, seems to be the instinctive political reaction represented by movements for sovereignty.

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# Economics as a Comparative Science from the Historical School to Otto Neurath


**Monika Poettinger**

## Introduction

The comparability of economies in time and space was taken for granted by many cataloguers and encyclopaedists in the centuries leading to enlightenment. The dawning thought of a development path for humanity put an end to such ingenuous comparisons. Along with the consciousness of the evolutionary nature of history, Europe developed the hubris of civilisation, condemning the rest of the world to an uncivilised backwardness. Comparisons became impossible, except for societies at the same stage of development. The study of economies suffered the same fate at the hand of all historicists who conceived complex models of growth in stages. Comparisons were allowed only by presuming the permanence of some characteristic of men or the existence of natural laws. While modern economics was funded on such assumptions, historicists became more and more sceptical about the possibility of comparisons over time: every event was unique. This profound difference in philosophical assumptions led to the famous debate between primitivists and modernists in respect to the study of ancient economies. Causality or contextualisation? That was the question. This essay will relate the nineteenth-century discussion on the comparability of ancient and modern economies, extending the analysis to the holistic vision of Otto Neurath. Some conclusions will be drawn on the possibility to construe in-kind indexes of wealth, allowing fruitful comparisons of different institutional settings across time and space.

M. Poettinger (✉)
Polimoda, Florence, Italy
e-mail: monika.poettinger@unibocconi.it



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## Looking Back at Antiquity in Nineteenth-Century Germany

During the nineteenth century, German-speaking economists and historians looked at antique economies under the influence of two factors. The long and troubled process of national formation, on the one side, favoured the emergence of nation-centred historical recounts stressing the importance of culture and agency and the unicity of historical facts. Philological studies had in this case the upper hand (Leghissa 2007; Heller 1998). A typical example is the study of ancient Germans: Indogermanen and Urindogermanen (Schleicher 1863). This kind of philological studies aimed at researching language per se and the way in which words reflected the reality of a precise timespan (Frohberger 1876, 70). Launching the *Osterprogramm* in 1845, Adalbert Kuhn (1845) stated that linguistics could help to reconstruct the circumstances in which an ancient population was living, or as Jacob Grimm would say in 1848, to pass from words to facts (Grimm 1848, XIII). Nonetheless economic questions were rarely addressed until the last decades of the nineteenth century (Frohberger 1876, 71). Main exception was the work of August Böckh on the public finance of Athens, published in 1817. One of the major difficulties of this approach was the paucity of statistical data in antique sources. Without reliable numbers many of the scarce studies on ancient economies proved to be only theoretical reflections. A more fruitful approach was to analyse ancient written sources to reconstruct the economic legislation, the class structure, and the political thought on economic questions in ancient Greece or Rome. Notably, in 1866, the founding father of German's historical school, Wilhelm Roscher, opened up the field of the history of economic thought in antiquity with his booklet, based on his dissertation, on the beginning of political economy in ancient Greece (Roscher 1866).

Another factor that influenced economic studies on antiquity was the growing specialisation inside universities and the related professionalisation of many intellectual figures. At stake were university chairs, the methodology of enquiry of specialising disciplines and the acceptability of interdisciplinary research (Fornaro 2013). The philological approach so diverted, since its start, from archaeological research, a division that struggles to be overcome even today. While the method of analysis might have been the same, the source of knowledge was different: ancient artefacts and not writings. Christian Gottlob Heyne, who defined archaeology for the first time in the 1770s, spoke of a comprehensive and encyclopaedical discipline that would call upon ancient monuments to testimony practices, norms, representations, mythological and religious concepts, and even historical circumstances and facts (Heyne 1822, 4–8). Heyne's approach justified a comparability of artefacts based on moral judgements. The ideal perfection of classical antiquity's art represented a superlative on which to measure the present mediocrity. Touring the ruins of ancient civilisations was, so, a way to moral betterment. In this sense ideal beauty represented a meta-historical value that allowed intertemporal comparison. If such universal values or forms could exist for the economy became a major dispute when researching ancient economies became fashionable in the last quarter of the nineteenth century. The question on the comparability of economies over time was the object of a *Methodenstreit* between

historians and economists of the historical school that would prove long-lasting and possibly insoluble. Main representatives of the opposite camps were the historian of antiquity Eduard Meyer (1855–1930), and the economist Karl Bücher (1847–1930).

The issue is widely known.[1] Bücher,[2] an adherent of the younger historical school,[3] affirmed that ancient economies were fundamentally different from the modern one and as such incomparable. In his speech on the emergence of political economy (*Die Entstehung der Volkswirtschaft*), held in October 1890 to inaugurate his chair at the *Technische Hochschule* in Karlsruhe, Bücher identified 'the economic development laws of populations' as the object of the German political economy (Bücher 1893, 4). Since 'all economic phenomena and institutions underwent a slow and often secular process of change', the main methodological tool became 'the reconstruction of economic stages' (Bücher 1893, 10). The economic historian had to sublimate this process in its main phases, neglecting the times of passage, to enucleate the causal relationships that brought about the changes in economic development. The analysis of ancient economies acquired importance because the progress of economic phenomena was 'nowhere better to be experienced as in the characterisation of the differences between the present economy of cultured people and the economies of antiquity or of culturally poor people' (Bücher 1893, 10).

The classical school of economics, for Bücher, had erroneously imposed onto the past concepts derived from the study of present-day economies, primarily regarding the ubiquity of exchanges. Bücher believed that the modern *Volkswirtschaft*, based on trade, had been born simultaneously with the modern state, while before, 'humanity had experienced lengthy time periods without exchanges or with exchanges of products and services that could not be defined as "*volkswirtschaftlich*"' (Bücher 1893, 14). By adopting, as a general explicative criterion, the distance between production and consumption, Bücher defined three stages of development (Bücher 1893, 16):

1. the period of the closed house-economy in which goods would be consumed in the same economy in which they were produced;
2. the period of the city-economy in which produced goods moved directly from the producing economy to the consuming economy;
3. the period of the political economy—*Volkswirtschaft*—in which wares passed through many economies before being consumed.

The first period had characterised the Western world at least until the thirteenth-century A.D. The difference between this stage and the following was not in the appearance and character of economic phenomena only, but of man also. *Tauschen*

[1] The main texts regarding the controversy have been published in volume by Moses I. Finley (1979). For a recent appraisal see: André Reibig (2001).

[2] On Bücher see: Jürgen G. Backhaus (2000).

[3] Bücher himself defined the German historical school as the tradition of thought having emerged in Germany in the 1830s in opposition to the French and English liberal tradition. The main point of dispute was the absolute value of the liberal theory. The historical school "by following back the changes in time of economic institutions and phenomena, came to define the present economic order as only a phase in the general economic development of populations", denying the a-historical normativity of any explicative theory (Bücher 1893, 4).

(to exchange) and *täuschen* (to cheat), underlined Bücher, were one and the same in antiquity, and everyone was, in consequence, as averse to trading as possible. Exchanges, then, were rare and had to be officially sanctioned by an authority, by testimonies, or by specific rituals. Even in the medieval development of the *Hauswirtschaft* exchanges still lacked the main character of trade exchanges, which Bücher defined as the relationship between the exchanged goods and services and the freedom of choice of the economies that entered the trade (Bücher 1893, 35). Money could circulate even in massive quantities, but was used as a measure of value, a store of value, and a means of payment outside trade (taxes, fines, etc.). In direct exchanges, the use of money was trivial, while in-kind exchanges were most common (*Naturalwirtschaft*) (Bücher 1893, 38).

Another characteristic of Bücher's first stage of economic development was the dependence from the land. Only control over a sufficient measure of land granted survival and men with no availability of resources were forced into serfdom. The economic unit, followingly, was the house—an extended family characterised by kinship ties that controlled a certain territory—variously named clan, breed, stock, tribe, *gentes,* etc.[4] The family, firstly matriarchal than patriarchal, held all property in common, subdivided the workloads among members and exercised a common law. Outside the family, man had no property, no rights, no protection, and no ties (Bücher 1893, 18–19). Whenever the division of labour inside families proved insufficient to complete a task, available solutions were the artificial expansion of the economic unit through slavery, the extensive use of servants, or temporary associations with other economic units.

In consequence of this peculiar economic organisation, many modern institutions and phenomena and the related concepts and words were completely absent: enterprise, circulating capital, loaned capital, etc. Even income, as a concept, could not be properly applied in its modern significance to ancient home economies, where it was limited to the agricultural produce of the controlled land (Bücher 1893, 40). For Bücher the scope of the house was not to generate a certain level of income, but to grant a certain level of consumption to its members. As such, taxation based on income would have appeared irrational.

[4] In this regard, Bücher openly referred to the work of Rodbertus and his definition of οἶκος economy. From 1864 to 1873, Rodbertus dedicated many writings to ancient economies (Rodbertus 1864, 1865, 1867, 1870, 1873), defining them as economies in which the property was distributed only quantitatively in respect to the possession of land, while in modern economies property could not only be quantitatively different but also qualitatively. In antiquity patrimony was so under the rule of the master of the οἶκος and trade was the exception. Money was not necessary and the economy was for the greatest part a '*Naturalwirtschaft*'. Laws reflected these characters of the economy and property was not sanctioned as in modern times: the state detained an absolute power not limited by any individual right (Rodbertus 1865, 344–346). See also: Warnke (1997).

Stage theories, as Bücher's, were no novelty in German economic thought. From Friedrich List[5] to Karl Marx,[6] from Bruno Hildebrand[7] to Gustav Schmoller,[8] many proposed theories of economic development characterised by relevant changes in economic institutions, economic phenomena, and the related law systems. Defining stages, photographing economies in one habitus after the other, was deemed necessary to discover the laws of economic development.[9] The relevant questions to answer were: what moved the economy from one stage to the other? where was the economy moving towards? The analysis of ancient societies, in this sense, had the value of a negative example. Describing the different functioning of the economies of the past was instrumental in defining the present economy: a bias that could lead to exaggerating the distance between 'primitive' and 'modern' economies.

The main critic of this methodological approach to the study of ancient economies became the historian Eduard Meyer (1910a). He gravely sanctioned the historiographic turn towards the analysis of societies, social groupings, classes, or nations that was spreading in German-speaking academia at least since the middle of the nineteenth century. The emerging and popular disciplines of sociology, anthropology, Marxist historiography, and the economics of the historical school applied a method of research based on a socialised man, on statistically average behaviours, on permanent psychological attitudes, on typified historical periods.[10]

> 'These modern research strands - lamented Meyer – constrain the infinite richness of history in such formulas. The living characters are destroyed and reduced to phantoms and vague generalisations. Even if the new definitions would be chosen with more care, generating more precise representations, nothing would be gained because they would always be generic and could never embrace the infinite variety of the real world. But our time is governed by the drive to define and by the foolish certainty to be able to know something and to understand a phenomenon by giving it a definition. We have experienced and experience still that some economists (*Nationalökonomen*) believe that with the framework of natural economy/monetary economy/credit economy they have unveiled the secret of historical development, reducing it to a simple formula. Since then, many more schemes, as that of Lamprecht,[11] have been devised and many more will surely follow. All of them find an easy diffusion, because they simplify the studying of historical facts or even make it superfluous

[5] Friedrich List's stages were: hunting-gathering, nomadic husbandry, agriculture, agriculture and manufacture, agriculture with manufacture and commerce (List 1841).

[6] Marx's stages of economic development were: primitive communism, slave society, feudalism, capitalism, socialism and communism (Marx 1965).

[7] Hildebrand defined three stages of economic development: *Naturalwirtschaft*, *Geldwirtschaft* and *Kreditwirtschaft* (Hildebrand 1848). On Hildebrand, see: Schefold (2016).

[8] Schmoller defined the economic stages of *Dorfwirtschaft, Stadtwirtschaft, Territorialwirtschaft, Volkswirtschaft, Weltwirtschaft* (Schmoller 1923).

[9] For a critical appraisal of the methodology of the German historical school, see: Weber (1985).

[10] In this sense, Meyer was particularly critical towards the methodological approach of Paul Barth (1971) and Ludwig Gumplowicz (1892).

[11] Meyer refers to the the historian Karl Lamprecht and his stages of cultural history, based on the study of socio-psychological traits and strictly referring to the nation as unit of analysis (Lamprecht

> and give to their believers a sensation of infinite superiority over all others. From the height of the modern worldview (*Weltanschauung*) they can look down with contemptuousness to the backward spirits who persist in the old ways and won't leave the study of the real facts' (Meyer 1910a, 12).

In their relentless chase for causal relationships and laws of development, economists' stage theories and all other strands of historical research criticised by Meyer lost three explanatory factors: chance as a cause of historical events; free-will defined as the setting of goals to human action and the attempt to reach them; and lastly the importance of 'ideas', widespread in a certain time and place, in influencing human action (Meyer 1910a, 8). Meyer, evidently, still championed the historical method, canonised by Leopold von Ranke, that had granted to German political historians the total control over university chairs for most of the nineteenth century (Dreitzel 1981; Hardtwig 1982). Ranke had identified in the singularity, of man and of historical facts, and in the moral freedom of human action the grounding notions of historical research (Chickering 1994, 168): the same points developed by Meyer. The polemic reference to Karl Lamprecht points in the same direction. Lamprecht had been appointed to a chair in history at the University of Leipzig as the first historian following the new methodology of cultural studies that was alternative to Ranke's. The defensive walls around the German citadel of political historians had received a decisive blow. Hence the vehemence of Meyer's response to the formulations of Karl Bücher in the 1890s. The heated debate between the latter and the historian became, in the discipline of ancient history, the question of the century. Meyer firstly addressed Bücher's work at the third Conference of German Historians, held in Frankfurt in 1895. The resulting pamphlet '*Die Wirtschaftliche Entwicklung des Altertums*' (Meyer [1895] 1910b) was an 'uninterrupted polemic' (Hartmann 1896, 153) against the thesis of Bücher.

Meyer attacked the simplified description of the *Hauswirtschaft* by revealing the many inconsistencies of the historical reconstruction of Bücher and the, at times, gross errors in textual interpretation. The etymological identity of *Tauschen* (to exchange) and *täuschen* (to cheat), for example, was typical only of the German language and had no correspondence in Latin or ancient Greek (Meyer [1895] 1910b). With his precise criticism Meyer intended to demonstrate that man in antiquity was not averse to exchanges and that closed economies could coexist with advanced city economies, open to wide ranging exchanges and fully monetised. Even in a *Naturalwirtschaft* as ancient Egypt, argued Meyer, trade was an important part of the picture (Meyer [1895] 1910b, 92–94). With the development of ancient economies in time, whatever their nature, both in Egypt and in the Near East, the extensiveness and pervasiveness of trade always increased (Meyer [1895] 1910b, 97). Trade was also present and determining in the most primitive phases of Greek development—so went Meyer's argumentation—and it would become decisive since the eighth-century

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1897). Lamprecht's socio-cultural stages (Animism, Symbolism, Typism, Conventionalism, Individualism and Subjectivism) corresponded perfectly to economic development stages: the collective employment economy, the individual employment economy, the collective in kind economy, the individual in kind economy, the associative monetary economy and the individual monetary economy. On a recent evaluation of Lamprecht's methodology, see: Chickering (1994).

BC. 'Through the introduction of money - wrote Meyer - and the general and encompassing trade, the social and economic relationships were upturned, causing the social crisis of the seventh and sixth century and the revolutionary movements that brought about the downfall of the aristocratic regimes. The monetary economy disrupted the old patriarchal connections, constrained the peasants into debt and stimulated the adoption of a capitalist mentality in the management of estates' (Meyer [1895] 1910b, 109). A further momentous consequence of the expansion of trade was the creation of a third social stratum between aristocrats and peasants: a bourgeoisie made of merchants, seamen, and independent workers that, in building an alliance with the peasants, gained power over the state. Xenophon so became, for Meyer, the Adam Smith of classical Greece, describing the effect of trade on the division of labour and the specialisation of craftmanship, up to a veritable 'industrialisation' process. 'Word after word - he affirmed - his description corresponds to the present-day conditions of a town with a population of two thousand inhabitants or even of a modern city'(Meyer [1895] 1910b, 116).

Meyer, as clear from the quoted passages and the terminology he used,[12] believed that a comparison between the development process that took place in the West between the fourteenth and the sixteenth centuries and that of classical Greece from the seventh to the fifth century BC was legitimate and hermeneutically fruitful. Against the linear development in stages devised by economists, he—the historian—embraced so, by wide and hazardous comparisons, the eternal return as his philosophy of history. 'It cannot be underlined sufficiently - he affirmed, challenging Bücher - that up to now the development of Mediterranean people happened in two equivalent cycles and that with the end of antiquity the development, returning to the primitive conditions that had been overcome for a long time, began anew'(Meyer [1895] 1910b, 89). The end of the second cycle, with the crisis of the Roman empire, had had the same causes of the decadence of Athens: 'the emergence of enormous capitals and landed possessions on one side and of a growing proletariat without properties on the other side, while the middle-class continuously decreased' and 'the disastrous attempts to solve the social problems that made a revolution unavoidable' (Meyer [1895] 1910b, 142). The use of modern-day economic terminology was not without rationale in Meyer. 'These all are processes - he concluded - that are highly interesting also in economics and have a deep-rooted significance for the present' (ibid.).

Notwithstanding Meyer's historical description of the cyclical recurrence of growth and decadence, his was no attempt to define laws of development. His methodology allowed the extrapolation of 'rules', not laws. Such rules were not constraining and prescriptive. So that, for example, the Middle Ages were not the same in antiquity and in European history. The end of the first cycle, in fact, saw the decadence of the city as the main political and economic unity. The same city, which had nurtured economic growth and cultural excellence in the beginning, had become in the end the cause of disruption (Meyer [1895] 1910b, 111 and 157; Meyer 1910a, 25). In

[12] Writing about cities like Athens and Syracuse immediately before Hellenism, Meyer defined the evolving social strata as 'capitalists' and 'proletarians' (Meyer [1895] 1910b, 133–134).

the ensuing cycle the city lost its centrality because the increasing role of Christianity injected in the system a powerful universalistic attitude (Meyer 1910a, 34). 'The term "middle-ages" - wrote Meyer - is a strong concept, implying a rule that connects specific economic, political and cultural orders. Middle-age conditions can be found in distinctive epochs of the development of mankind, not only among the German-Christian populations but also in the ancient world, and the use of this rule in the investigation and in the reconstruction of these times can prove extremely useful. But it would be a grave error to believe that it is sufficient to understand and recreate the historical conditions in all details. In the political construction of the middle-ages, for example, the prevalent form is that of the city-state. But in the Christian middle-age, in respect to the Greek one, this political form did not reach a complete autonomy, because the same had maintained from the past the idea of universality, of political and religious unity. The attempt to realise this idea and make it predominant constituted a powerful opponent to centrifugal tendencies and further generated influential historical manifestations. This same idea of universality, of a world-kingdom, dominated the whole successive historical development. The nations of modern Europe were born in opposition to it, at war with it' (ibid.).

Meyer's criticism to the economists' view of antiquity, while righteous in respect to many historical inaccuracies, nonetheless indulged in a comparability that was equally questionable. Ludo Moritz Hartmann, professor of ancient history in Vienna, observed: 'It seems that Meyer exaggerates the weight of the deviations from the scheme of Bücher. By reading his speech it could easily be concluded that the ancient economy did not differ significantly from the modern one. But exactly such a view seems to me, contrary to the intentions of Meyer, to hinder an accurate comprehension of antiquity and of the historical development of humanity and to contradict the evidence we have' (Hartmann 1896, 153). Hartmann even considered the comparative attitude of Meyer dangerous in respect to the negative judgement felled on urbanisation processes and related migrations and on the spread of extensive landed possessions. These elements were identified by Meyer as causes of decline and revolutionary movements in antiquity, but the historian also hinted at the possibility that they could have similar consequences even in the present: an assertion of dubious validity and politically perilous (Hartmann 1896, 156–157). The similarity, and hence comparability, of Meyer's complex historical cycles suggested an organic view of societies with unavoidable periods of decadence following growth and cultural splendour.[13] Similar interpretation was that of Oswald Spengler, de facto predicting the inevitable '*Untergang*' of the western civilisation.[14]

The comparability or incomparability of ancient economies with contemporary economic phenomena became so a crucial point of debate in the *Methodenstreit* involving political historians, economists, sociologists, and cultural historians in

[13] As such, WWI would further convince Meyer of the inevitability of a decadence of Germany, novel Cartago, at the hand of modern-day Rome: the United States (Meyer 1924).

[14] Eduard Meyer himself would publish a pamphlet with his observations on Spenglers' work. While Meyer generally shared Spengler's evaluation of the problems of Germany, he refuted many of his philosophical premises and a much too easy comparison among high cultures (Meyer 1925).

German-speaking academia from the end of the nineteenth century to the first World War. Times of abrupt political and economic changes—industrialisation and national unification happened in Germany in just a few decades time—influenced the work of researchers, who looked at the past in search for clues to understand the present and the future. At the same time, different philosophical premises favoured positivistic evolutionary perspectives or biologically ever-returning lifecycles as interpretative tools, but neither of these attitudes would prove, in time, without fault.

## A Study in Comparability: Otto Neurath

At the beginning of the twentieth century, Otto Neurath (1882–1945), economist and philosopher, was still caught in the ebbing of the *Methodenstreit* and in the manifold academic disputes that thorn apart German and Austrian academia on issues of economics (Poettinger 2012, 12–29). His chief endeavour became therefore to find holistic solutions that might reunite economists of different schools and at the same time increase the hermeneutic capacity of the economic science, restoring its credibility (Neurath 1910b, 66–67). One of the first clashes Neurath experienced, while completing his studies in Berlin, was the continuing dispute between the supervisor of his dissertation work, Eduard Meyer, and Karl Bücher.

Neurath had been sent to the University of Berlin by the advice of Ferdinand Tönnies, who thought that his extensive knowledge of economics and ancient history, gathered in his father's library[15] and in intensive personal studies, could be valued best in the fortress of the German historical school.[16] His research resulted in two dissertations: a study on ancient economies[17] and a history of social classes based on Cicero's *De Officiis*.[18] This last one was selected by Meyer to grant Neurath the title of Doctor. The thesis also received the honour of publication in its first part (Neurath 1906a), and was then published in its entirety in Schmoller's *Jahrbücher für Nationalökonomie und Statistik* in 1906 (Neurath 1906b) and 1907 (Neurath 1907).

Neurath's thesis, although being a juvenile work, addressed some of the crucial points of the Meyer-Bücher debate. Firstly, the problem of the relative importance of trade in an economic system, deemed the major sign of its 'modernity'. *Zur Anschauung der Antike über Handel, Gewerbe und Landwirtschaft* was dedicated, in fact, to a sketched representation of the historical evolution of social classes based on different evaluations of Cicero's work from antiquity to the eighteenth century. Through a complex study of all translations made of *De Officiis* and their reception and diffusion, Neurath exemplified the stance towards diverse professions and crafts,

[15] On the influence of Wilhelm Neurath on the ideas of his son, see: Uebel (1995).

[16] At the time Neurath had already published a brief essay on the interest rate in ancient economies (Neurath 1904).

[17] This dissertation would later be published as: *Die Entwicklung der antiken Wirtschaftsgeschichte*, (Neurath, 1908) and as *Antike Wirtschaftsgeschichte* (Neurath 1909).

[18] A recent commented edition has been edited by Michael Winterbottom (Cicero 1994).

particularly trade, and the cultural use of the historical past made at different times in different countries. As he would later vindicate, sometimes the analysis of literary texts could explain much more about the social and economic situation of a time than many useless statistics, based on erroneous or partial theorising.

As a conclusion to his study, Neurath summarised: 'Two kind of evaluations have emerged. The first underlines the social utility of man and, on this base, measures the value of his occupation. The second favours the personal qualities of man. The conceptions regarding social ideals and valuable personal qualities, though, change over time, as the circumstances that determine them' (Neurath 1907, 205). The different evaluation, in time, of *De Officiis* and followingly the social respect tributed to trade had so been affected by the prevailing idea of the path of historical change. Whether a time period was perceived as comparable with Cicero's or instead as completely different, had an effect on the reception of *De Officiis*. The second chapter of Neurath's dissertation was therefore dedicated to resume all possible approaches to the philosophy of history. This part of the work directly addressed the comparability of economies in time and space, with the intention of shedding light on the Meyer-Bücher debate, if not to solve it. 'In the absence of a definite theory of the conceptions of history, to which I could refer, - wrote Neurath - I will try in the following to systematically order and analyse the founding premises of the most important theories, more or less clearly expressed by the diverse authors' (Neurath 1907, 145). The resulting taxonomy, by representing all possible interactions between history and theory in the economic discourse, proves useful in evaluating the fruitfulness of a comparative approach (Poettinger 2012, 12–24).

Neurath distinguished among an evolutionary philosophy of history, a stationary philosophy of history and an anarchic philosophy of history.[19] The first attitude, present in some form at any time, postulated 'that from year to year the world would move closer to a given end' (Neurath 1907, 145). Graphically, it can be represented as a societal characteristic that, with the passing of time, shows a definite direction (Fig. 1). Given such a credence, when people were confronted with a set back of the evolutionary process, they would still believe that the direction of change would be maintained as a trend. This could be represented as an undulatory or periodic evolutionism, where in the periodic one the distance between the minimum and the maximum deviation points would always be the same, while in the undulatory one it would be random.

The evolutionary point of view was typical of the Christian philosophy of history. 'There had to be an evolution of men in some direction,—wrote Neurath—be it Paradise or Hell. The corresponding force of historical imagination has maintained its impetus for a long time and its echo can still be recognised in the systems of idealistic philosophy'.[20] Given this kind of philosophical premise, comparisons over time could only have a symbolic or exemplary validity as in the Old and New Testament. A similar view on the direction of history was championed by all those economists,

[19] The taxonomy is here translated literally from Neurath's work. Neurath himself expressed some doubts about the chosen terminology and considered it a temporary attempt at classification (Neurath 1907, 146).

[20] ibid., 150.

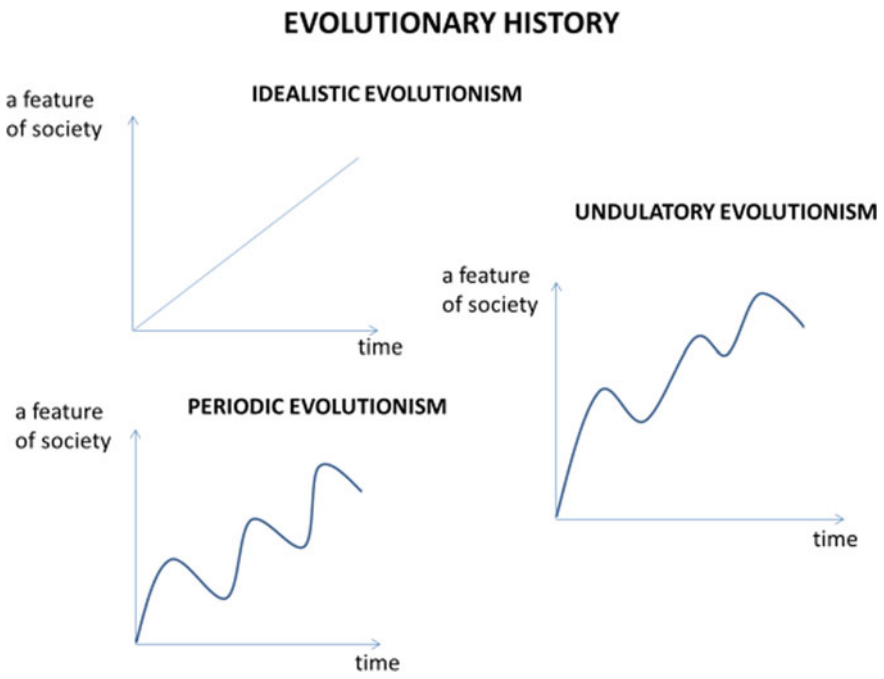


**Fig. 1** Evolutionary philosophy of history

Bücher among them, who devised some sort of stage theory along a path of linear development. Bücher's idealistic evolutionism allowed comparisons only between two different societies at the same stage of growth, be it at different times or at the same time. Idealistic evolutionism could not admit, instead, for a same society to return to an already concluded stage of growth.

'Many people, though, - observed Neurath - would not be satisfied by such an evolutionary vision and would affirm that, in respect to a certain end, mankind would remain unvaried: for example, the sum of all happiness or unhappiness, or morality etc.' (Neurath 1907, 146). Neurath called such an attitude stationary and represented it graphically as a line parallel to the progressing of time (Fig. 2). In this case also, deviations from the permanence of a character would be considered only temporary, cyclical, or erratic. 'The history of mankind is, for this people, just an up and down, in the end all returns to the same state' (ibid.). The Austrian school of thought (Menger 1883), and later what is collectively termed as neoclassical economic theory, by refuting historicism, implied a historical premise of idealistic permanence. As Neurath underlined (Neurath 1907, 152), their methodological attitude was based on Machiavelli's maxim that:

> Any one comparing the present with the past will soon perceive that in all cities and in all nations prevail the same desires and passions as always have prevailed; for which reason it should be an easy matter for him who carefully examines past events to foresee those which are about to happen in any republic, and to apply such remedies as the ancient have used in such cases. (Machiavelli 2012, 98)

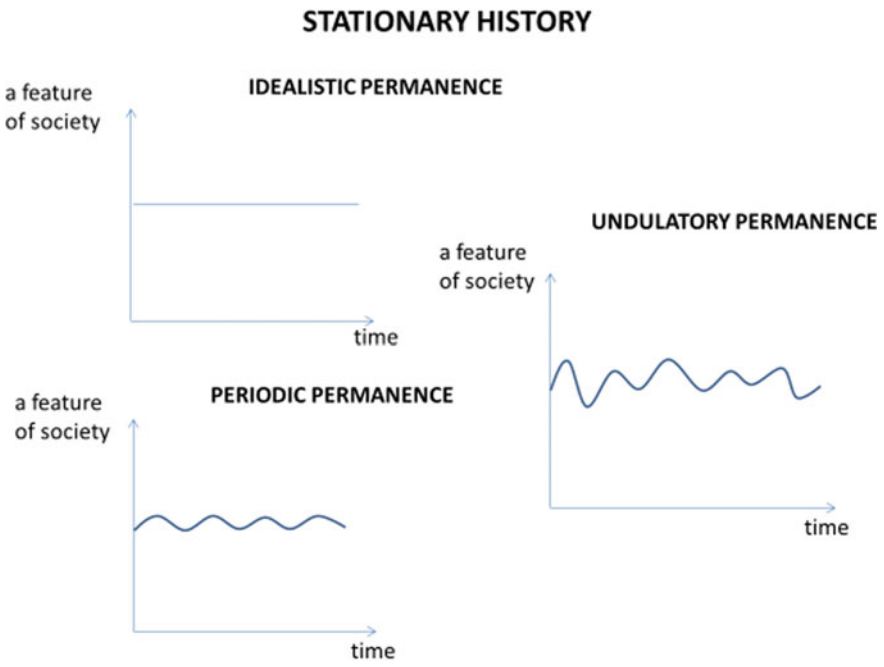


**Fig. 2** Stationary philosophy of history

According to such premises, economic actions derived from characteristics that were invariable in respect to time and space: idealistic permanencies. Invariable the problem of scarcity, invariable the rationality in the efficient use of resources, invariable man's self-interest. The economy could so be studied independently from varying institutions or social norms, and different economies were fully comparable across time and space.

Meyer's circular interpretation of history, instead, perfectly represented the periodic permanence hypothesis. The cycles of western evolution, one in antiquity from the twelfth-century BC to the spreading of Hellenism and the modern one, starting with the fall of the Roman Empire up to the nineteenth century (Hatscher 2003, 67–68), allowed comparisons among their phases, 'middle-age', 'classic' and 'modern', and among the institutions that characterised them (Neurath 1907, 145–148).

Stage theories like that of Bruno Hildebrand allowed a different approach to the problem of comparability (Neurath 1907, 147–148). By graphically representing the three stages of economic development: '*Naturalwirtschaft*', '*Geldwirtschaft*' and '*Kreditwirtschaft*', it is possible to confront the different results in terms of comparability by adopting a premise of idealistic evolutionism or periodic permanence (Fig. 3). As seen, assuming a linear evolution of history towards a teleological end would not allow for the same economy to return to the same stage of growth, followingly comparisons could only be between different societies that at the same time or in different times passed through one specific stage (Fig. 4). According to Neurath, this

kind of comparison had been the first to be practiced by historiography, in the seventeenth and eighteenth centuries, even in a simplified and often superficial fashion. Main studies had analysed the emergence of the cities in antiquity and in the German states, or the functioning of the agricultural systems from the economic and juridical point of view. A boost to comparative studies had then come from the popular doctrine of the state of nature and the successive evolutionary path of history (Neurath 1907, 153). Main setbacks had followed the French revolution and the spreading of liberalism, both events that, in the eyes of Neurath, had made the comprehension of the past more difficult and had hindered fruitful comparisons (Neurath 1907, 158). Only the German historicist tradition had fostered again this strand of research in the nineteenth century, even if through harsh debates and methodological disputes. Fruitful results in economic historiography would be borne until the 1930s (Heaton et al. 1930) and even further, not only in the Marxian tradition (Rostow 1960).

Adopting the premise of the periodic permanence (Fig. 3), instead, comparability became possible even for the same economy, passing through the same stage of development again and again (Fig. 4). Well before Eduard Meyer, this kind of philosophical assumption and historiographic tradition was typical for all family and clan recounts based on a biological view of society (Neurath 1907, 148). This implied, obviously, an idealistic permanence assumption in regard to the character of men: confronted with the same situation, leaders as common people would react in the same way and cause the same consequences, putting the eternal cycle in motion. The same applied to all those economic cycle theories that assumed the inevitability of boom and boost periods in consequence of some permanent characteristic of men or of the economic system.

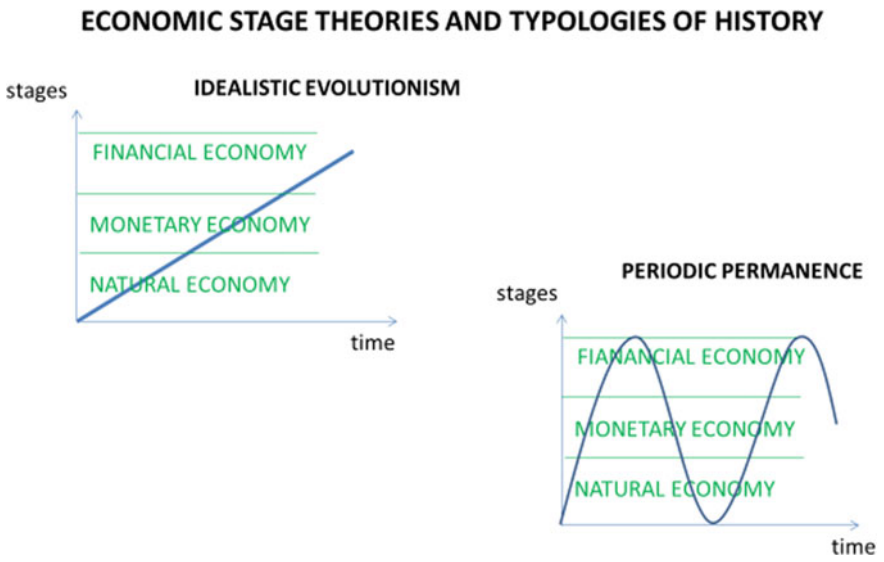


**Fig. 3** Stage theories and typologies of history

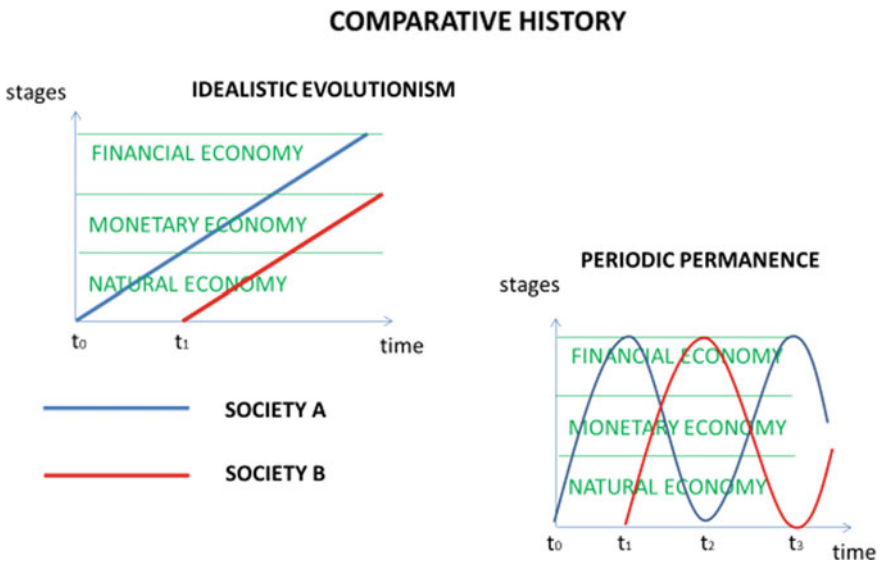


**Fig. 4** Stage theories and comparability

In Neurath's scheme, a third philosophic assumption, that of an anarchic philosophy of history, finally regrouped anyone who would not admit any permanence or constant improvement in societies. Changes would be continual, undulatory, or periodical, but erratic, showing no direction or end. Comparisons, in this case, would have no sense.

## Lessons from History: Economics as a Comparative Science

Neurath believed that much had been lost to the economic science, by abandoning the study of antiquity (Neurath 1910a, 244). By devising a refoundation of the economic science, he so decided to make out of it not only a science of happiness, but also a comparative science open to the suggestions of the past.

The set of variables he chose to measure and compare the happiness of people and the wealth of an economy was simple and quantifiable in kind (Neurath 1917a, 1917b). Neurath defined as *Lebenslagen* the life conditions influencing individual happiness (*Lebenstimmung).* Life conditions included necessity goods and services available for consumption and consequently the productive forces and natural constraints of a country, but also 'its state organization, the diffusion of innovative capability, the organizational know-how, stupidity and laziness and so forth' (Neurath 1917a, 8). In his statistical book *Modern Man in the Making*, published in

1939, Neurath implemented this kind of measurement and vividly represented statistics regarding *Lebenslagen* with Isotypes[21] comparing the availability of food and drinks, raw materials, and energy resources in the United States and Canada, Europe, and the Soviet Union. Out of the collected data, Neurath further construed silhouettes for many countries in the world, representing the average length of life of female population, suicide rates, literacy, and the possession of radio sets. The resulting scheme allowed an intuitive comparison of the wealth, in Neurath's definition, of the respective nations. Compared, for example, with simple data on income per capita, the suicidal rate comprised in the silhouettes cast a shadow on the otherwise brilliant performance of the United States and Great Britain, while giving merit to countries as India, Spain, and Italy that were conventionally classified as poor.[22] It should be underlined that all the compared quantities consisted of in-kind measures, not monetary measures. The reason for this choice was that while monetary and in-kind values were both useful to measure states of happiness, the latter could be collected also in absence of a market economy and thus had a wider use and a greater hermeneutical value.

At the beginning of time Neurath considered *Lebenslagen* as fully determined by natural and physical conditions—i.e. quantity of available fields, minerals, forests, water supply, etc. He consequently defined such situation in a precise set of time as *Lebensboden* (life base) (Neurath 1917b, 487). But with the evolution of society an order of society had emerged that could counter the effect that such primary conditions had on *Lebenslagen*: the *Lebensordnung*. It was this slow emergence of a *Gesellschaft* out of the primordial *Gemeinschaft* that had led to the development of theories studying the causal relationship between the newly erected institutions and the sensations (pleasure and pain) of individuals (Neurath 1913, 442). A calculation of happiness had arisen, as in Aristippus and Epicurus, that through mercantilism had developed all the way down to modern economics. Neurath's own definition of economy derived from this tradition of thought.

Denominations were, as always in Neurath, full of significance: *Lebensboden* is the base of life, *Lebenslage* is the condition of life, and *Lebensordnung* is the order of life. *Lebensboden* is historically determined, while *Lebensordnung,* as the material construction of the *Weltanschauung,* is determined by men and given only in each period of time. Comparing the *Lebenstimmung* caused by a *Lebensboden* with the *Lebenstimmung* of another, gave as a result a judgement of relative happiness. Given the same *Lebensboden* to start with, instead, comparing the *Lebenstimmungen* related to diverse *Lebensordnungen* resulted in a judgment of relative economy (Neurath 1917b, 490).

Neurath would so define an economy as the comprehensive set of actions, prescriptions, and attitudes—*Lebensordnungen* - having in any way influence on the happiness/wealth of men. In his words: 'The scientific study of these economies,

[21] On Neurath and his international picture language, see: Neurath (1936) and Hartmann (2014).

[22] Similarities between Neurath's theory and recent contributions of Amartya Sen to welfare economics, as well with statistical instruments as the human development index are unmistakable (Leßmann 2007).

the Lebensordnungen determining the Lebenstimmungen, will be named economic theory'(Neurath 1917b, 492).

Given this definition, Neurath considered the study of ancient economies as a source of inspiration for modern-day economists, suggesting feasible alternative institutional settings to the existing free market economy. His own popular booklet on *Antike Wirtschaftsgeschichte* (Neurath [1909] 1918) analysed in detail the economies of antiquity from the point of view of their *Lebensordnung* and specifically their *Wirtschaftsordnung*. The pamphlet contained information concerning economic institutions, taxation, monetary circulation, exchanges but also economic thought and the social appreciation of the diverse professions from ancient Egypt to the European middle ages. The influence of Eduard Meyer is unmistakable (Neurath [1909] 1918, 5). Neurath, in fact, identified three stages of development that had characterised both the economies of Ancient Greece and Rome: a first stage subject to bureaucratic control, a second stage of free market, and a last stage of renewed bureaucratisation with new institutions. The West, though, had not followed the same stages in its modern development, but had substituted the bureaucratic control of the third stage with an ulterior fragmentation of economic action. Another echo of the teachings of Meyer is to be found in the description of the negative consequences of the monetisation of in-kind economies. 'We see - wrote Neurath - that the monetisation conquers land after land, as an infection, and with it the slavery of debt that for centuries oppressed even Rome and Greece. Monetisation is a creation of international trade and would not have arisen in a national context. When it comes in touch with a developed economic order, it brings about change, in simpler economic orders, instead, it causes disruption' (Neurath [1909] 1918, 17).[23] Neurath, in fact, preferred the grand in-kind economy—*Großnaturalwirtschaft*—of ancient Egypt,[24] a preference that cost him the derision of many colleagues.[25] Imagination, sparked by historical comparisons, was not *en mode* among German economist, even of the historical school, who preferred to relegate the past to a primitivism in respect to which modernity would remain incomparable. 'Economics - countered Neurath - should not so much ascertain the historical course of facts but understand the functioning principles of given institutions'(Neurath 1910a, 244–245). The past would so become an unending source of knowledge and perhaps happiness. This is the case of the pictorial language, isotype, that Neurath derived from primitive paintings and hieroglyphics (Neurath 2010). His aim in creating a universal language, understandable by everyone, was to spread all kind of notions and statistical data regarding the present economic order and other comparable ones to the widest public possible, to enable people to democratically choose the best economy in respect to their prospective happiness.

[23] Similar the judgement of Meyer with particular reference to the effect of monetisation on the mentality of the landed proprietors in Rome (Meyer [1895] 1910b, 110).

[24] On the case of Egypt see also: Meyer ([1895] 1910b, 92–93).

[25] Lujo Brentano defined Neurath a "romantic economist of the Ancient Egyptian school" (Uebel 2004, 75).

Neurath's attempts to holistically redefine economics as a comparative science were not appreciated by contemporaries, with the exceptions of Max Weber and Joseph Schumpeter who vainly attempted to facilitate his academic career. The harsh judgement felled by Ludwig von Mises was just one among many (Mises 2009, 32). The many debates that lacerated the economic science at the eve of the twentieth century were a question of academic power and politics as much as of methodology of research. As such the participants in those debates did not search for a solution but mainly aimed at a revolution that would open the way up to academic positions and allow the spreading of new economic policies and practices. Historical comparisons would so be mainly undertaken by the newly founded sociology under the wing of Max Weber, while Neurath himself would be appreciated and remembered for his philosophical studies.

## Conclusions

The flourishing of studies on ancient economies in German-speaking academia in the course of the nineteenth century sparked many debates. The one between the economist Bücher and the historian Meyer represented best the different philosophical assumption on history of political historians on one side and economists of the historical school on the other. Not only did the methodologies of enquiry differ between the two camps—singularity of the historical fact and contextuality here and causality there—but also the philosophy of history—biological cycles in one case and linear evolution in the other. The consequences on the usefulness of comparisons of the same economy at different times or of diverse economies at the same time or in different moments were relevant. As the economist Otto Neurath synthesised in his dissertation in 1907, Meyer's conception would allow wide ranging but hazardous comparisons, while linear theories of growth in stages created an unsurmountable divide between 'modern' and 'primitive' economies. A solution to the problem, proposed by Neurath, was to transform economics in a comparative science, based on in-kind statistics, capable of evaluating the effect of different economic systems on the happiness of people. The study of antiquity, in this regard, would offer the richest material of enquiry and many future options of institutional change. One example was the pictorial universal language, devised by Neurath on the basis of ancient examples, that enabled people to acquire information easily and as such enriched their capacity to participate in the democratic decision process, enhancing their happiness.

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# Development Models

# Archaeological Evidence of the Political Economy in Pre-State and Early State Societies in the Near East. Mesopotamia and Anatolia, Some Remarks and Comparisons


**Marcella Frangipane**

## A Few Preliminary Thoughts

Before we can set about examining the economies and political economies in pre-industrial, pre-capitalist and pre-mercantile societies, we must set aside all the usual categories we automatically use and try to understand the real bases of economic thought in those societies.

It is certainly difficult for us to understand and even conceive forms of economic goals and relations that are different from the modern or contemporary ones with which we are familiar, and which refer to the economy as a system of 'rational actions' aimed at achieving maximum output with minimum effort. In today's terms, economic rationale is independent of politics and social ethics and aims at producing 'wealth', determining the 'value' of goods based on their 'scarcity' and of the rules established by the interplay of market forces. Precisely on account of our difficulty in understanding different types of rationales, the debate on ancient economies among most scholars has focused on the contrast between those who tend to see 'the first expressions of rational economic behaviour' appearing very early on, in the earliest Near Eastern societies, and those who tend to deny any recognisable form of economic rationality before the Greeks and Romans (see the discussion on this issue in Steinkeller 2015). I think, however, that this is not a matter of 'rationality', since, as Monika Poettinger has already pointed out, rationality as 'the effective use of means towards an end' has always existed in any economic action, but 'in every epoch it would be characterised by its own means and its own ends' (Poettinger 2013, 143–146). This is crucial to understand the profound differences between the political economies of different, sometimes very different, societies. The aims pursued by economic actions or strategy in early formative societies with some kind of central government or leadership may ultimately have been not only, or

M. Frangipane (✉)
Department of Sciences of Antiquity, Sapienza University of Rome, Rome, Italy
e-mail: marcella.frangipane@uniroma1.it



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not primarily, 'economic' in terms of today's categories. The search for goods in the emerging early state societies in the Near East, for example, appears to have not always been motivated by the need to solve problems of 'scarcity' or for the explicit purpose of accumulating surplus as wealth in a competing interplay among various components of the society, but very often appears to have been part of the political goals of the leaders/rulers, who seem to have aimed at controlling growing sectors of the basic production system of the population, by controlling the labour force (Steinkeller 2015, 5), and to some extent means of production, thereby consolidating their legitimacy to rule and exercise political power over the community and the territory. Centralised control over the movements of goods, already very clearly envisaged and theorized by K. Polanyi (Polanyi 1944; Polanyi et al. 1957), found its ideal tool in the introduction of sophisticated administration systems and an increasingly powerful bureaucracy, which were distinguishing features of Mesopotamian and Near Eastern societies. The boundary between political and economic spheres and ends is obviously ill-defined, and the leaders of the community and the persons in power certainly accumulated economic power as well, becoming the principal, strongest and unrivalled player in the economic competition. It is therefore crucial to try to understand the primary goals of their economic behaviours in order to identify their 'economic policies' and ultimately the functioning of the economic system as a whole.

It is certainly not easy to isolate and recognise the 'ends' and 'means' of a different type of 'economic rationality'—even very different and distant from what we are used to—especially in the case of the earliest centralised societies in the Near East that I shall be analysing, where the economy appears to have been closely embedded in politics and social relations systems. But these societies also were at the forefront of the historical process of State formation and trying to understand the economic relations and the modes of production and surplus appropriation that formed their backbone may lead to a significant advancement of our knowledge on these issues.

I would like to start by revisiting some basic concepts normally used in the analyses of economic phenomena, looking at them from the perspective of what we know from the early Near Eastern societies. The first concept to be examined in order to identify the economic objectives of a social group and the main object of contention within society to achieve these objectives is the concept of '*wealth*'. What was deemed 'wealth' for that particular social group?

Wealth is essentially all the material goods available to society or individuals to guarantee (1) their subsistence and (2) maintaining their material and social conditions as individuals and as a group. Where the production and consumption system of material goods is based on equality relations, I think that the system tends to preserve the existing conditions unless some 'external' factors of various kinds intervene to break the equilibrium. But where social relations are essentially based on inequality, in the sense that some individuals or groups for some reason are granted some kind of privileged access to certain essential resources, the system will often further widen the inequalities, producing change, sometimes radical changes, in the original conditions. In other words, those in a socially accepted position of privilege tend to use their prerogatives to extend their control and acquire more privileges by widening

the social gap between them and the rest of the community. This is what I think we have found, as I shall be trying to show shortly, in 5th and 4th millennium BCE Mesopotamia.

Bearing these premises in mind, the first crucial question to ask is *which goods* and which resources in each society are seen as essential for the system to function, and *constitute 'wealth'* in the mind of that community?

The second question, which stems from the first, is *what is the socially significant use made of this wealth?* Who uses it, how is it used and what kind of privileges does it confer on its holders?

In so-called 'formative' societies, generally coinciding with pre- and proto-historic societies, the first form of wealth accumulation by élites varied in kind in different social and economic contexts and in different parts of the world and shows that these goods were used differently and for different purposes by the population in general and by the emerging élites. A basic distinction has to be drawn between the staples linked to subsistence, and the so-called luxury and artisanal craft goods, usually linked to the sphere of prestige.

*Staples*, produced from farming and livestock, excluding by-products such as wool and flax, were perishables and had to be consumed, being unsuitable for long storage, and had to be 'reinvested', either by trading them for other goods or by using them to remunerate the labour force. This labour force could be used both in the production of more staples, trying to raise production and generating surpluses, and/or in public works or craft production. A system of this kind gradually expanded to the appropriation of the means of production such as land and livestock, to be exploited through the same labour force. But it did not lead to an accumulation of goods in the form of wealth, since they had to constantly be put back into circulation.

At the same time, increasing control over the lives of part of the population must have led to the constant growth of 'power', which was usually not so much expressed in the display of accumulated wealth, as in the construction of imposing seats of power, and was usually underpinned by powerful ideological legitimation, often in the form of religious/cultic consensus.

Public works extolled the leaders, their power and their ability to offer benefits to the people, such as the mass redistributions of food. The latter must have seemed to be such a huge 'gift', since it could not be returned or reciprocated, and this further increased the elites' social distance and the submission of the population. It is no coincidence that some of the most important public works in the initial political and economic hierarchical formation phase of redistributive economies were temples and ceremonial areas, where redistribution had a hugely important social and ideological value, which further boosted the way the whole system operated.

Economic and political strategies in these societies were therefore very closely related, as was the interaction between 'wealth' and power, to such an extent that it is difficult to recognise which of the two was paramount.

*Artisanal and luxury goods* were, conversely, durables; they could be accumulated, and be used in various forms. Items of common use, even made of rare or not easy to obtain raw materials—such as obsidian tools or precious stone or metal ornaments—were object of exchange and circulated widely. But if accumulated exclusively in

the hands of some particular social groups, they were used essentially as a means of displaying their owner's 'prestige' and, to some extent, power. This was specifically the case when these objects, mostly consisting of metals, were concentrated in the public or private 'seats of power' and in certain burials, flaunted as symbols of wealth. In the burials, this symbolic function was also accompanied by the annihilation and actual destruction of the wealth, which disappeared from view and from circulation, and by so doing enhanced its symbolic value (Ling et al. 2017; Wengrow 2011; Stork 2015). The very common practice in certain societies to destroy metals and precious objects in burials may have had different meanings depending upon whether it was done widely in many tombs, in which case they might reveal a kind of social competition, or whether it was only the prerogative of certain special burials, in which case its function would have been to further emphasise the social distance and the dominant role of the individual buried there and her/his family or social group. In many instances, both aspects were present.

In any case, this way of using luxury objects, particularly metal objects, served no economic purposes in the earliest hierarchical societies, but fundamentally acted as a social and political tool. Rather than real wealth, these objects represented a '*symbolic wealth*' that was able to produce prestige and power, but not to generate more wealth (Frangipane 2017).

*Metal hoards* deserve a different consideration altogether. They were generally scattered around in the territory and sometimes were also present in settlements, noticeably in European pre-protohistory, but less frequent or less widespread in the Near East. Hoards may have had a real economic function when they were stores of valuable goods to be put back into circulation, but the main nature of their value, whether symbolic or real, depended on their social function, on the producers and the beneficiaries.

The situation changed in mature states in later periods (late 3rd and above all 2nd and 1st millennium BC) when the production of metal objects also included widely used weapons and tools. In this context, both technology and trade in crucial and rare raw materials—such as tin, capable to substantially transform the production of bronzes—developed considerably to become an integral part of the economic strategies pursued both in the private and public sphere. Material evidence of this transformation (both archaeological and textual) lies in the new enlarged and more regular trade networks attested in the Near East from the late 3rd millennium BC onwards, as well as in the fact that certain materials, most of all metals, and particularly precious metals such as silver, acquired a codified and measurable 'value' (Steinkeller 2016; for a general overview on the birth of weight and measure systems, see Rahmstorf 2016), which only made it possible to fruitfully use them in exchange transactions, generating 'profit' or at any rate obtaining an income from trade (Frangipane 2018b).

In the following, I shall briefly compare *two models of hierarchical societies* in the pre-proto-historic Near East in which various types of social and political organisations had conditioned and driven different political economy strategies by the emerging élites: the 4th millennium Mesopotamian world, and the 3rd millennium Anatolian societies.

## Economic and Political Centralisation in 4th Millennium BCE Mesopotamian World

### *Economic and Political Strategies in the Early Centralised Societies of Mesopotamia*

The region known as Greater Mesopotamia, following the courses of the Tigris and the Euphrates and the bordering areas (Fig. 1), had continuous and intense internal contacts from the Neolithic onwards, perhaps also accompanied by internal migrations that formed the basis for the subsequent formation of very similar models of centralised societies in the whole of this large area, albeit with clearly recognisable regional differences (Frangipane 2007; Carter and Philip eds. 2010). The roots of these new societies lay in Lower Mesopotamia. This was a region characterised by potentials and resources of various kinds (good extensive croplands, others more suitable for horticulture, coastal and various lagoon lands with plentiful fish resources, pasturelands, etc.), but also by arid and very risky climatic conditions (Adams 1981). The vast plains suitable for cereals offered great production potential provided that the people were able to control these risk factors.

It was precisely the ecological differences in a restricted area, combined with potentially expansive cereal production, though subject to the need for irrigation and water management, that were probably the main reasons for the early introduction of economic centralisation and related redistribution practices dating back to the very

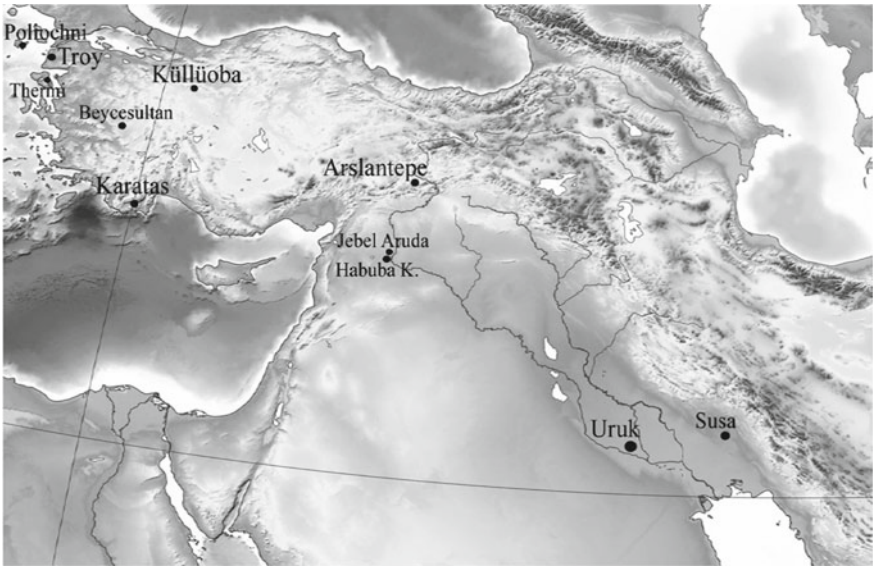


**Fig. 1** Map of the near East with the sites mentioned in the text

first occupation of the territory (Adams 1966; Pollock 1999). The 'redistribution' system based on the centralisation of staples in various forms (offerings, tributes) by high-ranking persons and their redistribution in public and élite environments probably made it possible to more efficiently coordinate and manage a potentially rich production system varying in different zones and exposed to risks, making it possible for products to circulate among different sections of the population and attenuating the effects of crises that might arise in some micro-zones (Adams 1966; Frangipane 2018a). This type of coordination and economic control was linked to a society based on potentially stratified and unequal kinship-based structure, composed of large and competitive households (Pollock 1999; Frangipane 2007). A kinship system based on hierarchical descent may have, from the beginning, given rise to inequalities, archaeologically evidenced, already in the 5th millennium BCE (in the so-called Ubaid period), by large tripartite houses, very likely used to host extended families. These buildings, in the few extensively excavated settlements of this period, were standing isolated from one another as very distinct units, and one of them usually stood out for its dimension and special features suggesting it was the residence of a high-status or leader family, as is shown at Tell Abada and Tepe Gawra XII (Jasim 1989; Roaf 1989; Stein 1994; Rothman 2002; Frangipane 2007). While these differences were not necessarily associated with economic privileges initially, it is highly probable that certain high-ranking individuals were invested with increasing political and religious authority and perhaps also with the power to coordinate production by centralising and redistributing staple commodities (crops, livestock, and fish) in a ceremonial environment.

It is no coincidence that Lower Mesopotamia also saw the very early emergence (in the early Ubaid period) of religious ceremonial institutions housed in architecturally monumental buildings, in which evidence of ceremonial food distributions was found. It is likely that the high rank figures managed the rituals and the ceremonial food distributions, and the temples were the main places in which the community leaders performed their political, ceremonial/cultic and economic activities at the same time. There are very few recent archaeological data on this region, but thanks to the information obtained from a few 5th millennium BCE sites (Ubaid period) and, most of all, from 4th millennium large urban centres such as Uruk-Warka (Uruk period), we may offer hypotheses about the gradual development of a highly centralised organisation (Adams 1966; Frangipane 1996; Liverani 1998; Pollock 1999). The interference by the political and religious authorities in the basic economic life of the population has been further demonstrated by the hundreds of seal impressions found in many public areas of the Uruk period and the thousands of pictographic tablets found in the main city of Uruk-Warka (Nissen et al. 1993; Nissen 2015; Frangipane 2018a).

This circuit revolving around the income and outcome of staple products—basically foodstuffs—, which had probably begun in a ritualised form in the 5th millennium BCE, must have gradually expanded to accumulate further resources, not only in terms of commodities but also as means of production, land and livestock, which, together with an increased control over the labour force, would have allowed to obtain ever increasing quantities of staple goods. Since foodstuffs could not be

stored because they were perishable, they must have been constantly reinvested, gradually generating an 'entrepreneurial' type system which set aside at least part of the accumulated commodities to support an increasingly large number of workers, and consequently generating the production of new commodities. This system therefore generated surplus to be reinvested, while increasing numbers of individuals were becoming impoverished and in need for support, thereby further fuelling the system (Risch 2016; Frangipane 2018c).

In this situation, the ideological and religious legitimation of the authorities, and their right/duty to manage the 'res publica', and to intervene in substantial aspects of the subsistence economy, must have been an essential factor for ensuring the running of the system, and its political and social solidity. This power, which was also by now economic power, continued to enjoy a legitimacy linked to the cultic sphere. The large sacred Eanna precinct at Uruk, which occupied a vast area in the centre of the city, consisted of numerous architecturally different buildings that were probably the headquarters of many different public performances (Fig. 2c), including economic and administrative activities, as evidenced from the numerous seal impressions and pictographic tablets (Fig. 2b) (Eichman 2007; Butterlin 2012; Nissen 2015).

On the other hand, the iconography found on the Late Uruk seals (3400–3100 BC) (mainly attested from their impressions) emphasised the 'social order' with a strong emphasis on the sacred. The images depicted on the seals clearly illustrate the close relationship between the so-called 'king/priest', the temple, and the public and ceremonial management of food, as the three key elements holding up this system of centralised power, which characterised Mesopotamian society in the 4th millennium, and probably had its roots in the original social, economic and ideological structure of the communities living in the plain in the previous millennium. These representations, particularly those found at Uruk-Warka, ideologically emphasised the temple 'offerings', namely foodstuffs that must have entered to fuel the circuit that revolved around food redistribution practices (Fig. 3a–b). Images showing people at work were also common (more frequent in other centres, such as Susa and the colonial sites of Habuba Kabira and Jebel Aruda, on the Syrian Middle Euphrates), and further stress the ideological importance of labour control (Fig. 3d–e) (Pittman 1994, 2001; Boehmer 1999; Amiet).

*Cretulae* and mass-produced bowls (Fig. 2c) also show the vast scale of administratively controlled food redistributions. Administration was the key-tool to control both the circulation of goods and the people involved in the transactions and was also aimed at recording the operations performed in a highly articulated and complex centralised system (Nissen 2015). Administration and bureaucracy, by delegating power to an increasing number of devoted people (the administrators), moreover made it possible for the authority to exercise control over a wider territory.

The management of such a system may have strengthened political power, and this in turn may have also fostered the concentration of an ever-expanding economic power in the hands of the leaders. It is interesting to observe that the paramount leader, the so-called 'king-priest', who is recognisable in the glyptics for his distinct features (dress, beard, long hair), is represented in connection either with the 'temple' or with

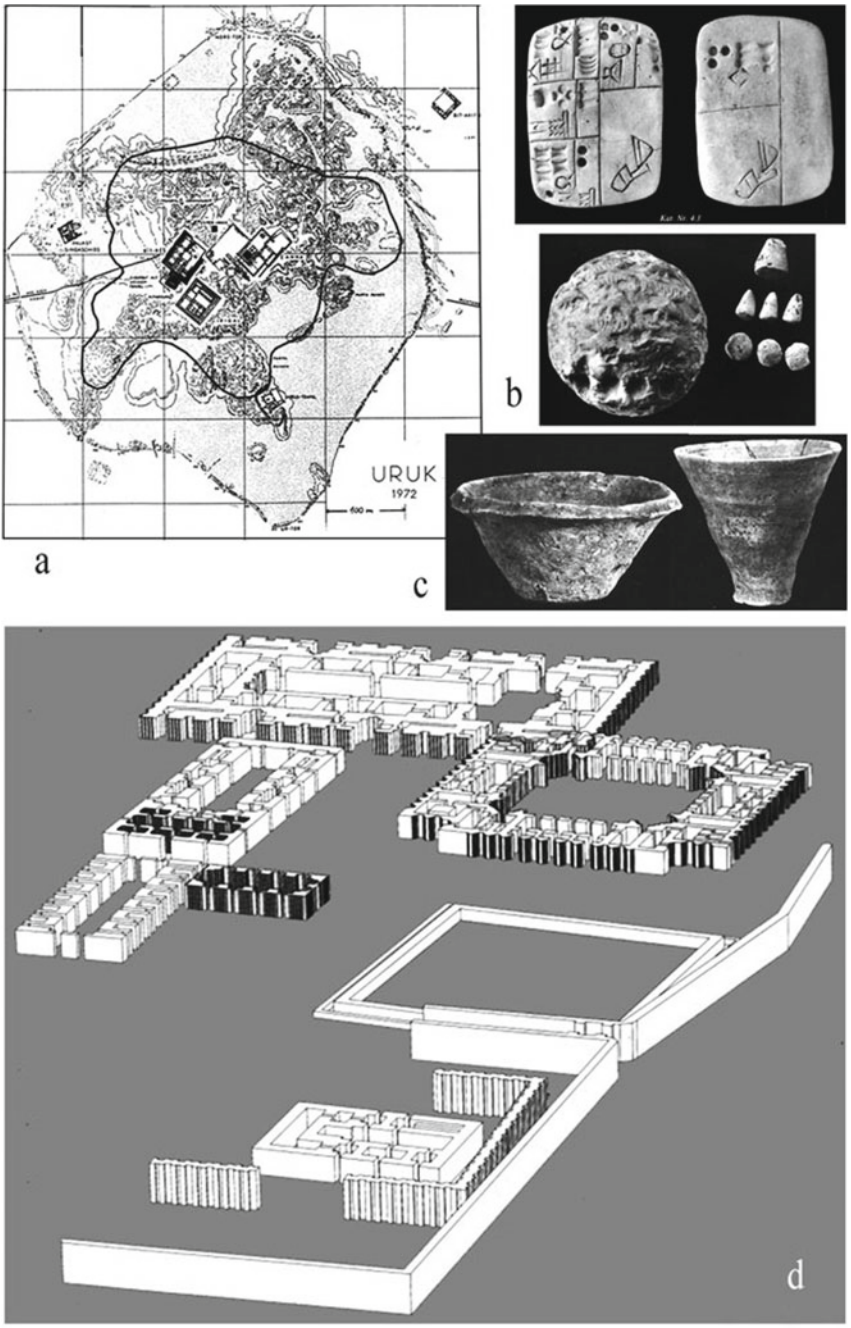


**Fig. 2** Uruk-Warka. **a** Map of the city of Uruk (after Vorläufiger Bericht über die Ausgrabungen in Uruk-Warka (UVB) XXIX-XXX, Berlin 1974). **b–c** Pictographic tablet, spherical bulla with seal impressions and mass-produced bowls from Uruk (after Nissen et al. 1990, p. 14 and figs. 6c and 6f). **d** The Eanna sacred precinct, re-elaborated in 3D (by C. Alvaro, © MAIAO)

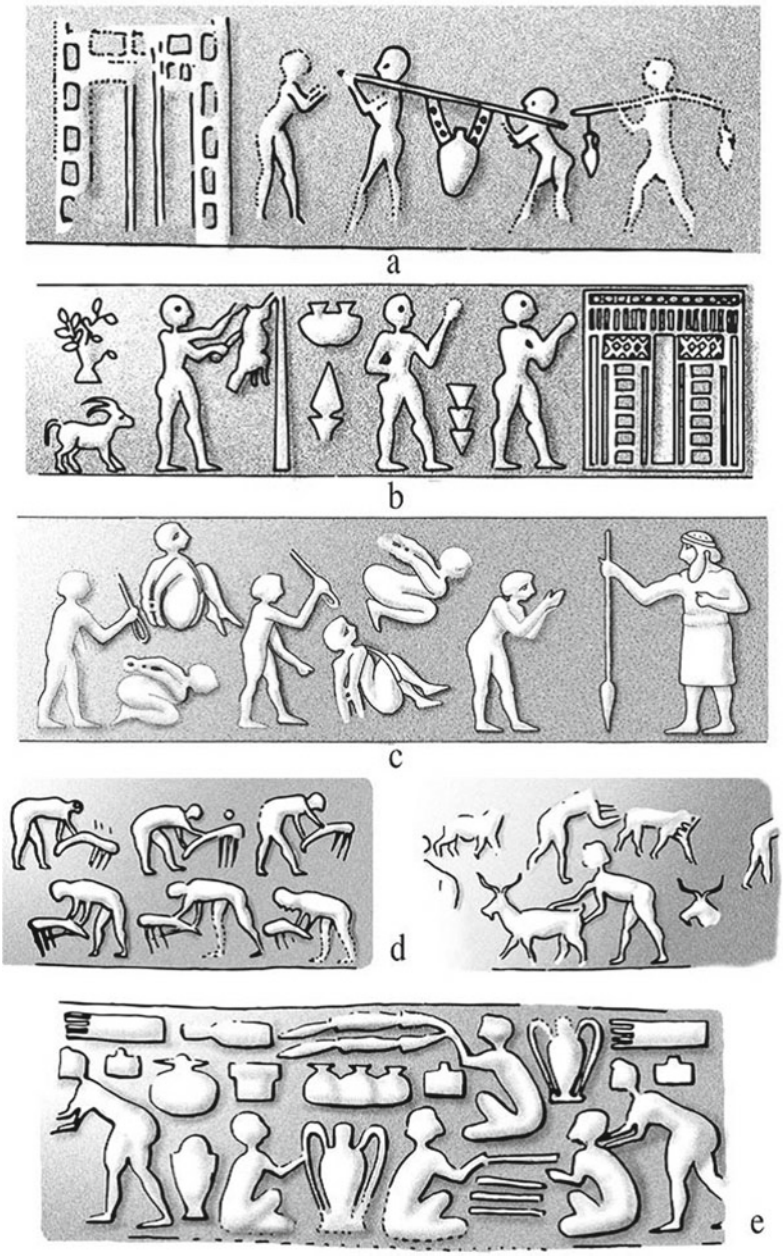


**Fig. 3** Seal designs from Uruk-Warka (Late Uruk period). **a–b** Offerings to the temple (redrawn after Amiet 1961, Pl. 13 bis, D, and Brandes 1979, Taf.30, respectively). **c** The Priest-King in front of subjugated people (redrawn after Boehmer 1999, Taf. 17). **d** Agriculture and animal breeding works (redrawn after Amiet 1972, Pl. 15, 621 and 614). **e** Craft activities (redrawn after Amiet 1972, Pl.16, 646) (re-elaboration of drawings by Alice Siracusano, MAIAO)

scenes where he displays his political power by exercising violence on subjugated people (Fig. 3c).

Increasing numbers of productive activities were certainly also brought into the centralised economic system, as evidenced from the pictographic tablets, on which the lexical lists mention craftsmen of various kinds, hierarchically organised (Nissen et al. 1993). We do not know whether these artisans were 'employees' of the central institutions or whether they simply took commissions from them. Yet by the end of the 4th millennium BC, the central institutions exhibited an increasing capacity to control larger sectors of the production system and perhaps also to somehow stimulate crafts production by increasing the demand for artisanal products (Adams 2004; Yoffee 1995). But the political and economic strategies of the ruling groups seem to have continued for a long time to mainly hinge around controlling staple production activities, which probably grew more thanks to the increasing domination over the surrounding land.

The role of private components in the production activities must have played an increasingly important role as the urban dimension of society expanded (Algaze 2008, 2018; Emberling 2015). Urbanisation played a key role in Mesopotamia and was one of its distinctive features (Adams 1981, 2004; Algaze 2018; Frangipane 2018a), stimulating specialisation and structural interconnection between different cohabiting sectors of the population.

Certainly, artisanal craft activities and trade were given a new boost in the 4th millennium, providing the élites with objects made using new technologies and non-local materials, such as metal (Algaze 2008). But in this phase these objects had, in my opinion, a limited circulation, being mainly used in the elite sphere probably to flaunt power and privilege and to manifest the leadership's capacity to 'control' resources, emphasising the social distance from the other members of the community. I am not persuaded that there is any evidence in this period to show that trade played a major 'economic' role in the political economy strategies of the early rulers of Mesopotamian and peri-Mesopotamian regions.

## *Evidences of 'Political Economy' Strategies in an Emerging Early State System at the Periphery of the Mesopotamian World. The Case of Arslantepe*

The long-term field research carried out at the site of *Arslantepe*, located at the northern periphery of Greater Mesopotamia, in the mountainous region of the Turkish Upper Euphrates in south-eastern Anatolia (Fig. 1), have shown the emergence of a strongly centralised society in the 4th millennium BCE, which was growing in parallel and in connection with the contemporary developments in Mesopotamia. The information we have got from this site confirms with a great deal of details that the goods accumulated and centrally managed in this kind of socio-economic systems were essentially food and the labour needed to produce it (Frangipane ed.

2010). In this site, where a very early and precocious example of a palace complex of the end of the 4th millennium BCE has been brought to light (Frangipane 2019) (Fig. 4b), we have found no evidence to show any storage of durable goods, but a complex of central storerooms where food was kept and continually put back into circulation (Fig. 4a). This is evidenced from the probable presence in the storerooms of elaborate foodstuff (as suggested by the large number of *pithoi* and jars and the absence of seeds) (D'Anna 2010, 2015), the small dimensions of the storerooms—suitable to contain food continuously put into circulation rather than to store large quantities of foodstuffs—, and the huge number of *cretulae* (clay sealings) and mass-produced bowls found concentrated in one of the rooms, all revealing food distribution to large number of people, perhaps workers (Frangipane et al. 2007, 2010). As in Mesopotamian sites, administration was a crucial device to manage this centralised political economy, as is documented in detail by the finding of thousands of clay sealings in situ in special areas of the Arslantepe palace. The thorough study of these materials and of their associations has demonstrated they have been used to seal different types of containers, mainly pots and sacs, but also door closures and locks, by a large number of people with administrative responsibility, who were hierarchically organised, thus suggesting the emergence of a bureaucracy in connection with a systematic and continuous circulation of foodstuffs (Frangipane et al. 2007).

Even the iconography of power, expressed both in seal designs and in wall paintings at Arslantepe, was interestingly linked to the sphere of staple production and stresses the symbolic and real relationship of the person in power with food production and the related activities (Fig. 5).

In the Arslantepe case, however, contrary to what we have seen in Southern Mesopotamia, and in connection with the foundation of a precocious palatial system, there was no clear reference to the ritual or religious sphere. And there was no urbanisation process as well.

The analyses of the sophisticated metal objects found at Arslantepe (whose location is not far from the northern/northeastern Anatolian mountains that are rich in metal ores) have shown that they are made of a type of copper (arsenical copper with specific trace elements, such as nickel and antimony) whose circulation seems not to have gone beyond the area of the Turkish-Syrian border in the Middle Euphrates valley (Palmieri et al. 1999; Palmieri and Di Nocera 2004; Di Nocera 2013). This is evidence of a restricted regional circulation, suggesting that the metal produced in the Arslantepe province was probably not intended for long-distance trade towards Mesopotamia, but rather for a local circulation among the elites. The morphology, composition and manufacture of these metal objects are moreover very similar to analogous items found in the subsequent period, at the very end of the 4th millennium BCE, when the Arslantepe palace and its centralised system had definitively collapsed, and a new group of mobile pastoral people linked to South-Caucasian communities of the so-called Kura-Araxes culture settled on the ruins of the palace (Frangipane 2014). Such close similarities with the metal production in a phase characterised by a very different type of society that does not show any evidence of centralisation, while revealing strong connections with mobile populations moving across mountainous areas rich in metal ores, suggest that the metal 'industry' was a

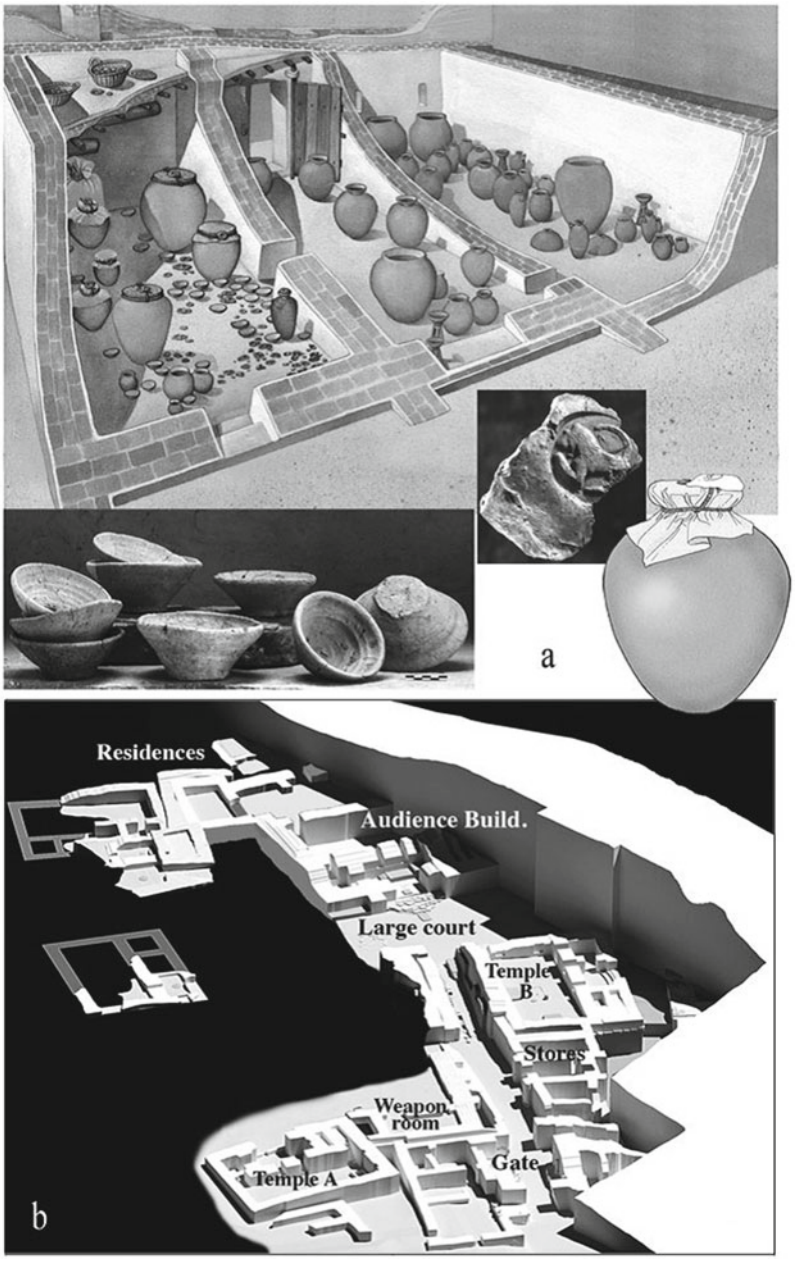


**Fig. 4** The Arslantepe 4th millennium Palace (Period VIA, 3400–3200 BCE) and evidences of central storage. **a** Reconstructive drawing of the three storerooms with a relocation of the materials in situ after they have been restored (drawing by Tiziana D'Este), wheel-made mass-produced bowls for redistributing food, cretula with seal impression and the reconstruction of a sealed pot. **b** 3D drawing of the palace complex (by C. Alvaro) © MAIAO

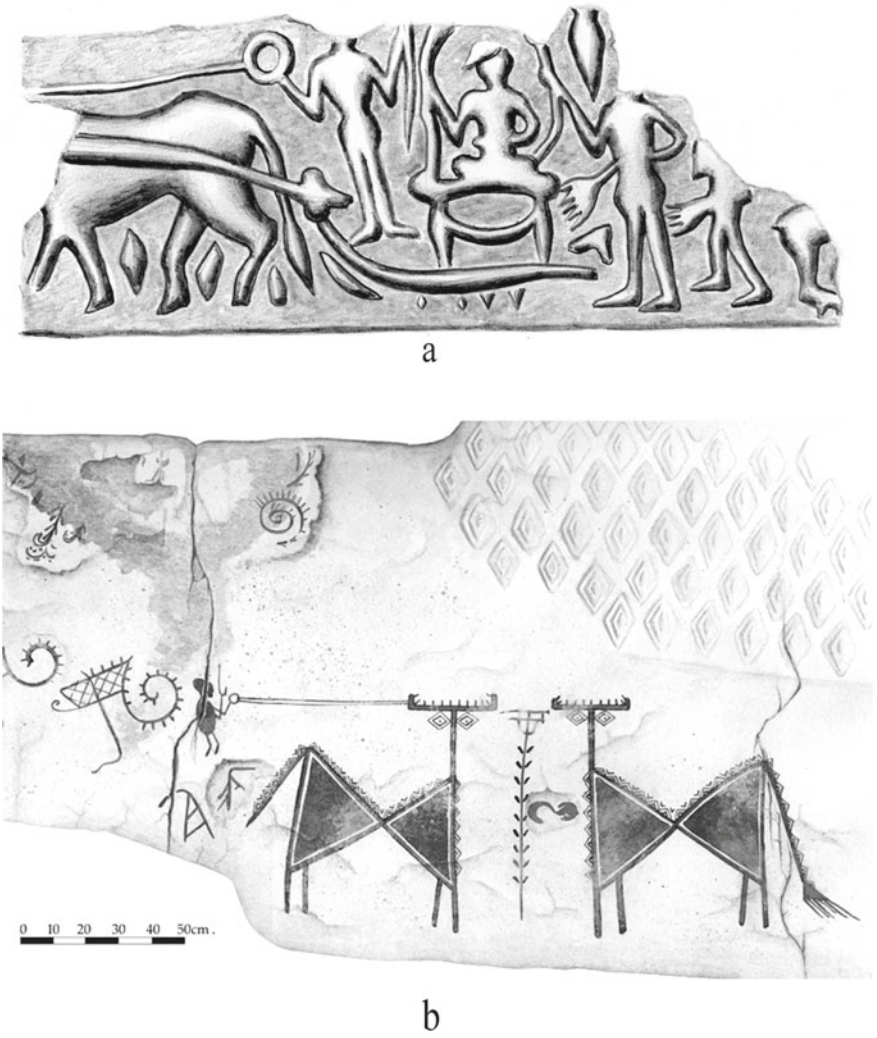


**Fig. 5** Arslantepe, the iconography of power. **a** Cylinder seal design showing the transport of a leader figure on a threshing sledge car (tribulum). **b** Wall painting in the main entrance corridor of the 4th millennium Palace depicting a scene with two oxen driven by a coachman and pulling what seems to be a plough (drawing by T. D'Este) © MAIAO

production run by autonomous groups even in the previous phase, when the craftsmen must have been independent of the central authorities, though certainly stimulated by their requests.

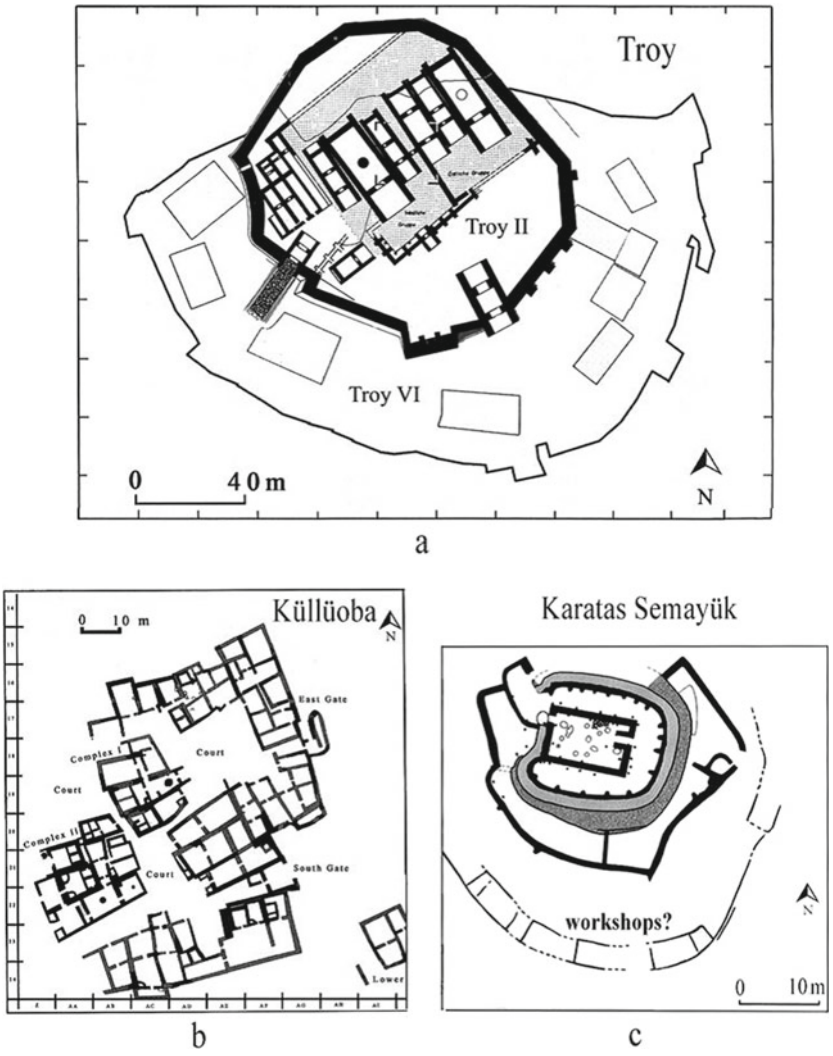


**Fig. 6** **a** Plan of Troy II (adapted from Mellaart 1966, Fig. 43 and Korfmann et al. 2001, Fig. 403). **b** Plan of the upper town building complex at Küllüoba (after Efe and Fidan 2008). **c** The Central Complex at Karataş Semayük (after Mellink 1974)

## A Comparison with the Economic Strategies of the Emerging Leaders in 3rd Millennium Anatolia

The economic policies of the early Mesopotamian rulers cannot be ascribed as a rule to any type of emerging hierarchical society. A very different type of economic strategies and power structuring is for instance recognisable in the early so-called 'urban' societies of the Early Bronze Age in Central Western Anatolia (3rd millennium BCE).

Early Bronze Age settlements in this region, located in favourable well-watered valleys and plains, continued to remain small as in the Neolithic, and a basic economic autonomy of the domestic units seems to have been also retained. This is evidenced from the lack of any substantial central storage of foodstuffs and no evidence of regular administrative practices connected with a centralised control of the circulation of primary goods. Clustering of handicraft activities in the places of power may have existed in some sites, as is perhaps the case of a row of small rooms with a large number of spindle-whorls, possibly workshops for textile production, located around the 'Central Complex' at Karataş Semayük (Warner 1994) (Figs. 1 and 6), and concentration of luxury goods are also attested, as in the citadel at Troy II (Blegen et al 1950, 1951; Korfmann 1995, 2006; Easton et al. 2002), but no redistribution activities or economic transactions involving mobilisation of staple products to finance these activities or support the artisans were documented in Western Anatolian sites, at least judging from the available archaeological evidence. Storage places in central building complexes, in the few cases they are documented, seem to have mainly been deposits of goods for the elites, in the form of accumulation of wealth, as in Troy II, or merely food supply in their residences, as it seems at Küllüoba (Efe 2003; Efe and Fidan 2008). The rare cases of possible concentration of handicraft activities in the seats of power, as may be inferred by the already mentioned numerous spindle-whorls found in the rooms around the Central Complex at Karatas, probably indicate some sort of privileged relationships of the craftsmen with the central elites rather than implying a centralised system of production. Conversely, the development of handicraft must have indeed taken place at a community level, as evidenced from the numerous workshops found scattered in various settlements, such as Thermi, Poliochni and Küllüoba.

There was also a lack of any very prominent public shrines, while evidence of cultic practices or rituals only refer to domestic spheres, as is possibly the case of Beycesultan, levels XVI-XIV (Lloyd and Mellaart 1962). This also seems to refer to a local Anatolian tradition since the Neolithic as suggested by the numerous household shrines at Çatal Höyük (Mellaart 1967; Hodder ed. 2010).

The wealth accumulation by the elites, mainly in the form of metals and luxury goods, at any rate suggests a privileged access to resources that regularly circulated as part of an economic interaction with the community.

The funerary customs, almost absent in the 4th millennium Mesopotamian world, here exhibited a wide range of rituals (cist graves, *pithos* graves, inhumations, cremation, etc.), which were only partly regionally diversified and were not matched by significant differences in terms of the wealth of funerary gifts or the emphasising of social statuses. The diversity of rituals was linked perhaps to a variety of group components, probably related to a similarly variegated picture in the Neolithic. These communities seem to have tended to be based on a clan structure, which had paramount chiefs, but was probably not very stratified in terms of complex social differentiation.

Socio-political élites and pre-eminent social figures, which certainly existed in Early Bronze Age Anatolia, lived in places that were kept separate from the rest of the community, in the architectural form of fortified 'citadels' or upper towns

(Fig. 6), built in the centre of the inhabited areas, where they hoarded luxury objects, particularly metals, as in the most prominent of these places, the citadel of Troy II (Bachhuber 2009). The big boost given to metallurgy in these societies probably came from the incentives given to these activities by the elites, who were the main purchasers of these goods, as well as, possibly, from the protection they were able to guarantee to trade routes. And forms of interregional exchange, or trade, appear to have been well developed among the EB western Anatolian communities (Mellink 1986; Efe 2002; Şahoğlu 2005), being probably also structurally related to the political and social competition that shaped these societies as competing small polities.

The widespread use of fortifications and the fortified compact arrangement of some villages, as well as the large use of metal weapons, suggest in these societies a tendency to conflict, perhaps also for the control of trade routes. It is possible that the paramount leaders acquired their political authority as defenders of the community, and perhaps also as protectors of the routes and promoter of the procurement of raw materials for the craftsmen.

Direct interference by these élites in the people's staple production system conversely appears to have been virtually non-existent. This type of society did not exhibit 'early-state' features and did not evolve in a real urban society.

Only the later expansionism of the great empires in the 2nd millennium BCE and the emulation of the Mesopotamian organisation by the Hittite State deeply transformed the Anatolian societies, their political power structures and their economic system.

## Some Concluding Remarks

All the archaeological evidence shows that food, land, livestock and labour were the main focus of the economic interests of the early Mesopotamian ruling classes and formed the core of the central administrative management system. Control over these resources, by intervening in the basic production systems, gave the ruling classes an immense power over their population, supported by an ideological/religious consensus and managed through an increasingly efficient administration and bureaucracy, which formed the body of the nascent State and the main instrument for effectively conducting its centralised political economy. I believe that the very concept of 'wealth' in these type of formative early State societies in Mesopotamia referred above all to the fully availability of foodstuffs and the means of producing them (Pollock 2012; Frangipane 2018b), and there is very little evidence to show any real hoarding of durables, central control of metal production and the resultant establishment of a system of standard values and equivalences for trading purposes.

Economic relations and the 'value' attributed to materials and objects were to change in the course of the 3rd millennium BCE. The difference between early and mature states was not only a difference in scale but also a difference in terms of quality. The structure of the state, when it reached full maturity in the 3rd millennium, was

transformed politically by taking on a clearly defined territorial character, which, in my opinion, it had not had in the 4th millennium. The economic policy pursued by the ruling classes developed and changed, facilitated by the immense political power they had already acquired before, precisely thanks to their ability to interfere in the life of the population. They broadened their sphere of interests including craftsmanship and trade, by controlling large scale metallurgy and long ranging trading networks, to acquire resources on a regular basis as tin to produce tin-bronzes (Steinkeller 2016). In this framework, they perfected the system for raising revenues in the form of taxes and levies, giving objects measurable 'values' for trading purposes, making it possible to generate 'profit' through these activities too (Sallaberger 2013; Stork 2015; Rahmstorf 2016). In this context the role of the private components in various activities seems to have acquired greater importance and the competition must have consequently also increased. Political and military capacity to attain new expansionist goals and to protect the trade routes supported these new performances, and the ideology of power changed to focus on increasingly extolling military might.

New interregional networks of relationships, variously based and fostered (trade and/or war), linked mature states and empires in an international system of political and economic bonds that constituted the framework of a new, more compatible, though more complex, Near Eastern world.

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# Clash of the Titans: The Economics of Early Bronze Age Mesopotamia Between Empirical Evidence and Theoretical Models


**Giacomo Benati**

## Introduction

*Clash of the Titans* is a 1981 heroic fantasy movie loosely based on the mythological adventures of Perseus. One of the most striking features of the film is the mechanical owl (Bubo) that Hera, unwilling to send her real totem animal, delivers to Perseus as guide to the Stygian witches that hold the secret to defeat the kraken, the frightening titan that, in the movie, threatens to destroy the city of Joppa. In a similar way, I propose to use a "mechanical owl"—the methods and theories of social sciences—to find new means for advancing theoretical and empirical knowledge on Ancient Near Eastern societies, a titanic task indeed.

Indeed, in spite of an extensive literature on Ancient Near Eastern "political economies", published by both archaeologists and Assyriologists/historians, the theories and methods employed by this kind of research do not match the ones routinely employed by political economists in the field of social sciences. This paper advocates that, a step forward in the evolution of the discipline may be made by cross-fertilizing ANE historical disciplines and social scientific methodologies, i.e. adopting questions and methods of political economy enquiry as carried out by economists and political scientists. Given the growing interest of social scientists towards historical data, sometimes reaching back to pre-Classical societies (e.g. Bentzen et al. 2017; Mayshar et al. 2017), this now appears to be a *not* too far future development.

The ANE is, indeed, a unique case study in the landscape of ancient societies due to the availability of unparalleled—and ever-growing—bodies of data and to the crucial role in history as the starting point for fundamental processes characteristic of complex societies (Liverani 2014, 5). The lack of an ancient historiography (unlike

G. Benati (✉)
Department of Economic History, Institutions, Politics and World Economy, Universitat de Barcelona, Barcelona, Spain
e-mail: giacomo.benati@ub.edu



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the Classical world) made the process of reconstruction of ANE history heavily reliant on the availability of primary sources (Liverani 2014, 5). In this regard, written texts have survived in large amounts because the writing material used (i.e. clay tablets) is virtually indestructible, unlike other materials in use later or elsewhere (papyrus, parchment, and paper). The downside of this availability of sources is the fact that new materials are uncovered with regularity forcing specialists (archaeologists or philologists), on the one hand, to continuously produce and publish new materials, and, on the other hand, to revise constantly entire chapters of history adding new details (Liverani 2014, 5). Indeed, as noted by Liverani (2014, 5) the availability and the complementarity of archaeological and textual evidence fuelled not only a large degree of experimentation of methods and theories, but also a more holistic interpretation of the past (from material culture to large-scale history and social structures). Altogether, according to Liverani (2014, 6) "In many respects, then, the history of the Near East is increasingly becoming a workshop for the study of highly interesting phenomena characterising the history of human societies. The concept of 'workshop' has to be understood as a place that allows to break down complex phenomena into their constitutive factors, analysed on their own, in order to detect norms and recreate patterns of behaviour".

Although general historical syntheses continue to be produced, Liverani (2016, 374–375) highlighted the tendency of recent approaches to avoid (or reject altogether) the reconstruction of structural features of social orders and historical change, focussing instead on small-scale and short-term scenarios. Lately, popular trends in ANE studies, are, in fact, small-scale social and economic phenomena (Schwartz 2015; Wilkinson et al. 2013), on differential socio-economic pathways leading to the formation of early urban centres and social complexities (Iamoni 2016; Lawrence and Wilkinson 2015; Smith et al. 2014), collapse and fragility of political and social systems (Yoffee 2019; Cookson et al. 2019; Weiss 2017b). Richardson (2014, 63) and Jursa (2010, 14–15) came to similar conclusions about political and economic history. Although aided by rich datasets on state, kingship, and institutions, Mesopotamian scholars have been mostly absorbed by issues of chronology, dynastic history, microhistory, and international relations, leaving aside questions about the nature of political institutions, actors, and processes, as well as economic performance and overarching structures (Richardson 2014, 63; Jursa 2010, 15). It is also true that ANE scholars are keener on emphasizing the pitfalls of documentation rather than the possibilities (Richardson 2012; Stein 2005).

This paper aims at proposing a framework for harnessing the power of archaeological and textual datasets from the ANE by applying a perspective that derives from the stream of research dubbed as New Institutionalist Economic History (Krul 2018) and adopts the methods and theories proper of political economic research as conducted in the social sciences (cf. Weingast and Wittman 2006). In addition to proposing new analytical tools, the final aim of this approach is that of making ANE's political and economic history more in tune with research questions and methods proper of the social sciences (cf. Smith 2017). The aim of the paper is not to embrace a positivistic idea of social scientific history as opposed to traditional historical narrative building upon humanistic approaches but, instead, to stress that by adopting *also* a social

scientific perspective, we can positively improve the tools at our disposal to marshal and interpret historical evidence. The job of any historian is not just to narrate or describe, but also to analyse and understand the processes in human relationships in time (Davies 2018). As Manning (2018, 19) correctly emphasized, we need not choose sides!

## Big Models and Small Data? Unified Theories vs. Complexity

### *Mesopotamian Political Economy (and History): State-of-the-Art*

Scientific knowledge depends to a great extent on the interplay between empirical knowledge and theoretical development (Weingast and Wittman 2006, 5). It is certainly true that considerable advances in data production in the field have been made (Marchetti et al. 2018), hand in hand with improved understanding and new editions of written materials, now also in digital and annotated form. However, the production and testing of theories lag behind, especially in the field of political and economic history (cf. Richardson 2014). Although, as said above, ANE historical disciplines have proven highly responsive to ideas and methods from other fields, formal political and economic theory has been seldom incorporated into analytical frameworks, that, instead relied more heavily on anthropological theory (cf. Feinman 2008, 2017).

The field of enquiry of political economy provides a good case study for conceptualizing these trends. Political economy has been variously referred to as an area of study or as an approach (Weingast and Wittman 2006, 3). In the realm of social sciences, political economy is defined as "the methodology of economics applied to the analysis of political behaviour and institutions. As such, it is not a single, unified approach, but a family of approaches" (Weingast and Wittman 2006, 3). However, historians of the ANE often articulated political economic approaches following a Marxist-derived agenda, i.e. focusing on investigating "how the ownership of the means of production influenced historical processes" (Weingast and Wittman 2006, 3). Archaeologists generally understand political economy as the study of extra-household economic relations meant to support hierarchical institutions or elites (Feinman 2004, 2). Lastly, Assyriologists approached political economy as the study of institutional archives and/or royal ideology (Richardson 2014, 64). However, following Jursa (2010, 15), they do so without engaging in explicit discussion and use of hermeneutical or theoretical frameworks. Although all these definitions align on the centrality of political behaviours and institutions, what is lacking in the archaeological and historical approaches is the use of methodologies typically associated with economics and political science, i.e. mathematical theory and statistical techniques.

A further point of departure of ANE studies and social sciences relies on the difference between inductive and deductive methods. The former, in fact, relies on

making broad generalization from specific observations (inductive—and sometimes abductive—reasoning), while the latter relies on deductive reasoning based on the rigorous testing of general premises.

In the past decades, a number of "grand" theories have been proposed to make sense of Mesopotamian political and economic developments. In some cases, theories have been generated from the analysis of empirical data, such as the popular "Temple-State" theory stemming from the examination of institutional archives (Foster 1981; Schrakamp 2013). Whereas, in other cases, explanatory models derived from other disciplines have been applied top-down on the material evidence. Just to cite a few influential ones, Algaze's "Uruk World System" fashioned upon Wallerstein's World System theory (Algaze 1993), Marxist-derived models for understanding the relationships between elites and peasants as to the main productive means (Liverani 2016, 131–182), Polanyi's theories of exchange (Frangipane 2018), Wittfogel's hydraulic theories on the co-evolution of irrigated agriculture and social hierarchies (Bentzen et al. 2017), or neo-evolutionism (Yoffee 2005, 8–15, 31–33).

It is most certainly true that the constant production of new datasets forces refinement and reconsideration of theories (e.g. the revision of Algaze's theory about the Uruk expansion, Algaze 2012 and the theory proposed by Stein 1999), but the general absence of systematic testing tends to generate an ever-growing set of competing theories that are very hard to disentangle, validate, or reject, leaving much of their fortune to the personal inclination of researchers, or the reputation of the scholars that proposed them. In fact, although some of the theories and models cited before were challenged or discredited over the years (Yoffee 1995, 2005), some proved incredibly resilient and are still widely used in scholarship. Indeed, a hypothesis or a speculation that is repeated so often is eventually taken as a hard fact, becoming a "factoid" (Yoffee 2005, 7). As brilliantly explained by N. Yoffee (2005, 7), the factoidal nature of some of the mainstream theories in the study of ANE generated circular reasonings about the nature of ancient societies and the process of social change that are still difficult to eradicate.

## *We Shall Overcome*

By looking "across the pond"—in this case, the Mediterranean Sea—three items of research recently emerged in the agenda of economic historians (Manning 2018, 19): (1) Structure and performance; (2) Dynamic modelling; (3) Intercomparison of pre-modern economic institutions.

These research items call for a different engagement with data and theory. On the one hand, it would be positive to adopt questions and methods from the field of political economy (see definition above), and, on the other hand, it would be advisable to improve data processing by incorporating multiple sets of empirical evidence into dynamic modelling frameworks that aim at exploring more structurally the feedback mechanisms and trajectories of change (environmental, social, economic, etc.) in the given societies.

This can be done, at least in part, by employing the methods of quantitative research as employed in economics, political science, and sociology (Hudson and Ishizu 2000; see also Manning 2018, 26). Although it is true that datasets from ancient societies are often patchy and incomplete, accurate marshalling of available information coupled with the use of digital and statistical tools can produce more reliable results (Hoyer and Manning 2018; Turchin et al. 2017).[1] Or at least, results that are deeply grounded in data, data that can be checked, validated, and improved at every step of the analytical process.

Unlike other fields of ancient history (e.g. Ober 2018), well-organized bodies of quantifiable evidence are not yet available for the ANE. However, proxies for calculating economic levels can be extracted from different empirical sources as recently demonstrated by scholars engaged in studying different pre-industrial economies (Bowman and Wilson 2009, 2013; Bresson 2016; Kohler and Smith 2018; Ober 2015). Quantitative approaches have been experimented only lately by K. Padgham (2014), R. Rattenborg (2016), A. Bogaard et al. (2018), and E. Stone (2018) on the corpora from ANE societies but with encouraging results. Although we must be wary of an improper use of quantitative methods that, when applied on poor or limited datasets (e.g. Stone 2018), may generate wrong or deeply biased conclusions, these works open up interesting avenues into broader research questions, such as inequality, institutional performance and change and suggest that intercomparisons can, indeed, be made.

These efforts call for a more systematic integration of written and archaeological data, and overall, for a more accurate systemization of the evidence into proper datasets. As customary in the field of economics, quantitative efforts must always be sustained by thorough explanations about the data collection methods and the sources utilized in the data-gathering efforts, which are usually provided in shape of appendixes to the publication or in the form of codebooks (e.g. http://seshatdatabank.info/methods/codebook/). In some cases, the primary data upon which the analyses have been performed are also provided. This custom in ANE studies is still a sporadic phenomenon (e.g. the supplementary material provided by Massa and Palmisano 2018; cf. Kintigh et al. 2014, 19).

Data integration is also a popular, yet delicate, subject for ANE history given its heavy text-based nature. Considerable methodological work has been done over the years to properly engage with excavated written materials as material culture (see for example Marchesi and Marchetti 2011; Zettler 1996, 2003; Balke and Tsouparopoulou 2016), but cuneiform records (and, in a way, also archaeological datasets) are not usually structured into formal databases populated by statistical units (variables, coded units), a practice which is at the core of quantitative approaches (Hudson and Ishizu 2000). Given the inherently economic nature of cuneiform corpora, and the enormous effort of Assyriologists in digitizing and annotating cuneiform texts, systematic quantification appears not only within our grasp, but also a natural step forward in the evolution of ANE historical studies.

[1] See for example, the CRANE project https://www.crane.utoronto.ca; the SESHAT project http://seshatdatabank.info.

To sum up this section, a social scientific approach built upon methods and tools provided by historical economics and political sciences may be regarded as a welcome addition to the playbook of ANE scholars, that traditionally rely on qualitative research alone. The positive implications of such an approach to the research on ancient economies have been recently summarized by M. Smith (2017):

1. The use of social science approaches and epistemologies will produce more rigorous understandings of past human societies and the causes for their change over time. Social science methods allow to create better descriptions and explanations of human behaviour and society in the past and present.
2. Social science fosters integration with other social and historical sciences, such as economic history. Archaeologists share with other social sciences a concern with, and knowledge of, topics such as social inequality, political domination, urbanization, economic processes, and community formation.
3. The pursuit of social scientific methods will help us to produce knowledge about human societies that is relevant and useful today and into the future. Present day policymakers and administrators are unlikely to pay attention to archaeological accounts using abstract and philosophical humanities-based concepts. Rather, they look to the findings of the social sciences.

## The Economy? A Matter of Structure, Performance and Agency?

Of course, there is no such a thing as a unified definition of what is an economy, but in this case, it is worth citing D. North (1978), the founder of the New Institutional Economics: "the task of economic history [as being] to explain the structure and performance of economies through time". Let us focus now on these two concepts, structure and performance applied to the framework of ANE economies.

As stressed by M. Jursa (2010, 14), economic structures and performances are not usually addressed in Assyriological scholarship, which is mostly concerned with philological details. As a result, the lack of either information or attention to determinants of economic performance hindered the research on key issues such as economic change and growth, contributing to create the idea that ancient economies were stagnant (cf. Clark 2007; Fig. 1.1; Manning 2018, 20–21). Recent investigations into pre-modern economies, especially the ones of the classical world (Bresson 2016; Lyttkens 2013; Manning 2018; Morris 2004; Ober 2015; Canevaro et al. 2018), indicate that also ancient economies were characterized by fluctuations, expansions, and contractions, differential performances, trends which cannot be explained solely by referring to Malthusian dynamics (Goldstone 2002; Manning 2018, 20–21). The interest in detecting episodes of economic growth and decline in ancient economies spurred attention to key determinants of economic change and led to the application of quantitative methods to the study of economic history (Boldizzoni 2011; Rosenbloom 2008). Much of this work has been inspired by research conducted by D. North and others (Milonakis and Fine 2007; Myhrman and Weingast 1994), stressing the

overarching importance of political institutions as agents of economic change and development, the so-called "New Institutional Economics" (NIE). The New Institutional approach is important at theoretical level because it allows us to reorient our research objectives in the sphere of economic structures and behaviours (see the review by Greif and Mokyr 2016), but also at practical level, because it has also been used to integrate text and material culture into the same framework with the aim of understanding economic performance (see Manning 2018: 29 and the bibliography cited therein).

A focus on institutions should not replace multiple scales of investigation that allow us to see interconnections between and among social sectors (Manning 2018, 33). Manning (2018, 33), in fact, stressed that it is cooperation at multiple levels of society that leads to institutional change (see also Boranbay and Guerriero 2019). Therefore, institutions cannot be studied in a void (Manning 2018, 33 n. 121; see also the critique of NIE recently put forward by McCloskey 2016 and the response by Greif and Mokyr 2016).

The datasets from the ANE are uniquely suited for investigating the structure and performance of political institutions, as well as the behaviours, preferences, and value of agents. By better understanding the processes of emergence and change of political institutions, of which we have impressive empirical evidence but lack satisfactory interpretive models, we can really grasp some of the key determinants that contributed to moulding ancient economic, political, and social structures.

A recent estimation suggests that the worldwide cuneiform corpora—ca 3450 BC–100 CE—amount to ca 550–600,000 specimens, of which ca 250,000 catalogued (Streck 2010). Among the preserved ancient languages, only the Greek corpus surpasses the cuneiform one, probably making ancient Mesopotamia the best recorded ancient society in human history. The CDLI database contains 322,880 entries for cuneiform texts spanning from the 4th to the late 1st millennium BC, of which, 176,142 are administrative in nature, 19,530 are classified as royal/monumental inscriptions, 8593 are legal texts, and 17,540 are classified as literary/lexical. Administrative accounts consist of records of everyday managerial actions involving different assets (land, agricultural produce, labour, raw materials, artifacts, etc.) carried out and registered by political and social institutions. The Mesopotamian administrative accounts outnumber by far other text genres in just about any other historical period, but they received limited attention from scholars, more interested in qualitative and lexicographic aspects (Van De Mieroop 1999, 3). Royal inscriptions consist of accounts written on different media and emanated by royal chanceries detailing accomplishments of rulers, be they military exploits, construction of public buildings/infrastructures, provision of public goods, law-making, ritual dedications, etc.[2] Legal texts consist of trial proceedings, codes of law, contracts, royal edicts, etc. and they document the processes of centralized law-making as well as the day-to-day administration of justice at various levels (Westbrook 2003). To this humongous number of texts, we can add ca. 180 years of

[2] Here a digital repository that contains editions of 14.000 cuneiform royal inscriptions: https://cdli.ucla.edu/projects/royal/royal.html.

systematic archaeological explorations that resulted in a presently non-quantified—and ever-growing—array of archaeological reports, material culture studies, scientific analyses of archaeological finds, landscape and palaeoecological studies, online repositories and databases, 3D models, and so forth.

From this and from the considerations put forward before, it stems that we shall strive to restructure historical analysis in the field of ANE studies by making a fuller use of the sources presently available, which are of unparalleled quality and quantity in the landscape of ancient societies. This can be achieved through an integrated analysis of empirical datasets, by refining theories through systematic testing, and by refocusing research questions through cross-fertilization of disciplines (Gerring 2012; Manning and Morris 2005; Manning 2018; Smith 2017). Although the use of statistics and formal mathematical modelling is not customary in the field of ANE research (but see for examples Thompson 2002, 2004; Frank and Thompson 2005; Barjamovic et al. 2019), it must be noted that many new tools and approaches for making more reliable reconstructions of the past are being currently adopted and experimented with.

## New Tricks for Old Dogs: Rebooting Political Economy for ANE Historical Disciplines

Let us now review some of the tools that are at our disposal for attempting to construct a better economic and political history of the ANE by refocusing research questions and data processing. As correctly stressed by Manning (2018, 34–35), one item that needs to be prioritized in the present research agenda of historians interested in early economies is the study of paleoclimatology. Refined paleoclimatic proxies are becoming increasingly available globally and it is mandatory that we incorporate climate changes into our reconstructions of the past (cf. Brooke 2014). As to the ANE, much work has been done recently on contextualizing the global aridification period dubbed as "4.2. ka BP event", which certainly contributed to large-scale social and political change, such as the collapse of the Akkadian empire (Weiss 2017a, 2017b; Cookson et al. 2019) but many other such episodes remain ill-researched (cf. Staubwasser and Weiss 2006). In addition, a growing literature addressing the local (regional and micro-regional) impact of climate change by taking into consideration other proxies, such as palaeobotanical and archaeozoological data, is making datasets for understanding how ancient societies coped with climate changes available (Riehl et al. 2014; Gaastra et al. 2020).

Climate proxies are certainly critical for addressing human-natural dynamics, but other crucial aspects of past economies remain to be developed. For example, the study of human skeletal records is of the utmost importance for reconstructing standards of living, life expectancy and levels of violence in past societies (cf. North et al. 2009, 75–76; Clark 2007, 91–111, Table 6.3). These studies, bringing

together archaeologists, anthropologists, economic historians, and medical historians, are almost completely absent from the ANE scholarship. Recent surveys of the skeletal evidence from early Mesopotamia have been offered by Rosenstock (2015) and Sołtysiak (2015) with very interesting—albeit very sketchy—conclusions that certainly deserve more attention. The same can be said of epidemic diseases, for which, some authors (e.g. Scott 2017, 99; McMahon 2015; Algaze 2018, 26) claim there is evidence in cuneiform texts, whereas archaeological evidence can be summarized in one article (Sołtysiak 2012). Endemic diseases seemingly had tremendous impact on the population levels of ANE, mostly settled in crowded cities—in line with the data we have for other agriculturalist societies (Scott 2017, 107)—but the overall impact of these phenomena is presently impossible to estimate.

These topics lead to the crucial importance of demography for understanding past societies (Manning 2018, 176). Demographic scale and dynamics (human and animal populations) are key factors for understanding demand, living standards, and economic performance but also for understanding the impact of institutional change over time (Manning 2018, 176). Lacking census data for Mesopotamian populations, ANE demographics have been traditionally estimated on the basis of survey data and by using as reference modern mudbrick architecture population densities in the Middle East (Algaze 2017, 29, n. 4). The logic of population dynamics has been increasingly developed by scholars working on the northern Mesopotamian regions, due to the availability of good quality survey data (e.g. Lawrence et al. 2016, 2017). Alongside a steady flow of new survey data (Marchetti et al., in press), new tools, such as modelling C14 sample distributions, are becoming available (Crema et al. 2017), increasing the variety of proxies that can be used to estimate ancient populations.

An interesting attempt to integrate survey data and land tenure information from cuneiform archives has been provided by Rattenborg (2016) and Sallaberger and Pruß (2015) who attempted to reconstruct the quantitative dimensions of institutional estates and their agrarian production during the 3rd and early 2nd millennium BC in northern Mesopotamia. The idea of establishing a dialogue between archaeology and texts is certainly not new, but it is also true that a real integration proved exceedingly difficult to achieve. This connects directly to the issue of quantification. Recently, R. Pirngruber (2016, 2017) applied the quantitative approach to the study of Iron Age Mesopotamian economies. Given the rich evidence on commodity prices, modern economic theory and statistical analysis have been applied to the analysis of cuneiform sources in order to investigate the impact of state policies and other exogenous factors on the fluctuation of prices within a framework of market exchange. He also managed to estimate standards of living for the sixth century BC Babylonia on the basis of wage levels and commodity prices, and also obtained insights as to their change over time, specifically a lowering of standards during the second century BC. Even though the sources for earlier periods are certainly drier and more patchy, one of the key tasks in the attempt to make better economic analysis in Mesopotamia would be that of compiling datasets of quantifiable collated evidence in diagnostic areas of social, economic, and political activity, in order to facilitate

statistical analysis.[3] Some interesting new insights come from the attempt to quantify social and economic inequalities on the basis of archaeological proxies proposed by Bogaard et al. (2018) and E. Stone (2018), respectively, for Late Neolithic northern Mesopotamia and Bronze Age southern Mesopotamia. This approach is promising (but see the caveats above) if coupled with a thorough testing of hypotheses and with a more intense engagement with problems related to data-gathering. Databases of proxy data, with appropriate query tools, should be ideally published or made available to researchers in searchable form. In the field of research on ANE societies, so far, only the textual corpora are currently being massively digitized and made available through online databases.[4] Primary evidence from archaeological excavations is mostly tucked away or kept in local servers and not made available to researchers (Kintigh et al. 2014, 19). To overcome these daunting limitations, we have to begin applying consistently an Open Science approach to excavation and documentary data, but this is beyond the scope of this paper (see Marchetti et al. 2018).

Turning now to the political component of political economies, North et al. (2009) (NWW hereafter) provide a unified framework for interpreting state-building processes as seen through the lens of social evolutionary theory. According to these authors, development is triggered by reduction of internal violence, which in turn is achieved through the creation of institutions that foster cooperation between elites and citizens. NWW separate societies with no or limited access to wealth and power (natural states), which are concentrated in the hands of armed rent-seeking (i.e. predatory) elites, and open access societies, where citizens can participate to the political process structured by complex political institutions, to markets, and can organize themselves freely via organizations. In between are societies that are on the brink of transitioning from natural states to open access states. Although the idea that societies can be classified into categories has been harshly criticized (see, among, others, Yoffee 2005), the framework proposed by NWW is crucial for conceptualizing state formation since it forces us to pay closer attention to both violence and cooperation, political structures, economic performance, judicial systems, property rights, and state capacity. The book encourages further engagement with comparative institutional analysis, which can advance our understanding of how societies transition from one state to the other. As of late, much attention in social sciences has been drawn to the political transition from oligarchy to democracy in ancient Greece (Teegarden 2013; Fleck and Hanssen 2013), as part of a growing literature on the economic incentives behind the formation of inclusive institutions (Mayshar et al. 2017; Boranbay and Guerriero 2019). Extending this framework to the analysis of ANE state formation processes, with their unparalleled richness of political experimentation and empirical data, appears to be a natural step forward in the interdisciplinary agenda (Benati et al. 2019).

[3] Collections of proxy data are available for the ANE, such as ancient climate, river levels, demographics, and bodily height (Brooke 2014). It is however regretful that, apart from paleoclimate, these datasets are almost never taken into consideration by ANE specialists.

[4] See https://cdli.ucla.edu; http://oracc.museum.upenn.edu; http://etcsl.orinst.ox.ac.uk; http://psd.museum.upenn.edu; http://ebda.cnr.it.

A more precise quantitative characterization of political economies can indeed contribute to larger debates in the social science realm, such as those connected to state capacity (Soifer 2016). Mesopotamian states have been often described as either strong states—i.e. states characterized by a strong centralized leadership and oppressive administration—or as weak states, i.e. states with low infrastructural and limited decision-making capacities (Richardson 2012, 2017). However, the literature on state capacity in the social sciences (e.g. Besley and Persson 2009, 2010; Besley et al. 2013), which is impressive and encompasses economists, economic historians, and political scientists, is never used as framework for discussing such topics in the historical analysis of ANE societies, which, therefore, are left at the margins of these debates.

A note of caution now: we have to be honest about the fact that, ancient historical data are at times patchy, sparse and disparate, sometimes even poor, and difficult to interpret. Using sparse and disparate information to make estimates and quantifications can, indeed, cause a proliferation of uncertainties and biases that could eventually produce hardly credible results (Lavan 2019). Also, it is a truism that all quantitative efforts are grounded in qualitative, therefore subjective, exercises. So, how do we take subjectivity and uncertainty out of the equation? We don't, since all empirical disciplines are reliant on subjectivity and objective authority in many historical disciplines is a myth—there is no such thing as "historical truth" since history is an iterative construction process. However, historians are increasingly relying on statistical methods to manage uncertainties, such as Monte Carlo simulations and Bayesian approaches (Lavan 2019, 92–93, n. 3). Bayesian approaches are routinely employed in managing absolute chronologies via radiocarbon dating efforts (Wencel 2018), but they are becoming relevant also in dealing with archaeological material culture to understand cultural change and transmission (Crema et al. 2014), following a recent trend in biology and linguistics (Lavan 2019, 97–99, n. 10–11). In other historical and archaeological fields and sub-fields, however, these methods are still virtually unknown. Probabilistic estimates applied to the bodies of data from ancient societies can help us to transition from individual scholars' assessments of uncertainties to probability distributions (Lavan 2019, 98–99). As Lavan (2019, 102) put it "making the probabilities explicit would help clarify the positions and focus attention on the degree of uncertainty". These approaches and theories, if properly employed in a coherent research strategy, can provide the means to mix qualitative as well as quantitative methods in inquiries that address both micro (complexity) and macro (general principles) aspects of ancient societies. The production of testable predictions must go hand in hand with the dissemination of primary datasets in order to make findings from research easily reusable and re-testable, and with probabilistic estimates of uncertainties about input variables, in order to facilitate the assessment of pitfalls in the documentation and in the credibility of the results. By making well-structured datasets available we also open up our field to broader investigations by social scientists that may be interested in well-documented case studies for testing theories of human behaviour (Ober 2018).

## Conclusions: Future Directions for a New Economic and Political History of the ANE

Traditionally, historians—among which feature also ANE researchers (albeit with the peculiarities summarized in the introduction)—value complexity over the tendency to find simple explanations that is proper of the social scientific methods (Ober 2018). However, it is important to stress that simplified, even "reductionist", exercises in science often proved crucial for understanding more complex phenomena. Most notably, Nobel Prize winner Eric Kandel discovered the incredibly complex biological mechanisms of human memory by studying the neural systems of extremely simple animals, such as sea snails, and by doing so, he founded an entirely new discipline ("A New Science of Mind") that bridged cognitive psychology, neuroscience, and molecular biology with enormous implications for medical research and the healthcare industry (Kandel 2006).

Social scientific approaches focus on finding simple explanations about complex phenomena by observing statistical relationships between quantifiable variables. Quantitative methods have been employed in historical research since the 1950s, most notably in the field of medieval, modern, and contemporary history, where readily available datasets are more common. Lately, however, these methods are more and more applied also in other historical fields, such as Classical history (Canevaro et al. 2018). The growth of this literature demonstrates an increasing interest of economists and political scientists towards early societies, now seen as sources of important case studies for testing theories (Ober 2018; Hansen and Hansen 2016).

In some cases, these efforts (dubbed as quantitative historical analyses, cliometrics, big history, grand narratives, etc.) have received bad reviews from scholars who still mistrust quantitative methods when applied to archaeological and historical data from early societies (e.g. Hodder 2018) or scholars that highlighted the dangers of positivistic faith in statistics (Boldizzoni 2011). Archaeologists, in particular, tend to fall to a sort of "Empire Strikes Back" effect, in which the black cape of the evil empire—Processual Archaeology—is worn again by a new wave of "processualists-in-disguise" that explore the archaeological record in search for universal laws "by heaping proxies and proxies" (Hodder 2018, 3), ending up killing particularities, alternative trajectories, or contexts in the process.[5] Others have underscored that economists incorporated the past in their work in a rather superficial way (Hanse and Hansen 2016, 350). Some embraced this wave in a more enthusiastic fashion with the conviction that a more rigorous marshalling of the evidence and theory testing can improve the way we conceptualize the past (the above-cited Smith 2017; Turchin et al. 2017; Currie et al. 2018; Manning 2018, etc.).

Notwithstanding this debate, all concur that, to better engage with history, we have, in the first place, to engage thoroughly with data, theories, and research questions. From the point of view of social scientists, a systematic study of the past requires more attention to a critical evaluation and interpretation of the sources, as benchmark

[5] See also the critique by M. Smith http://publishingarchaeology.blogspot.com/2018/11/ian-hodder-says-archaeology-is-bullshit.html.

for organizing the empirical work (Hansen and Hansen 2016, 350). From the point of view of archaeologists, it has to do with careful data collection and processing and with publication methods. For historians it is crucial to calibrate research methods according to the type of inquiry and to evaluate more thoroughly the credibility of data sources. In fact, Ober (2018, 8) stressed that narrative micro-history is certainly better suited for addressing questions related to small-scale phenomena and complexity, whereas, if we want to tackle issues connected to long-run/large-scale change, the tools and methods provided by the social sciences are probably the best options. There is no conflict between qualitative and quantitative methods and an integration of both methods would certainly represent a step forward for the analysis of ancient societies.

In this regard, the ANE can be crucial for better conceptualizing key historical processes in the pre-industrial world given the nature of the documents at disposal and being the point of origin of important historical processes (Liverani 2014, 5). Of specific relevance to this framework is the phenomenon of formation of institutions and their political economic strategies. Mesopotamia, offering the earliest, best documented, and most varied cases of formation of endogenous institutions, can give an unparalleled historical depth to the understanding of social and political phenomena that have been much debated in other disciplines. Presently, due to the methods of research and publication of archaeological and textual data, information about ANE political economies is very hard to access for non-specialists, let alone social scientists. By applying social science tools and theories on a more systematic scale to the study of ANE economics and politics we can investigate the evidence more creatively, we can venture outside the usual limits of the discipline, and, as a corollary, we may end up opening our field to the big questions that are asked in the broader field of social sciences and global history.

A final note is on researchers' behaviours. Most of the Assyriologists and historians in the ANE produce scholarship by working alone (article and books are mostly single-author accomplishments), as is customary in the humanities. Collective efforts are produced in shape of volumes that usually consist of collections of essays (e.g. Sallaberger and Schrakamp 2015) on particular topics that, however, are never really addressed in a true collaborative fashion (see, as exception, Wilkinson et al. 2013). On the other hand, archaeologists are trained to work in teams and are increasingly opening their collaborations to other disciplines, such as digital methods and informatics, geomatics, archaeometry, palaeobotanical and archaeozoological studies, etc. Indeed, the growing need to quantify and assess patterns more thoroughly has brought more and more statistics into teaching curricula in empirical disciplines, such as archaeology and anthropology (e.g. Shennan 1997; Madrigal 2012). Broadening our history teaching curricula to encompass also statistical methods would represent a formal opening towards the social sciences. Moreover, building teams of experts with complementary expertise is now a fundamental requirement for applying to major funding bodies. Thus, it is to be hoped that the growing need for teamwork will provoke a better engagement with historical topics by opening new collaborative pathways.

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# Modelling Modes of Production: European 3rd and 2nd Millennium BC Economies


**Kristian Kristiansen and Timothy Earle**

## Introduction

Dramatic new evidence from ancient DNA and strontium isotopes allows for more detailed social reconstructions of prehistoric societies both at the level of individual kinship systems and of large-scale migrations that establishes a new level of documentation of prehistory. However, such new evidence demands new interpretations. We revisit therefore Marx's concept of Modes of Production (MP) to expand its relevance in light of present archaeological knowledge so as to model changes in Bronze Age economies (3rd to 2nd millennium BC) in temperate Europe.[1] We and others believe that theoretical benefits can be harvested by employing Modes as a cornerstone in materialist theory for history, in which political economy theories form a central part (Earle and Spriggs 2015; Rosenswig and Cunningham 2017a).[2] To begin, we have in front of us Europe's prehistoric economies, by which we consider key relations that allow us to model specific MP and their articulations. Among these

[1] In doing so we respond to recent critiques of a lack of contextualized archaeological interpretations of the new science based evidence, especially aDNA (Fuhrholt 2017; Sørensen 2017, both with comments).

[2] Circulation, consumption, as well as production are essential elements of all economies such that economic modes might be a more accurate characterization, or perhaps modes of exchange (Karatin 2014) or modes of reproduction (Rowlands 2019), but we retain Modes of Production because of its historically effective uses by Marx and later Marxist archaeologists. The recent upsurge of Marxist theory in archaeology (Rosenswig and Cunningham 2017a, b; Hansen and Müller 2011; Müller 2017; Ott 2017; Rowlands 2019) is part of a broad revival of materialist theories in the historical and social sciences, including the concepts of materialization and materiality (Patterson 2003) and with that also a return to the thinking of Marx as its intellectual foundation.

K. Kristiansen (✉)
University of Gothenburg, Gothenburg, Sweden
e-mail: kristian.kristiansen@archaeology.gu.se

T. Earle
Northwestern University, Evanston, IL, USA



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we consider the articulation between production, circulation, and consumption as most important, as presented originally in Marx's introduction to *Grundrisse* (Marx 1974).

Marx's writings are often complicated and offer room for interpretation. He never defines Modes of Production, but uses them to examine historical examples, such as Asiatic, Feudal, or Germanic Modes of Production. His conception of Modes is inherent, however, in the following quotation: '*Production creates the objects which correspond to the given needs; distribution divides them up according to social laws; exchange further parcels out the already divided shares in accord with individual needs; and finally, in consumption, the products steps outside this social movement and becomes a direct object and servant of individual need, and satisfies it in being consumed*' (Marx 1974: 89). Fundamental to his understanding is to combine means of production and relations of production to formulate governing processes of Modes. This unity of economic, social, and political is foundational to our approach to political economies as dynamic human systems. For simplification, we combine his consideration of distribution and exchange into circulation as the cover term. Here, we seek to update Marx's original conception of Modes according to advances in theoretical understanding and the richly expanded evidence of the prehistoric record.

Central to our venture is Marx's observation that several Modes of Production may co-exist in any socio-economic system, but that one will dominate. In his *Introduction* to *Grundrisse*, he states that '*in all forms of society there is one specific kind of production, which predominates over the rest, whose relations thus assign rank and influence to the others*' (Marx 1974: 106). Thus, in our conception of the Maritime Mode of Production (Ling et al. 2018), a pre-existing Germanic Mode of Production was transformed by channelling neighbouring maritime economies to control flows of special goods in a new Mode. Hegemonic or administrative dominance of outside polities with existing Modes creates new Modes from constituent parts. Marx further develops the dialectic relationship between production, circulation, and consumption as a basis for his analysis of capital. His observations introduce a historical dynamic, and for us it implies a focus on historical transformations; seeds of new dominant MP are always to be found in preceding ones and the parts continue as an afterlife in subordinate positions. This perspective of interacting MP, in conjunction with the articulation of production, circulation, and consumption adds a spatial dynamic and implies a focus upon large-scale geographical interactions of Modes in ancient World Systems. We turn now to a definition of MP and discuss its usefulness in archaeology and anthropology.

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It is important, however, that like Darwinism in the biological sciences, the measure of truth is its applicability to the real world and not to the original statements of the master. Our theoretical foundations also include the elaboration of Marxist theory to embrace World System theories and its application to pre-capitalist societies (Friedman and Rowlands 1977; Kristiansen 1998; Spriggs 1984 for a summary), as well as the historical period (Wolf 1982). We do not include the so-called 'New Materialism' in our study (Coole and Frost 2010; Witmore 2014), as we consider it to be embedded in a theoretical illusion of object fetishism (Hornborg 2017).

## Modes of Production

Modes of Production are the labour processes that extract, transform, and distribute resources to meet needs and to create power relationships (Fig. 1). Following from this, Modes are always to be understood as exploitive, whether of environments or humans; they are deeply embedded in the contested social relationships of production. Fundamental is developing property rights, the social relationships of people to productive resources. Property is central to understanding relations of production, and it can be studied archaeologically (Earle 2017). A crucial theoretical concern is to describe how surplus labour and surplus wealth are generated and distributed. Labour processes involve tools, skills, organization, and knowledge and so are always socially constituted, involving relationships between working individuals and groups. Controlling flows and employing goods provide the material infrastructure for social formations with degrees of stratification and power differentials. 'Modes are manifest in social formations—i.e., societies and cultures in the process of becoming and dissolving' (Patterson 2014: 41). The aim is, therefore, to understand what Modes of Production do rather than what they are.

Modes of Production should never be thought of as a new typology; rather, resulting in a range of political outcomes, Modes represent specific relations of production as processes grounded in material conditions (Rosenswig and Cunningham 2017a). Modes are in constant flux and reformulation. Although modelled in terms of specific relations of production, these relationships are to be understood as systems constant changing and creating novel relationships of power and inequality. MP specify how individuals access the economy to mobilize revenues to support and institutionalize political power. Institutions thus organize production, circulation, and consumption, which form relations of production (Kristiansen and Larsson 2005: Chapter 1.2 and 1.3; Earle et al. 2015). Social systems must be considered regulated (institutionalized) and open at the same time, such that the connections between them create articulated Modes as in World Systems (Friedman and Rowlands 1977; Wolf 1982), and agency must be recognized for all people positioned with

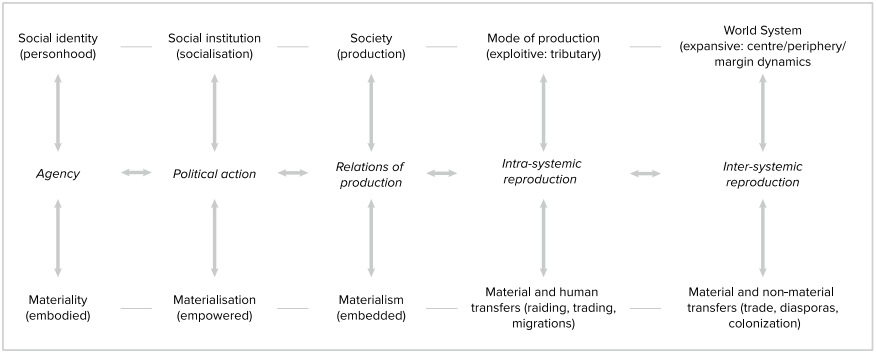


**Fig. 1** Materialist model of forces of history from individual agency to World Systems

differing relationships to production, even if agency change according to changing historical conditions (Blanton and Fargher 2008; DeMarrais and Earle 2017; Kristiansen and Larsson 2005: Fig. 169–170). At any point in time, a social formation is formulated by MP that are linked together among different spheres and scalar dimensions that determine power relations of cooperation and co-optation. Contradictions may arise over time between both different Modes and different institutions within an MP. This may lead to a redefinition of institutions and of relations of production through increased agency on a large geographical scale, whose end result is social transformations of one or several Modes.

While a social formation is historically defined in time and space, a Mode of Production is the material relationships that can be employed to characterize historically different social formations and polities. Modes thus represent abstractions of material relationships that model economic strategies in ways that can be compared across prehistory and historic cases (Earle and Spriggs 2015; Earle 2017). As we discuss with our summary of Bronze Age Europe, relations of production are framed by the institutional character of property as it opens or limits access to resources and results in particular relationships of power. Wolf's (1982) tributary mode of production, for example, is a generalized concept based on elite property relations that can be applied to various historically independent cases of complex social formations without well-developed market systems. Thus, the mode of production concept 'provides the potential for archaeologists to comparatively investigate changing human organizations' (Rosenswig and Cunningham 2017a).

Modes of Production can perhaps best be understood within a multi-scalar model of agency and interaction, as presented in Fig. 1. It raises the question of the internal articulation of scales. In our model, different levels are dialectically intersected into each other. We consider a Mode of Production to dominate until the build-up of contradictions activates agency and leads to a redefinition of relations of production that releases a transformation.

We now discuss how different Modes of Production during the European Bronze Age help understand political change. We recognize two general Modes: Kin-ordered and Tributary (Wolf 1982) that we divide into historically specific variants representing alternative pathways towards and away from complexity. In all cases, most economic activities, such as subsistence production and tool manufacture, were primarily local (within the household or local community), but we envision specific relations of production and circulation that were critical for political formations.

## *Kin-Ordered Modes of Production*

A Kin-Ordered Mode implies that no regionally centralized control exists over large numbers of households. It remains decentralized with an emphasis on horizontal kin relations. Communities retain political autonomy even when they take part in expansive networks of trade and alliances. Competition and contradictions within communities often drive demographic expansion and migrations. Corporate, Pastoral

Segmentary, and Germanic Modes are variants with differing subsistence, levels of intensification, and property relations.

***Corporate Mode of Production (CMP1)*** models moderately dense populations living in villages dependent typically on farming and its *landesque capital* (see Hayden and Cannon 1982; Häkannson and Widgren 2016; Johnson and Earle 2000). Clan and lineage kin groups owned and defended land. Village headmen or chiefs led independent village-sized polities. Property relations were materialized by fortified villages, permanent household arrangements, and/or group cemeteries. Village-based polities could either bud off to form new village polities or expand by conquest to form regional polities with Tributary Modes of Production.

***Pastoral Mode of Production (PMP1)*** models decentralized, low-density societies based on free and highly mobile pastoral herders organized by ego-centric kin networks (Barfield 1993; Irons 1979; Kradin et al. 2003; Sahlins 1961). The economy was extensive and low intensity, as required to manage individually owned animals. All males were warriors, raiding for and defending moveable wealth in animals. Mechanisms of expansion included population growth causing expansion into 'open' lands or intensification with agriculture that could establish the Germanic Mode of Production.

***Germanic Mode of Production (GMP1)*** models settled and largely self-sufficient households that individually own improved agricultural fields and many animals (Marx 1974: 79; Gilman 1995). The animals required ample territory across lands often marginal to intensive agriculture. Males were warriors raiding for moveable wealth in animals. Specialization and trade established decentralized networks between regions. By controlling wealth circulation, the GMP could expand spatially to form regional chieftaincies and confederacies as part of the GMP2 or Maritime Mode of Production.

## *Tributary Modes of Production (TMP)*

Embodied in Tributary Modes of Production were extractions of surpluses in labour, staples, and/or wealth to finance political expansion and regional power (Earle 1997; Wolf 1982). Competition created strongly growth-oriented political economies, whether centrally or decentrally organized. Variants of the TMP included the CMP2 and GMP2 and the Maritime Mode of Production.

***CMP2*** models settlement hierarchy within regional, staple-financed polities (D'Altroy and Earle 1985; Earle 1997). Hillforts offered hard-point control over productive lands and/or transport routes and defined specific property rights. Construction of agricultural facilities included terracing, drainage, and irrigation. Overarching chiefly ownership of productive lands and trade routes was based on conquest or financed construction of facilities. Burials were typically in cemeteries, sometimes with marked elite burials. Specialized warriors, eventually organized as armies, were armed with superior weapons and mobility was provided,

for example, by horses and chariots. Mechanisms for expansion included conquest warfare, domination of trade bottlenecks, and eventually encouraging markets.

***GMP2*** models the formation of regional polities involving warrior chiefs, who coordinated raiding bands recruited from free farmers to seize and trade objects of wealth including animals, slaves, and high-status objects. Mechanisms for expansion involved elite individuals seeking to channel wealth circulation in higher volume trade especially of metals that provided means to form regional chieftaincy networks.

***Maritime Mode of Production (MMP)*** models political strategies employed by chiefs owning productive farms to produce surpluses to support acquisition of boats owned by chiefs (Ling et al. 2018). This Mode is an expansion of GMP (see Bell Beaker discussion below); however, the particular property of the MMP was the spatial fusion of agropastoral and maritime systems. By financing raiding and trading parties geared to metals, slaves, and other objects of exchange value, chiefs channelled wealth flows and thus expanded chieftaincies and their confederacies. Mechanisms of expansion typically involved access to a world economy in an arc around agrarian states or city-states.

We describe below the historical dynamics and transformations in the political economy during the European 3rd and 2nd millennia BC, concluding with a brief outline of how these patterns can illuminate the transformative potentials of historical processes. We wish to stress that our interpretations are sketches for further discussion, and thus biased by our priority of what constitutes the most convincing explanation of the data at hand. In other words, they are interpretative narratives where we privilege some data at the expense of others in order to create coherent social and economic explanations of historical processes.

## Third Millennium BC: Age of Migrations

Archaeology is undergoing a third scientific revolution that is transforming our understanding of Eurasian prehistory (Kristiansen 2014). With rapidly developing DNA and strontium techniques, 3rd Millennium migrations, for example, are now well documented at the onset of the Bronze Age, and they demand a new understanding of historical changes (cf. Furholt 2017, 2018). Setting the stage for these changes earlier Neolithic farmers had spread broadly across Europe forming scattered local groups with small villages and cemeteries indicative of CMP1. Some argue that changes started earlier among these early farming groups, but the changes were limited (Heyd 2017). No comprehensive explanations are readily at hand for the 3rd Millennium's changes that are now documented; we need to re-theorize migrations, mobility and their relation to genetic, cultural, and language change, and other key economic changes (Kristiansen et al. 2017, for a first attempt). The economic and social transformations of western Eurasia during this period were due, we argue, to major migrations, genetic replacement, and what amounted to genocide. We now discuss and re-theorize these changes, understanding them in part by MP models and their associated economic changes. In simple terms, we suggest that a dynamic

existed between population growth, subsistence shifts, new property relationships, expanding warfare, and emerging trading networks, all of which underlay large-scale migrations and population replacements.[3]

## *The Pastoral Mode of Production and the Replacement of Neolithic Farmers*

The 4th millennium BC witnessed the origins of new technologies (Hansen 2014), which transformed Late Neolithic/Late Copper Age societies, created a new pastoral economy in the Pontic steppe, and undergirded its expansion into Europe. Using oxen as draft animals, the traction complex of wheels and wagons spread rapidly from the Caucasus into much of Europe during the mid to later 4th millennium BC (Johannsen and Laursen 2010; Maran 2004; Leppek 2017). Although it probably lowered transport costs from farm to table in existing Neolithic economies and so allowed for larger settlements, evidently more importantly for future historical trajectories, the traction complex transformed steppe economies by lowering costs of seasonable herd movements (Anthony 2007). Suddenly, the steppes became highly productive for people and their animals. As known ethnographically (Irons 1979), the warrior basis of pastoral societies was enhanced by horse domestication that increased mobility of warrior bands employed in swift raiding (compare Hämäläinen 2008 for the adoption of horses by American Plains Indians).

In the steppe, the traction complex and the role of cattle permitted rapid expansion of the Yamnaya Culture. By 3000–2900 BC, it stretched westward from the southern Urals into Romania and the Carpathian (Kaiser and Winger 2015: Fig. 1). This 'cattlization' greatly increased the ratio of cattle (typically 80%) to sheep compared with Copper Age settlements in Pontic steppe when cattle were of little importance (Kaiser 2011: Fig. 1b vs. Figure 2b). Wagons—or mobile homes really—appeared in elite burials, and, for the first time, male warriors received institutional identity in burials, sometimes marked with stone menhirs depicting warriors. Monumental barrows (kurgans) represented a new kin-ordered family structure with inheritance of animals and pasture rights, and their burial ritual symbolized the new institution of warrior leaders originating in the Maykop Culture of northern Caucasus (Korenevskiy 2017). Yamnaya encapsulated a new social formation that embodied rapidly expanding populations with Pastoral MP.

[3] By large scale we primarily refer to their effects in terms of genetic and cultural turnover, inlcuding major openings of landscapes (Kristiansen et al. 2017). We realize, however, that rapid demographic growth also played a role in these processes. At present it is difficult to estimate group sizes; however, we believe that their organisation was perhaps more important. The best proxi for the estimation of impact are pollen diagrams, which for northwestern and western Jutland testify to extensive deforestation within one to two generations (Andersen 1993). Similar processes were reconstructed for the southern Cimbrean Peninsula (Feeser et al. 2012; Feeser and Furholt 2014) The evidence suggests a widespread, large-scale event signifying the arrival of substantial numbers of people across northwestern Europe.

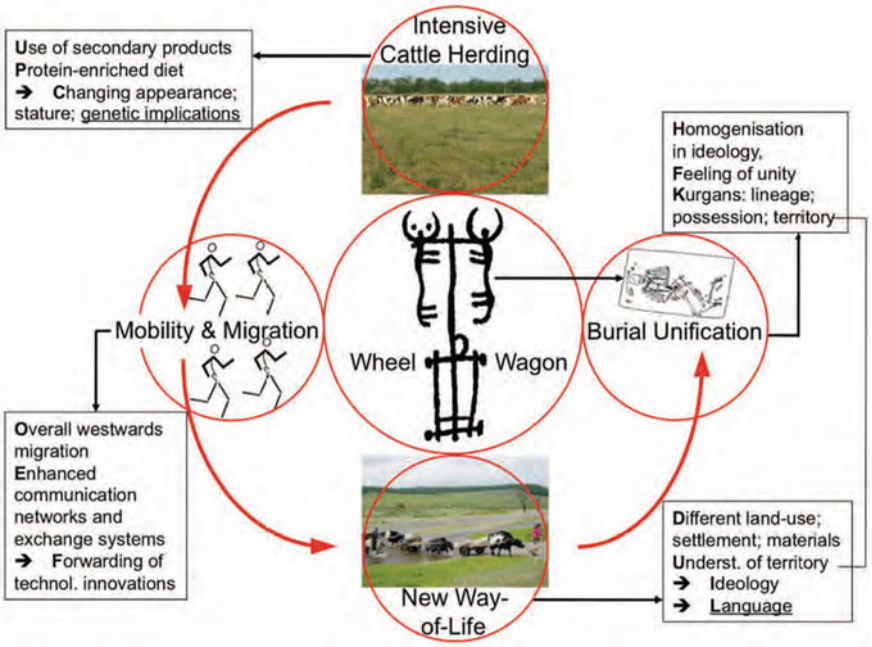


**Fig. 2** Model of the Yamnaya pastoral Mode of Production (after Frînculeasa et al. 2015)

The PMP of the Yamnaya Culture (Fig. 2) can be modelled as follows: Subsistence was based on meat and dairy products (Shislina 2008) with some wild products (Schulting & Richards 2016). No agriculture is documented, except to the west, where some cereal was cultivated (Pashkevych 2012). Genetic selection existed for lactose tolerance (Mathieson et al. 2015), and, compared to Neolithic populations, people were taller with a healthier, protein-rich diet, which meant that more children could survive, and population could grow. Spatially, demographic expansion was rapid, increased by the required low population densities and highly mobile economy of pastoralists. Under the prevailing climatic conditions of the early 3rd millennium BC for grassland productivity animals and populations would rapidly outgrow local carrying capacity. Settlements were impermanent, not anchored to permanent, owned places. Property was first and foremost in animals, especially cattle, the most important subsistence product and the primary form of moveable wealth.[4] An element of

[4] The following citation catches the dynamics of cattle ownership and raiding: "The importance of cattle as a medium of exchange and as the main object of raiding parties meant that cattle circulated in society much more intensively than is generally assumed. The practice of raiding need not result in accumulation of cattle on the homesteads of successful warrior elites. In Northeast Africa as well as in ancient Ireland the cattle captured in raiding was often directly redistributed by elites to their followers or clients. Especially in Ireland, clientship networks were closely connected with a system of cattle loans. The existence of such redistributive practices makes it almost impossible to reconstruct the cattle ownership of tribal leaders on the basis of archaeological evidence" (Roymans 1999: 298).

permanence was, however, established by barrow cemeteries, aligned in the landscape probably to mark ownership of pastoral lands along established seasonal routes (compare Johnson and Earle 2000).

From 2850 BC onwards, Yamnaya populations expanded rapidly into central and northern Europe leading to the formation of Corded Ware Culture (Allentoft et al. 2015; Haak et al. 2015; Mittnik et al. 2018). Genetically, they originated from Yamnaya populations, but they also added some farmers' DNA, apparently from capture or marriage of women from existing Neolithic groups (Sjögren et al. 2016). These captive women would, of course, have brought with them specific cultural behaviours and knowledge that influence the formation of the Corded Ware complex (see Cameron 2016: chapter 6). Numbers of farmers declined substantially, but coexisted for a few hundred years with pastoral groups, until being extirpated in much of Europe by the later 3rd millennium BC. Corded Ware Culture, composed of a genetically distinctive group, spread over vast areas carrying common burial rituals (Furholt 2014: Fig. 7, 2018) similar to the steppe Yamnaya Culture. Across Northern Europe tens of thousands of small, single-grave barrows exist, forming visible lines of communication in vast, open anthropogenic environments (Hübner 2005; Bourgeois 2013). These barrows suggest segmentary groups with territorial ownership of pasturelands and routes of movement.

## *Dynamics of the Growing Pastoral Mode of Production*

The 3rd millennium BC witnessed radical transformations in European societies. Already Neolithic farmers appear to have declined significantly in number during the late 4th millennium in northern Europe (Hinz et al. 2012), probably devastated by the plague (Rasmussen et al. 2015; Rascovan et al. 2019); overall, population densities were quite low, and pastoralists spread into relatively open land, first in areas unoccupied by Neolithic farmers and progressively replacing them across much of Europe. How was this possible? Pastoral societies are universally warrior-based and organized along male lines of warrior sodalities.[5]

Corded Ware migrations apparently constituted up to 80–90% males, in all probability young warriors, as supported by genetic evidence from the earliest Corded Ware burials (Goldberg et al. 2017). Mobile pastoral warrior groups would have been in search of animals, new pastureland, and of course women; males in Neolithic communities were killed, and women were taken as captives and mates. Ample

[5] Based on ethnographic analogy to pastoral societies like the Nuer (Evans-Pritchard 1940), individuals owned animals. Each male was a warrior, required to establish his manhood characteristically by capture of animals. Then they had to defend their animals and animals of their close kin against constant threats of outside raids. These warriors were individual predatory agents seeking to seize what was useful to them but could unify along kinship lines to form larger predatory warrior groups according to the model of predatory segmentary societies, as articulated by Sahlins (1961). There existed fundamental similarities between African pastoral societies and Indo-European pastoral societies (Lincoln 1981).

evidence exists of massacres of Neolithic communities probably by Corded Ware groups (Schroeder et al. 2019) and in reverse by Neolithic groups (Muhl et al. 2010). Abduction of Neolithic women by Corded Ware males was probably customary, while the killing of males represented ethnic cleansing.[6] This would explain the extraordinary genetic fact that only two dominant male lines are documented from Yamnaya to Bell Beaker communities, and these lines still dominate today's male population in Europe, while Neolithic male lines vanished. In contrast, multiple female lines existed, many of which show Neolithic origins. As the evidence stands, we can envisage a rather massive, if long-drawn-out, genocide of Neolithic males that eliminated their reproduction contributions throughout temperate Europe,[7] even if such processes might have been intersected with periods of more peaceful interaction.

The practice of exogamy and abduction of Neolithic women helped introduce new cultural and economic practices that created both a new pottery style, as well as introduced certain agricultural practices though on a limited scale (Kristiansen et al. 2017). Also new vocabulary for crops was introduced that were non-Indo-European in origin (Iversen and Kroonen 2017). A cultural hybridity led to small-scale changes in material culture, language, and economy among Corded Ware groups.[8] The PMP remained dominantly, but we can suppose that as territorial limits for expansion were approached, a need to intensify subsistence probably transformed the PMP. In one place or another across Europe, the selective addition of agricultural practices and regional trading specialization formed a foundation of what was later to become the Germanic Mode of Production, perhaps first unfolding in rapid migrations of Bell Beaker groups.

## *Water-Based Technology, Continued Expansion, Colonization, and New Trading Networks*

From around 2500 BC, the Beaker complex spread in ribbons and patches across western and central Europe where pastoral and agricultural groups were already well established (Heyd et al. 2018). Many new settlements were positioned close

[6] There is evidence of horse domestication, and thus horse riding, in the 4th millennium BC (Damgårdet al. 2018). This practice would have spread with the Yamnaya and later Corded Ware migrations. The use of horses in raiding would have provided an advantage to these groups compared to Neolithic communities. We find small amounts of domesticated horse bones in relation to Corded Ware and Bell Beaker settlements (Becker 2008).

[7] A dramatic bottleneck in male genetic lineages took place globally between 5000–7000 BP, while not the case for female haplo groups (Karmin et al. 2015). A recent attempt has been made to explain this as a results of increasing competition between patrilineal male lineages leading to new more expansive pastoral formations (Zeng et al. 2018).

[8] We are aware that these processes unfolded according to local conditions and created local variations, not least in areas where Neolithic populations were still holding their positions. Thus, in Poland, we witness the formation of several cultural variants (Wlodarczak 2017); however, to understand such processes demand more localized samples that combine aDNA and the evidence from strontium isotopic tracing.

to the sea and along rivers. Settlements typically held boat-shaped houses that were found in small clusters of farms and/or small hamlets with house structures replacing each other through time, suggesting individual ownership of farmland. A particular cultural package, typically found in burials under barrows, included such items as the characteristic beaker (probably a drinking vessel), a flint dagger, finely crafted arrowheads, and distinctive double-drilled buttons. Genetically, many Bell Beaker groups came out of Corded Ware populations, but an apparently earlier Bell Beaker group in Iberia belonged genetically to Neolithic populations of Anatolian descent (Olalde et al. 2018). Around 2600 BC, they expanded into the Mediterranean Sea to colonize and probably to tie into existing populations (based on continuing house traditions), but they also expanded to the north along the Atlantic seaboard, identified by Maritime Beakers, and inland into central Europe. Here, they would have encountered Corded Ware populations, which apparently adopted the Beaker package, including metallurgical skills and advanced archery of warriors (Grossman 2015). Little genetic admixture, however, took place between the Iberian Bell Beaker and Beaker-transformed Corded Ware populations, which had varying admixture with other existing Neolithic groups.[9]

What are we to make of the dynamic development of this new phenomenon across Europe? These two genetic populations, with distinctive historical backgrounds, adopted a shared cultural and technological complex that formed a network of traders, craft specialists, and miners that was expanded by rapid colonization and conversion. We envision the Bell Beaker complex as created by rapid migrations characterized by the PMP of Corded Ware people, who represented genetically much of the Bell Beaker populations. The dynamic population expansion was typical of those pastoralists, and the distribution of barrows suggests the same pattern of ownership over pasturelands and cattle that was so widespread. But the new settlement pattern of permanent farmsteads that suggests a stable farm-based property system anticipates the Germanic Mode of Production. We suggest that the addition of farming, evidently related to their linkage to Neolithic populations, would have created an anchored productive base that supported mobility across water with a new boat technology of seagoing plank-build boats, as documented by slightly later evidence of boats that must represent a protracted maritime tradition (van de Noort 2011). Setting out from the Netherlands, these boats enabled them to cross the British Channel in large numbers, and they spread rapidly across the British Isles in much the same way as Corded Ware had spread into central and northern Europe. Again, we witness a rapid and nearly full genetic replacement of the existing Neolithic populations (Olalde et al. 2018).

We propose that, with new boat technology, Bell Beaker people took to the waters of Europe to colonize areas with special resources for trade within an

[9] Discussing these variations: "We observed differences in ancestry not only at a pan-European scale, but also within regions and even within sites. …. Although the steppe-related ancestry in Beaker-complex-associated individuals had a recent origin in the east, the other ancestry component—from previously established European populations— could potentially be derived from several parts of Europe, because groups that were genetically closely related were widely distributed during the Neolithic and Copper Age" (Olalde et al. 2018).

extended network of culturally identified people. We imagine people with the same creative drive for expansion and innovation, as characterized by Corded Ware groups, expanding to colonize areas offering opportunities to produce goods with regional comparative advantages that could then be traded inter-regionally among a group with common identity. They colonized the Netherlands and coastal England with its pivotal location joining the maritime coasts and the river systems of central Europe, moving across the British Isles to mine rich metal deposits, colonizing western Jutland with cattle useful for hiding production, flint for the specialty warrior equipment (daggers and arrowhead), and, of course, in amber, into Norway where standing forests could be used for boat construction, and along the rivers into the heart of Europe where many metal sources were available, horse breeding was optimal, and the web of rivers provided networks for efficient movement to consumers of their many products. Evidence is building for emerging regional specialization and major inter-regional trading systems: the rapid abandonment of amber for local use in Denmark (Shennan 1982), new mines on the British Isles (O'Brien 2015), and horse breeding for trade in Bell Beaker settlements on the Danube in Hungary (Endrődi and Reményi 2016).

## *The Transformative Potential of the 3rd Millennium MP*

By the end of the 3rd Millennium, temperate Europe from the Urals to Ireland exhibited basically similar social formations, probably with rather similar spoken Indo-European dialects, as well as shared ideologies, which then began to diverge (Heyd 2016). They originated in the steppe PMP, which gradually transformed into a GMP once the migrants settled and adopted agricultural practices, as was already underway during the later Corded Ware settlement complex of Central Europe (Müller 2009). The rapid expansion of a common Corded Ware Culture across much of Europe erased many of the ethnic divisions and allowed for freer movements across vast stretches of land, the establishment of broad networks of relationships, and distant exchanges in some special objects, especially the stone used for battle axes and later many special goods.

Systematically, the adoption of a GMP appears linked to the emerging trading complex of the Bell Beaker Complex. Broadly spread social and linguistic compatibility held a transformative potential when linked to an expanding trading economy. Already during the 5th Millennium, metal had come into use, especially for objects of distinction, but expansion in metal use and trade stalled due in part to localized Neolithic lives with CMP1 that apparently limited trading volume and extent. As the new farm-based Germanic Mode of Production, based on independent households, developed, its economic base apparently supported new water-based trading and related export production within broad networks of relations of production materialized in the Bell Beaker complex. This was, we believe, the synthesis that allowed for extensive trading networks that interconnected Europe and allowed for the eventual articulation with an expanding World Economy. The interstitial connections of the Beaker Complex would lead to the onset of a new and lasting Bronze Age trading

economy that transformed 3rd millennium MP into new tributary forms that we now describe.

## Second Millennium BC: Age of International Trade

Across Europe, the Bronze Age of the 2nd millennium BC witnessed dramatic changes in social formations and their articulations regionally and trans-regionally based on an integrated, metal-driven trade (Kristiansen and Larsson 2005; Kristiansen and Earle 2015; Vandkilde 2016). Of course, much in everyday life remained largely unchanged, geared to subsistence practices linked to local histories of resource use. Everyday lives were essentially still based on CMP and GMP. Changes were, however, dramatic in a new sphere of exchange in wealth that supported the emergence of tributary modes of production. Some contributing factors behind this development are considered below. Between 2000 and 1500 BC, European population rose more than 50% perhaps to 13 million, which was comparable to the Near East at that time, although admittedly across a much larger area (Müller 2015a: Fig. 17.9). Bronze Age populations document a genetic continuity from the 3rd millennium; probably some migrations involved population expansions and colonization. Although genetic changes from the Mediterranean are yet to be determined, new evidence from strontium and isotopic analyses show that in the 2nd Millennium individuals, both males and females travelled regularly over long distances (Frei et al. 2015, 2017a, b). Increased individual mobility is probably connected to various factors (such as chiefly exploratory travels, marriage alliances, free-agent warriors, and slaving), but certainly all connected ultimately to the expanding, well-organized commodity trade in copper and tin for bronze weapons, luxury and utilitarian objects. The metal trade and the associated commodity flows helped establish broad trans-regional networks across Europe. For the first time, the societies of Europe and even into the steppes became bound into expanding socio-economic networks.

### *From Kin-Ordered to Tributary Modes of Production: Transforming and Linking Local Economies with Expanding Trading Systems*

Starting around 2000 BC, a transformation took place, with tin bronzes becoming dominant in a wide range of goods and with concomitantly increased volumes of trade across Europe (Vandkilde 2017). The change was completed by 1600 BC, when metal trade took another jump in scale and volumes (Vandkilde et al. 2015; Meller and Risch 2015). As a result of these changes, the Kin-ordered Modes of Production from the 3rd millennium BC were often transformed into Tributary Modes of Production, as emergent leaders and groups were able to control bottlenecks in resource flows.

Although most subsistence goods and other items like ceramics were obtained locally and market systems were under-developed, communities often became dependent on surplus production for trade in order to gain access to metals and increasingly to textiles. In turn, the demand for surplus labour increasingly required tributary work and slaves.

At this time, the PMP largely ended across Europe, because increasing population densities demanded expanding food production. Subsistence intensification with investments in buildings for storage and animals created a new landscape of farmsteads and hamlets. The Germanic Mode of Production became the dominant MP across northern and middle Europe and along its Atlantic fringe from 2000 BC onwards. Wealth was based upon land and cattle, stalled for protection and increased production, and each farm would provide warriors to form retinues for local and often chiefly agency (Horn and Kristiansen 2018). A characteristic settlement pattern of permanent farms and fields with individually owned ancestral barrows marking the landscape emerged extensively over temperate Europe (Artursson 2009; Earle 2002; Earle and Kristiansen 2010; Kristiansen 2015). Along the coasts of Scandinavia and western Europe, as the extension of the GMP1 and its Bell Beaker manifestation, a new Maritime Mode of Production formed from 1600 BC onwards (Ling et al. 2018). This new maritime economy boosted the GMP1 into a more expansive variety, as intensive landholding economies could finance boat construction and their crew engaged in international trading and raiding on scales not seen before. It was the circulation of wealth by chieftains that bound warriors into dynamic regional chieftaincies and their confederacies.

The CMP1 became dominant in much of Central and Southern Europe, where Neolithic precedents for settled village life existed. Focused on rich soils, permanent settlements were positioned above good farming lands, often with a reliance on intensive agricultural investments. These lands must have been corporate property materialized by densely settled and stable villages and their associated group cemeteries. Settlements were often fortified tells or hillforts, which, we argue, materialized ownership and defense of land (Earle 2002, 2017). A vivid example of the CMP is the tell settlements and cemeteries in the alluvial soils of Hungary (Jaeger et al. 2018a, b; Kienlin 2015). Quite similar to earlier Neolithic settlements, these were largely self-sufficient communities of arranged houses within fortified walls that could form tell deposits over hundreds of years of continuous occupation (Jaeger 2017). From around 1700/1800 BC, metal trade and production intensified, in tandem with a new wool-based economy (Bergerbrandt and Sabatini in press), and societies across Central Europe entered a CMP2, as represented in the settlement hierarchies of the Benta Valley (Earle and Kolb 2010). Other dramatic examples of CMP2 at this time include the irrigation-based hillfort Argaric culture of southern Spain (Gilman 2013) and the fortified, irrigation-based villages of the Terramare culture of the Po Valley, in northern Italy (Cardarelli 2015).

On the steppe, the PMP of the 3rd millennium BC gave way to more settled herding economies (Anthony et al. 2016). With the invention of swift two-wheeled war chariots the balance of power changed dramatically, and a PMP2 with significant stratification formed on the steppes. New power institutions demanded surplus

production to maintain specialists linked to the breeding and training of horses and the construction and driving of the new war machine, the chariot. We can locate this innovation in the Sintashata Culture of the Trans-Urals, a society organized around regularly laid out fortified settlements, led by a new warrior elite that controlled copper production in the Urals (Chechushkov and Epimakhov 2018). From around 1800 BC, these groups expanded east and west in a series of conquest migrations that took them through central Asia into Pakistan and northern India (Allentoft et al. 2015; Damgård et al. 2018). In the west, they reached Mycenae, and to the south the invention changed the character of warfare in Near Eastern city-states.

With the formation of fully developed BA Tributary Modes of Production, the societies of western Eurasia entered into commercial and political relations with states and city-states in the eastern Mediterranean, Anatolia, and the Near East (Kristiansen and Larsson 2005). We now describe these dramatically expanded trade networks that boosted local economies and vice versa.

## *The Growth of Trans-Regional Metal Trade in the 2nd Millennium BC*

We believe that the circulation of metals, especially copper and tin to produce bronze, was the primary driver of the expanding political economies of Bronze Age Europe. Although metallurgy and related trade expanded from 2500 BC onward with Bell Beaker networks, a full-blown bronze economy emerged in south and central Europe only after 2000 BC, extending into the steppe as well. The demand for tin-bronze objects required a supply of copper and tin, two metals smelted from ores that typically derived from different regions, often quite distant from each other. Captured by Vandkilde with the term 'bronzization' (Vandkilde 2017), the 2000 BC turning point reflects the integration of Europe into a larger world system, which unfolded and expanded to encompass all European regions after 1700/1600 BC (Vandkilde 2014). Copper became widely distributed throughout Europe from a few major mining areas (O'Brien 2015; Melheim et al. 2018; Radivojevic et al. 2018). The magnitude of the Bronze Age metal trade was quite extraordinary, according to the rates of consumption, especially knowing that most regions imported metals from long distances. This in turn led to the rapid development of new institutions, such as warrior retinues linked to powerful chiefs and, in the steppe, to the invention of the two-wheeled war chariots. New institutions like these demand innovative forms of economic support, often some measure of control over laborers, whose surplus could be extracted as tribute.[10] A good example is the regional fortified metal production centre of Bruszsewo near Poznan, which controlled both supra-regional metal- and

[10] An increasing number of local and regional in depth studies testify to these European wide transformations. Selectively we refer for Northern Europe to Vandkilde (2017), Bech et al. (2018), Yates (2007); for the steppe to Anthony et al. (2016), Krause and Koryakova (2013 and 2014), and for tell societies of east-central Europe to Jaeger et al. (2018a, b).

amber trade, and the nearby hamlets. The wealth was displayed in the burial mounds of the nearby Leki Male (Müller and Kneisel 2010; Czebreszuk et al. 2015). This transformation was not uniform, however, as some regions, peripheral to the Bronze Age trading networks, retained a CMP1 way of life (Kienlin 2017).

How and why did the new trading economy come to dominate European societies? Metal provided new weapons, personal adornments, and working tools that were broadly advantageous. Once appropriated to provide for many social, ritual, and economic demands, regular supplies of metal became indispensable to social and economic reproduction. The flows of metal were not unlike the modern dependency on oil that transformed international relations so fundamentally. In Denmark alone, the annual demand for copper to replace loss and reduction through use-wear and sharpening of axes, sickles, and weapons amounted to 1–2 tons (Radivojevic et al. 2018). Scaling this up to all of Europe, the production and circulation of copper must have been hundreds of tons per year. By now, every farmstead, village, warrior, and chief were depending on regular deliveries (Marciniak and Greenfield 2013: Table 1 and Fig. 11). We can imagine that long-distance political confederacies were formed to secure trade routes by providing protection and provisions during travels, and that they were likely based on old Indo-European institutions of guest-friendship (Kristiansen and Larsson 2005: 236ff.). A continuation and institutionalization of exogamy probably structured the support for these political confederacies of long-distance alliances and trade, as evidenced in Fig. 3, as millennia-old traditions. The institutional character of trade routes was also highly dependent on population densities and social stratification (Müller, 2015a, b). The establishment of such integrated, high volume trade across Europe was further facilitated by lowered transport costs using more advanced maritime technologies, which included large (11 m) seagoing plank-build boats that could carry cargoes up to 6–700 kilos, as did the famous Hjortspring boat from Denmark (Kaul 2003; Vinner 2003).

Highly desirable foreign metals were the product of regionally specialized economies. Each region's population had to be involved in some critical step in metal commodity chains or produce alternative highly valued exports for trade that provided an inter-regional comparative advantage (i.e. lower costs in procurement and production) (Rowlands and Ling 2013). These could include the mining and refining of copper, tin, silver, or gold ores, different stages of textile production, the collection and manufacture of amber, of glass and other items of personal adornment, and the production/extraction of salt and other commodities (Ling et al. 2017: Fig. 9.1; Kristiansen and Suchowska-Ducke 2015). Each regional specialization pattern, geared internally by the acquisition of metal, transformed local labour processes. Thus, the broadly new metal economy transformed the regions of Europe in quite different ways depending on local opportunities. Some examples are well known, while others are just becoming recognized.

Denmark's amber provides broadly known examples of export production. In the Thy, for example, households near the coast became engaged routinely in raw amber collection, sorting, and storage, for export purposes (Earle 2018). A new industry of salt extraction was established in Hallstatt and the Carpathians with large-scale mining and related activities, probably including children for such jobs as lighting

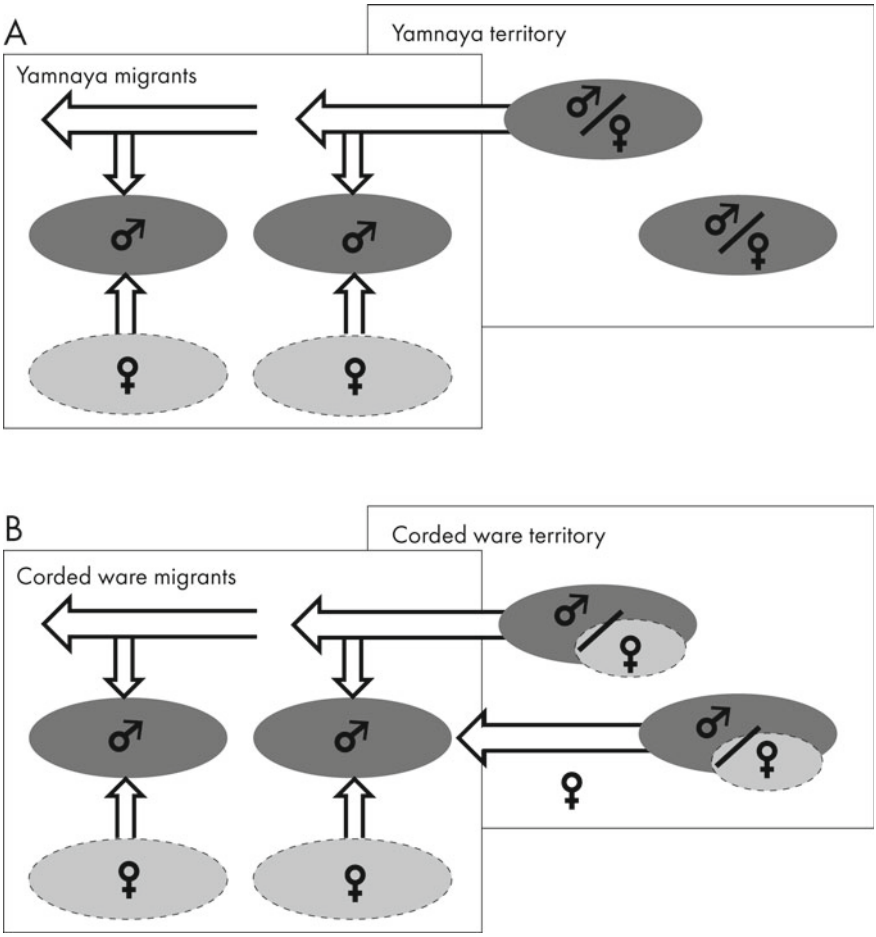


**Fig. 3** Model of the Yamnaya and Corded Ware expansion strategy (after Kristiansen et al. 2017: Fig. 1)

the large galleries (Harding 2013; Kern et al. 2009). The increased trans-regional availability of salt then expanded its uses and enhanced demand, for example, to produce salt meat, so useful to support trading and military campaigns.

Beyond specialization in metal mining and crafting, perhaps the most dramatic economic change was the emergence of a trans-regional textile industry, which began during the 3rd Millennium in western Asia and expanded into southern and central Europe in the 2nd Millennium (Sabatini and Bergerbrant 2019). During the Middle Bronze Age, in the Po Valley of northern Italy, for example, a village specialized in spinning as has recently been documented by an extraordinary concentration of spindle whorls (Sabatini et al. 2018); spinning specialization here must then have been linked closely to specialized sheep herding to produce the required volume of

wool. Thanks to its specialization, the village gained access to metal and could further specialize in the metal production and trade, allowing the subsequent emergence of regional political hierarchies. At the same time, along the Danube in Hungary, sheep production shifted from generalized culling practices towards one geared to wool production (Vretemark 2010). Here, too, a regional settlement hierarchy emerged that suggests a chiefdom-like political structure characteristic of the CMP2.

By the Middle Bronze Age and into the beginning of the Iron Age, following lowered costs in production and transport and increased population densities, the new export industry of southern and central Europe appears to have provided northern Europe with woollen garments (Sabatini and Bergerbrant 2019). Several thousand woollen textiles, in the form of large 2 × 3 m pieces of cloth, were then exported north. We estimate that 1500 to 5000 textile pieces reached Denmark alone (Bergerbrant 2019; Kristiansen and Sørensen 2019). In south Scandinavia, these large pieces were cut up to create male and female garments. At this time in Denmark 80% of woollen textiles were imported, and only 20% were locally made (Frei et al. 2017a). After 500 BC, however, new breeds of sheep with full fleece made it possible for villages and individual households to produce their own woollen textiles, thus leading to a decline in textile trade. Many regions of Europe participated in different ways in the emerging wool economy providing textiles, which were historically one of the mainstays of World Systems. All in all, the development of regional specializations both met existing demands and created new demands as unexpected efficiencies and uses became evident, so that progressively integrated economies of special commodities emerged.

## *Competing Tributary Modes of Production and the Bronze Age World System*

After 1700/1600 BC, a privileged class of consumers from expanding palaces and city-states of the eastern Mediterranean boosted the demand for high-value goods, such as amber from the northland, tin from Cornwall, and probably other specialties like slaves acquired by northern raiders and horses from Carpathian breeders. As a result of these inter-regional flows, we observe cyclical swings in trade routes linking transport technologies and the political strategies to concentrate and circulate wealth. Between 1900–1600/1500 BC, central and south-eastern Europe flourished with regional polities financed strategically with CMP2 that secured ownership over trade routes and key exports (Vandkilde 2014). As rapidly as they formed to dominate trade, their dominance collapsed. A newly dominant trade route took over that linked Denmark and south Scandinavia more directly into the trade networks that connected the Mediterranean to the amber trade, perhaps also moving slaves (Kristiansen and Suchowska-Ducke 2015). The Maritime Mode of Production was formed to link formally independent communities into more integrated political economies, by which highly productive chiefly farms could finance trading-raiding ventures that

passed wealth through the hands of chiefs for the building of extensive networks of warriors (Ling et al. 2018). After 1300 BC, the Carpathian ECMP recovered, forming huge fortified proto-urban settlements, while the Atlantic sea trade connected Iberia, British Isles, and Denmark and stoked the continuing MMP.

What were the main drivers and constraints of the Tributary Mode of Production? The primary driver behind the formation of Tributary Modes of Production during the 2nd millennium was the potential for control of warriors and producers through the centralized circulation of the metal required for new professional weapons (swords, lances) that armed semi-professional warrior bands and retinues. These, in turn, helped to protect trade and to control local export producers. The ideological driver, especially of the GMP2 and MMP, was a prestige good system of wealth finance, which allowed chiefs to tie warriors and clients to them and thus expand alliances and incoming tribute. But this would not have been possible without the surplus generated from trade/plunder from faraway places through warrior force (Horn 2016), and the subsequent local expansion of property rights of the more successful chiefs. Throughout Europe, this competitive tributary, trade/raid-based MP resulted in settlement hierarchies between farms and villages (Sørensen 2010), and by the Late Bronze Age it led to the formation of regional centres corresponding to large and rich chief settlements, exploiting the produce of farmers reduced to commoners and slaves (Holst et al. 2013).

Warriors, however, were disruptive in centralized power systems (Earle 1997). Only control over the circulation of metal weapons appears to have been the way to effectively bind them to their chieftains. The rise of semi-autonomous warrior aristocracies, who could be hired by the highest bidder,[11] could tip local and regional power balances and lead to rapidly changing trade routes and opportunities for wealth accumulation. Conquest migrations, such as documented by the Tollense battle in 1250BC, sought to colonize and control fertile lands as at Mecklenburg and major trade routes like the Oder. When considering the scale of warfare documented at Tollense, conflict, conquest, and colonization could take place at regional scale to assert ownership over key land and trade routes, from which tributes could be extracted. The Tollense battle happened at a time when trade between Jutland and south Germany had collapsed after 150–200 flourishing years and had to be forcefully replaced by another trade route from the Carpathians to south Scandinavia (Kristiansen and Suchowska-Ducke 2015). At the same time, an expanded maritime trade towards the Iberian Peninsula appears to have compensated for the temporary collapse of the Weser trade route to South Germany.

The only stability in such systems was constant change as competing forces, emphasizing alternative TMP, sought to direct flows of metals to their advantage. Competition over the metal trade and the resulting opportunities of circulation were inherent to reproduction of the system; they did not lead to systemic collapse, but

[11] There is increasing evidence from strontium isotopic analyses that many warriors of retinues and larger armies had diverse, non-local origins (Wahl and Price 2013; Price et al. 2017). Similar patterns are known from Viking Age warrior cemeteries (Price et al. 2011). This is a characteristic pattern of retinues formed by mercenaries.

rather to continuing shifts in regional centres of wealth. These shifts were often between different MP, the GMP2 and CMP2 of east-central Europe, dominated by the CMP2, and middle and north-western Europe dominated by the MMP and GMP2 dynamics, which persisted independently of the observed shifts in ascendancy to the south. The historical trajectories of Europe and the eastern Mediterranean became increasingly intertwined.[12]

Towards the end of the Bronze Age, the transformative potential of 2nd millennium MP unfolded, ultimately separating the historical trajectories of temperate Europe and the Mediterranean (Kristiansen 1998). In temperate Europe, the metal trade ceased to be critical because of the replacement of bronze, which required large-scale trade, with iron, which was locally available. The Maritime Mode of Production and its control over metal circulation ended, to be replaced by hillfort societies across much of Europe and fortified villages in Scandinavia. These settlement forms were characteristic of CMP1. Eventually, in the world of hillforts large urban-like settlements formed. The oppida (Fernández-Götz 2014) were likely loci for new markets and full-time specialists including merchants.

In the Mediterranean, in the twelfth century BC, the so-called 'Sea Peoples,' apparently originating from northern Italy and other places, flooded the Mediterranean Sea region to prey on and ultimately disrupt trade, causing the collapse of the Late Bronze Age states of the Mycenaeans and the Hittites (Fischer and Bürge 2017; Kristiansen 2016: Fig. 10.5 and 10.7). Perhaps the loss in control over metal circulation and warrior weapons created a dynamic, highly decentralized piratic network of warriors that could prey on established trade, on which the late BA civilizations had been based. Then, during the 1st Millennium BC, throughout the Mediterranean, the Phoenicians (Monroe 2018), then the Greeks, and eventually the Romans, via colonizing, created a new trans-regional economic integration, suppressed warrior raiders (pirates), and established supportive administrative and mercantile structures for trade to support a new social order. The global interdependency that ceased with changes in metal and textile technologies made northern Europe into a periphery, but one linked economically by increasing trade relations to support resource demands of Mediterranean empires. The north–south divergence was finally established and consolidated with the gradual formation of the Roman empire towards the end of the millennium that established a continuingly strong core-periphery relationship until the collapse of the Roman empire in the 6th Century AD (Brun 1994).

[12] We suggest that similar dynamics between competing MP characterized larger regions of western Eurasia, perhaps most clearly demonstrated in the Caucasus (Smith 2015). But also in the steppe do we see an increasing settleling down of the pastoral groups after 2000 BC (Anthony et al. 2016).

## Concluding Discussion

### *Formation and Dissolution of Modes of Production: Expansion and Constraints*

Migrating societies tend to support forces of social equality, in part due to the inherent conditions of risks and collaboration needed to overcome these conditions and the lack of circumscription (Kristinsson 2010). A rule of patrilineal residence and exogamy helped to secure male dominance over property, first in animals and then in farmsteads created by improvement or seizure. As described well in Indo-European sources (Falk 1986), and archaeologically documented (Anthony and Brown 2017), male primogeniture would lead to an institution of training young teenage males as warriors responsible for themselves. Since the pastoral system inherently produced demographic surpluses of young warriors, they had to move out or become dependent labourers at home. Seeking to establish their status, these warriors were the first agents of expansion (Sergent 2003). As operated in many pastoral societies, the young warriors would have been responsible for the defence of their group, but their personal ties based on kin-relationships and friendship would have created the ideal collaborative bonds to seize new opportunities. Sahlins (1961) based on his analysis of Nuer and Tiv ethnographies from Africa called this an organization of predatory expansion. This model is presented in Fig. 3.

Constraints can also act as drivers, depending on outcomes. Demographic and ecological restrictions undoubtedly existed in the PMP. Ecological borders of the steppe became limits to Yamnaya expansion to the west. To the east, they were constrained by well-organized horse herders and hunters of the Botai Culture. Turning constraints into drivers for expansion, however, the Corded Ware people adapted their pastoral economy to forested Europe, and they did so by choosing to occupy first the lighter soils where forests were easily transformed by burning into steppe-like grasslands. Demographic constraints on Corded Ware populations were linked to the carrying capacity of their animals that varied with climate and precipitation. The early 3rd millennium was in this respect good for pastoral practices, but the onset of a dry, warm period around 2300 BC affected productivity and gradually favoured more stable agricultural activities.

In areas of heavier and more fertile soils, Neolithic populations still persisted with settled village life, structured by the CMP1. In less fertile soils occupied by pastoralists, however, the transition to the GMP1 was driven by a continuing growth dynamic, but with definite limits to expansion. While retaining a strong herding component, groups adopted cereal farming, starting an economic transformation that included settlements of scattered farms and the continuous search for new opportunities for colonization. Interacting with Iberian Bell Beaker groups, which had new metal technologies and perhaps maritime boats, Bell Beaker people, who were genetically Corded Ware populations, were able to rapidly recolonize northern and western Europe with a new farming-trading-export economic mix. This Bell Beaker complex

continued to expand towards the British Isles through a broad network of communities that developed specialized products for exchange and/or means of transport. Europe became divided: in areas of heavier soils, villages with cemeteries existed with the CMP and across lighter soils isolated farms and barrows associated with the GMP and MMP (Harding 2000: Fig. 3.1; Earle and Kristiansen 2010: Fig. 8.8 and 8.9).

## *The Role of Cultural, Linguistic, and Ethnic Identities*

Fundamentally, common identities appear in burial rituals, often an individual under a barrow, that express the relations of production that gave individual rights to property. Strict rules of how to position males and females and how to accompany them with particular packages of goods probably reflect shared institutions of ownership transferred at death.

Across broad areas of Eurasia, correspondences existed between migratory expansions and colonisations of the Yamnaya, Corded Ware, and Bell Beaker groups. Structured by an emergent Pastoral to Germanic Mode of Production, these cultural groups stood in sharp contrast to the Corporate Mode of Production of Neolithic farmers, who kept, improved, and defended rich soil areas cut out of the forest, and its cultural localism. Neolithic farms were the target of continuous raids to capture women by Corded Ware and later Bell Beaker warrior groups. As a result of these tensions sharp cultural and ethnic borders were sustained, as well documented from ethnohistorical sources (Cameron 2016: chapter 5). The emergent GMP was supported by warrior sodalities materialized in widespread similarities in male burials (Bourgeois 2017), and perhaps linked to the practice of raising foster sons from distant families networked by kinship and marriage (Knipper et al. 2017). Martin Furholt (2017) has proposed that the fluidity of social groups was behind the formation and maintenance of a homogenous material culture, at least for a few hundred years, which represented strong spatial mobility despite being settled. Later migrations during the La Tene and Migration periods documented that migrating groups often shared symbolic elements fundamental to their identity, while exhibiting local cultural variation (Hedeager 2010).

The symbolic and ritual world, reinforced by language, provided a cultural and ethnic identity in periods of mobility and social tensions. When confronting hostile groups, such collective identities were crucial to form alliances in a segmentary system. Others outside these groups were despised and exterminated; defeat meant death or slavery. Archaeology documents massacred bodies thrown into pits like garbage, as at Pömmelte (2300–2000 BC) where 27 individuals, mostly juvenile and adult males, were thrown into pits around a circular ritual structure (Spatzier 2017).

Language change and continuity has been broadly studied in processes of migration and political economies (Hornborg 2014). In comparative ethnographic cases (Lansing et al. 2017), the dominant language is the one spoken by the social groups into which spouses found residence after marriage. Thus, whether matrilineal or

patrilineal, the language of the receiving group dominates. That these BA societies were typically patrilineal with patrilocal residence following marriage and language adoption, we believe, is in line with the dominance of IE languages across western Eurasia. We can thus propose that the expansive patrilineal, patrilocal warrior based on Pastoral Modes of Production supported the global expansion of Indo-European languages. Should the Neolithic Corporate Mode of Production have been dominant, we would in all probability have seen a much more diverse linguistic history across Europe.

During the 2nd millennium BC, the formation of new regional identities, in part linked to trans-regional networks of trade routes, raiding, and confederation, probably led to the formation of regional dialects and later languages, such as Germanic, and Celtic, Italic and Greek. They could well have their roots in the regional identities, political economies, and networks of mobility and trade formed during the 2nd millennium BC (Kristiansen 1998: Fig. 26).

## *Ideology and Modes of Production*

The dialectic of ideology and relations of production suggests how culture, language, and social relations are modelling on core values and life worlds. Ideology and myth provide a blueprint for social action, e.g. how young warriors must raid cattle and bring them back as bridewealth payments, core personal wealth, and obligations to priests and sacrificial gift to gods (Roymans 1999: Fig. 9). Warrior behaviour unfolded according to social rules that were organized following heavenly rules expressed in myths, rituals, and martial behaviour (Lincoln 1981). This behavioural complex was rooted in principles of primogeniture that led to the formation of the institution of young male training and initiation camps, where they learned the mythical and ritual codex of martial behaviour (Falk 1986). Indoctrination assigns rewards from the gods when warriors sought to take new territories. Inscribed in myths and rituals were Indo-European tales of warrior heroes (Miller 2000). The virility of the warrior hero became a universal language from burial rituals to rock art sceneries (Horn 2013). But these same warriors could become dangerous and dysfunctional after battle; their enhanced aggressive personalities would have been difficult to restrain. Not being able to adjust to normal social life, Bronze Age warriors may represent the first documentation of post-traumatic stress, encoded in the mythologies (Woodard 2013). As documented by Woodard, mythic stories of dysfunctional warriors were shared throughout the Indo-European world from India and Rome to Celtic Ireland, and so probably originated in a shared past, no later than the 2nd millennium BC.

We observe a homology between ideology and social organization, where kinship functioned as relations of production, legitimized by religion. What comes first? This is an old discussion where Godelier (1977) and Friedman (1975) proposed that, as part of modes of production in traditional, small-scale societies, religion organized relations of production and kinship. Rather than seeking arrows of causality,

they appear to merge in the formation of PMP. Modes entail all of these relations, including economic appropriation and distribution of surplus wealth and labour within a larger spatial framework where these mechanisms are unfolding until they reach their constraints. With the international metal economy also came 'modern' weapons, which lead to the formation of a new social institution—the warrior retinue (Kristiansen 2018). But it also became a prerequisite for securing protection to trade expeditions, as well as granting tribute from clients in some varieties of the TMP.

## *The Dialectic of Transformations and Traditions*

Our analysis has come to an end, and even if we can point to specific drivers and constraints in the formation and dissolution of Modes of Production, we note certain commonalities crosscutting such changes, most clearly rules of patrilineality and patrilocality, regionally generalized subsistence economies, and the importance of status in defining objects. These traditions seem to be core of the Indo-European speaking societies that expanded through migratory movements during the 3rd millennium BC, and consolidated and expanded their political economies and hierarchies through the metal trade during the 2nd millennium BC. We note that different MPs co-existed during both millennia, the CMP1 of Neolithic origin was gradually incorporated into a new dominant MP of steppe origin, only to reappear in the 2nd and then 1st millennia BC.

From this, we may deduce that cultural and ethnic/linguistic traditions were indeed strong, especially if linked to rules of ownership, as they usually would have been. Cultural and ethnic traditions, we propose, were carried by institutions that defined basic rules of ownership and political dominance. Every MP, therefore, not only had dominant relations of production characterizing a political economy, but also dominant ideological relations that defined rules of conduct instrumental in maintaining the MP, which also included blueprints for warfare and genocide. The different sources of power represented by economic relations, warrior might, and ideology were always part of a single whole that we can divide only for analytical purposes (Earle 1997).

Among the agents of change were technological innovations that changed both the means and the relations of production. Twice, they paved the way for the formation of new Modes and the subsequent downfall of previous Modes: firstly, with the introduction of the traction complex which led to the formation of the Pastoral Mode of Production around 3000 BC, and secondly, with the introduction of the war chariot around 2000 BC, in combination with effective, personal weapons as represented by the bronze sword and spear paving the way for the Tributary Mode of Production. In both cases, the complexity and materiality of the technologies created new relations of production, and institutions that allowed for the emergence of a warrior elite and their control in part by their aristocratic chiefs. New technologies can drive social transformations, if they are appropriated to form new relations of production, new supporting ideologies/institutions, and thus a new MP.

The forces of history discussed here are more dramatic and violent than scholars have been used to[13]; however, it brings prehistory more in line with recent ethnographic and historical evidence, such as the taking of captives and the killing of the defeated males (Cameron 2016). History happened, not always to ways of our liking. The expansive forces of the 3rd millennium BC established a new and more unified economy, and social formations of Modes of Production that facilitated the integration of western Eurasia into a larger globalized Bronze Age world during the 2nd millennium BC (Kristiansen and Larsson 2005; Vandkilde 2016, 2017), from which there was no way back.

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[13] In many respects our new models echo Maria Gimbutas dramatic scenario of the downfall of a Neolithic matrilineal Old Europe due to migrating warlike patrilineal Indo-Europen speaking societies (Gimbutas 1997a, b), even if she was wrong about the three successive waves as representing Indo-European speaking societies, starting in the 4th millennium BC. We now know that that main migrations took place during the 3rd millennium BC, and those that were eventually earlier, such as Globular Amphora, were Neolithic populations, and not Indo-European speaking. While Gimbutas had a vast archaeological knowledge that allowed her to present impressive, large scale archaeological narratives, she lacked a comparative theoretical and methodological framework to support her interpretations, which made them subject to critique (discussion in Anthony 1990; Kristiansen 1991). Thus, while her interpretations, like those of Gordon Childe and an earlier generation of archaeologists, have become verified, at least in part, it is only now that we are able to provide detailed evidence of the complex interplay of genetic, demographic, economic and social forces of change, including the kinship system, which holds a key to understand much of these dynamics. Thus, the outline of the Crow-Omaha kinship system and its application to the Germanic Mode of Production by Morgen and Engels (Engels 1972), and later to Bronze Age (Rowlands 1980), is still valid. However, we have some way to go before we fully understand Neolithic Modes of Production and their underlying kinship systems.

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# Political/Ideological Display or Economic Need? The Problematical Picture of the Hydraulic Networks in Seventh Century BC Assyria

**Frederick Mario Fales**

There is a long-standing historiographical opinion (born from a number of stratified prejudicial attitudes, virtually all of nineteenth century origin) that the Assyrian Empire, from approx. 850 to 612 BC, was economically based on the pure and simple accumulation of riches from the many external conquered lands, for the essential benefit of an in-group formed by the ruler and his immediate family and magnates. This opinion has been critically disproved on various occasions. Research shows instead an accurately pursued, forward-looking, and even in part locally cooperative, economic strategy of the Assyrian Empire in different scenarios—e.g. regarding the horizon of the Southern Levant (esp. Phoenicia and Philistia), where the existence of a *Pax Assyriaca* with consequent local economic development is by now a largely accepted factor (see most recently Fales 2017a, b, with previous lit.). The present case-study will, instead, focus on the economic care for "innermost Assyria" (the area around the Middle-Upper Tigris and northwards), which could have been the object of one king's specific attention and planning, and for which unusual monumental and archaeological evidence supports the (few) written texts.[1]

[1] The present study is written in the framework of the research activities of the "Land of Nineveh Archaeological Project"/ "Progetto archeologico regionale Terra di Ninive" (*LoNAP/PARTeN*), directed by Prof. Daniele Morandi Bonacossi at the University of Udine. The writer personally visited the area of Khinis/Bavian with Dr. R. Del Fabbro as philologists of the project in September 2012. For detailed and updated studies of the Jerwan aqueduct and its inscriptions, cf. Fales and Del Fabbro (2012–2013, 2014, 2016). A more archaeologically detailed overview of the Khinis/Bavian complex may be found in Fales (2017a), which should at present be updated with the important discoveries published in Morandi Bonacossi (2018c), subsumed in brief also in the present article. Prof. Morandi Bonacossi is to be heartily thanked for his kind help and suggestions, both on the field

F. M. Fales (✉)
Dipartimento di Storia e Tutela dei Beni Culturali, Università degli Studi di Udine, Udine, Italy
e-mail: mario.fales@gmail.com



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**Fig. 1** The Khinis/Bavian gorge and rock face overlooking the Gomel, from N. The bathing figures in the stream are concentrated around the remains of the **GM**

No sculptural complex in the entire Assyrian empire is as majestic as the one executed by king Sennacherib (704–681 BC) in the rocky cliffs of Khinis/Bavian, in the north-eastern corner of Assyria (present-day Iraqi Kurdistan), although its overall monumental and conceptual logic is still disputed, thus opening the possibility of taking up the matter again here in a historical-economic perspective. This vast Assyrian sculptural complex—placed on the rock face of a steep gorge formed by the southern ridges of the Kurdish mountains, through which a river flows that more upstream is named Atrush, and in this area Gomel[2] (Fig. 1)—was discovered already in 1845 by French travellers, and first described in full in 1853 by the British archaeologist Austen Henry Layard, in his second illustrated account of his

and in group discussions in Italy, as well as for timely information on new publications. For reasons of convenience, the main monumental realities of the Khinis/Bavian gorge and adjacent areas will be indicated in the following through acronyms: **RR** = 'Rider Relief'; **GR** = 'Great Relief'; **GM** = 'Gate Monument'; **N** = 'niches' with Sennacherib's image on rock face; **BI** = 'Bavian inscription of Sennacherib'; **J** = Jerwan aqueduct.

[2] Cf. Bagg (2000, pp. 208, 212). The Atrush basin covers a relatively limited area (525 km$^2$) in the mountains to the north of Khinis but receives a quite high amount of annual rainfall (Ur 2005, p. 336). The Gomel river bends sharply after the Khinis gorge in a N–S direction, tracing a slight arc for some 30 km, before its confluence with the more eastward-lying Khāzir or Ghāzir. The final stretch of the two converging waterways bears the name of the one with higher water output, Khāzir; it continues southwards, with a somewhat meandering course through the Jebel Maqlub, before disgorging into the Greater Zab (cf. Fales and Del Fabbro 2014, p. 78).

**Fig. 2** Frontal view of the Khinis/Bavian monumental complex. At centre-right of the rock face, the large sculptural panel of the **GR**; beneath it to the right, a glimpse of the **GM** lying in the waters of the Gomel; above it, in parallel from right to left, three of the rock-cut inverted stelae or niches (**N**) bearing the image of king Sennacherib. To the left, bottom, the square niche of the **RR**. The cavities in the rock face are due to activities by medieval hermit communities. Photo by D. Morandi Bonacossi, http://asorblog.org/2014/01/15/back-to-assyria-cities-villages-and-canals-in-the-land-behind-nineveh/

Assyrian travels and discoveries (Layard 1853, pp. 207–216).[3] Layard gave a correct identification of Sennacherib as the ruler on the large sculptured panel in bas-relief on the rock face (the so-called "Great Relief" [**GR**]), and a preliminary interpretation of the so-called "Bavian inscriptions" **(BI**) of this king, inscribed in three of the round-topped, stele-like niches **(N**)—of which eleven were formerly known, but most recently twelve have been identified (Morandi Bonacossi 2018c)—carved into the sides of the rock cliffs, bearing also small bas-relief portraits of Sennacherib himself (Fig. 2).

[3] Layard however duly noted (ibid., p. 207) that Simon Rouet, the French consul at Mosul, had previously visited the area. In point of fact, this public servant, who acted as *gérant* for the absent P.-É. Botta, had alerted the French academic authorities on Khinis/Bavian and its monuments as early as January 1846. Rouet's activities seem to have excited Layard's animosity at a time when he was attempting to persuade Stratford Canning, the British Ambassador at Constantinople, to back him more forcefully with the local Pasha on his work at Nimrud (Larsen 1994, p. 77). An entry in the British cultural journal *The Athenaeum*, n° 949, Jan 3, 1846, p. 18, mirrors clearly the respective status of the two at the time: "The same journals mention that the French consul at Mossul, M. Simon Rouet, has just discovered, within ten leagues of that city, some Assyrian bas-reliefs in perfect preservation; and that an attaché of the English embassy, Mr Leard [sic], has been making excavations near Mossul, but has, as yet, found only some bricks bearing cuneiform characters".

**Fig. 3** **GM**, side view, as photographed by Gertrude Bell, May 6, 1909. From the *Gertrude Bell Archive*, Album M_035 (1909), online at: http://www.gerty.ncl.ac.uk/photo_details.php?photo_id=3337—accessed on June 1, 2017

As for the so-called "Gate Monument" **(GM)**, Layard viewed it as a broken stone monument fallen from above within the Gomel waters (Layard 1853, p. 234)—where it still lies nowadays (Figs. 3 and 4).[4] Layard's interpretation of the monumental complex was that of "a sacred spot, devoted to religious ceremonies and to national sacrifices" (ibid., p. 215), given the many representations of divine figures to which the king visibly paid homage in the sculpted scenes. Finally, Layard gave a first description of the mangled and abraded panel of the "rider relief" (**RR**) to the south of the **GR**.

Short of half a century later, the Khinis/Bavian monumental complex was visited by the Semitist Eduard Sachau for the *Deutsche Orient-Gesellschaft* (1898), who compared it to Darius' rock inscription with its trilingual inscription at Behistun—thus pointing to a new perception of the purpose of the complex itself (Sachau 1900, p. 118). Sachau was also the first to note that Sennacherib's **BI** spoke "of a major

[4] Layard's description contradicts to a large extent the attached woodcut, in which the fractured memorial is shown standing decidedly above the level of the river. Unfortunately, this misleading illustration ("Fallen Rock-Sculptures (Bavian)"), made its way into the travel and archaeological literature for many decades: e.g. it was recopied by Faucher-Gudin in vol. VIII of Maspero's bestselling *History of Egypt* (London 1903), p. 66, as "Assyrian Bas-Reliefs (sic) at Bavian". A reproduction may still be retrieved online (last accessed: december 2018) at https://commons.wikimedia.org/wiki/File:History_of_Egypt,_Chaldea,_Syria,_Babylonia_and_Assyria_(1903)_(14763156992).jpg.

**Fig. 4** **GM,** side view, as photographed by the author, September 12, 2012

hydraulic work, through which the king irrigated his residence in Nineveh" (ibid., 120). A few years later (1904), the prominent British Assyriologist Leonard W. King made a quick but detailed visit to the site, coming up with a detailed sketch map, with drawings and photographs of **GR**, **GM**, **RR**,and **N** (Fig. 5). But especially, he recommended investigating the hydraulic layout of the gorge and surrounding areas:

> It would also be most important for the Expedition to investigate and make plans of the water-constructions etc. at Bavian and of the paved causeways and other remains in the neighbourhood. I found fragments of inscribed bricks built into the walls of houses in villages near, so I think a careful survey of the district would well repay the time and trouble.[5]

However, King's health failed him, and he never came back to Bavian. In 1914, Walter Bachmann, a long-standing member of the successful archaeological expedition led by W. Andrae to the vast urban site of Assur (=Qal'at Shirgat), decided not to head back to Germany (and to a scenario of war), but to visit the northernmost corner of present-day Iraq on behalf of the *Deutsche Orient-Gesellschaft*, with the aim of providing a full documentation of the Assyrian rock monuments there, through his trained architect's eye. The monumental complex of Khinis/Bavian was to play a major part in his investigations, which also comprised the rock sculptures of Maltai and Gündük, published more than a decade later (Bachmann 1927).

Bachmann's investigation at Khinis was in itself very exhaustive as regards the description and analysis of the gorge's monumental realities, and especially as regards

[5] King *apud* Bachmann (1927, p. iv; see also Bagg 2000, p. 218).

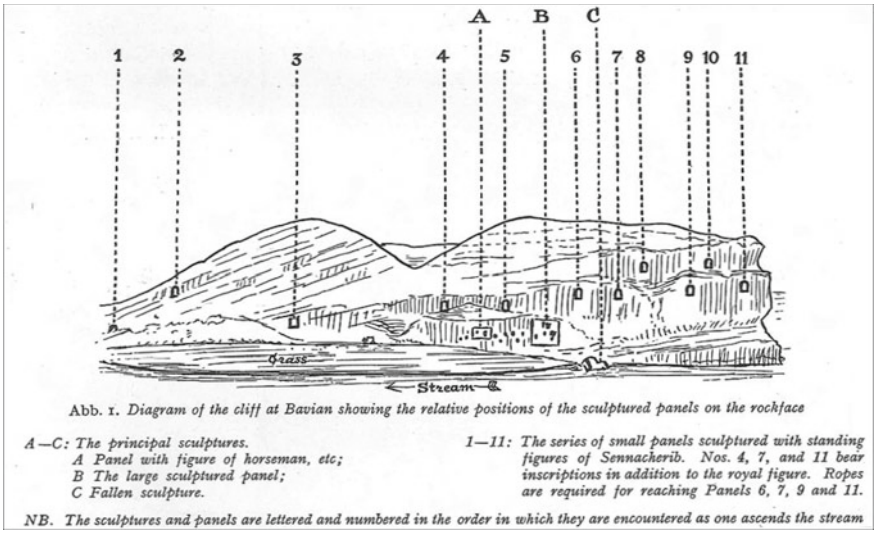


Abb. 1. *Diagram of the cliff at Bavian showing the relative positions of the sculptured panels on the rockface*

*A—C: The principal sculptures.*
*A Panel with figure of horseman, etc;*
*B The large sculptured panel;*
*C Fallen sculpture.*

*1—11: The series of small panels sculptured with standing figures of Sennacherib. Nos. 4, 7, and 11 bear inscriptions in addition to the royal figure. Ropes are required for reaching Panels 6, 7, 9 and 11.*

*NB. The sculptures and panels are lettered and numbered in the order in which they are encountered as one ascends the stream*

**Fig. 5** L.W. King's 1904 sketch plan of the Khinis/Bavian gorge with the location of the main monuments (from Bachmann 1927, p. v). Concordances: A = **RR**; B = **GR**; C = **GM**; 4–11 = **N**, of which nos. 4, 7, 11 bear the **BI**. Notice that Bachmann in the following cases changed King's numbering of **N** (here given in italics): *8* → 11; *9* → 8; *11* → 9, but the original numbering has been kept in more recent studies (see Fig. 13)

the broken and half-submerged **GM** within the Gomel, of which he executed the first reconstructive drawing of excellent craftsmanship (Fig. 6). On the other hand, he totally overlooked King's recommendations to investigate the hydraulic "landscape" involving the site. His overall interpretation of Bavian was that of a *Gartental* even more radical than Layard's:

> On site it is easy to see that only the beautiful landscape of the valley, and the pleasures of pure, cool spring water here led to the founding of a summer residence of the Assyrian rulers. Nature and art created jointly a place of recreation for the summer months… Even hunting may have been quite profitable in this place. Anything else is out of question for the choice of the area; there is no important access to the mountains of Kurdistan, and the surroundings are searched in vain for remains of large settlements.[6]

A new page in the history of research on the Bavian gorge was written in the spring of 1934, when the philologist Thorkild Jacobsen and the archaeologist Seton Lloyd proved this area to be a fundamental pivot in a series of wide-ranging hydraulic works performed by king Sennacherib in northernmost Assyria.[7] Both scholars were engaged in the American-British expedition at nearby Khorsabad, and they had taken four weeks off during the previous year for the first in-depth examination (including some light digging) of the vast stone "causeway" already noticed by Layard, King

[6] Bachmann (1927, p. 1) (translation by the present author). On the connections between Layard's and Bachmann's interpretations of the site, see already Bär (2006, p. 85).

[7] Jacobsen and Lloyd (1935, pp. 44–49).

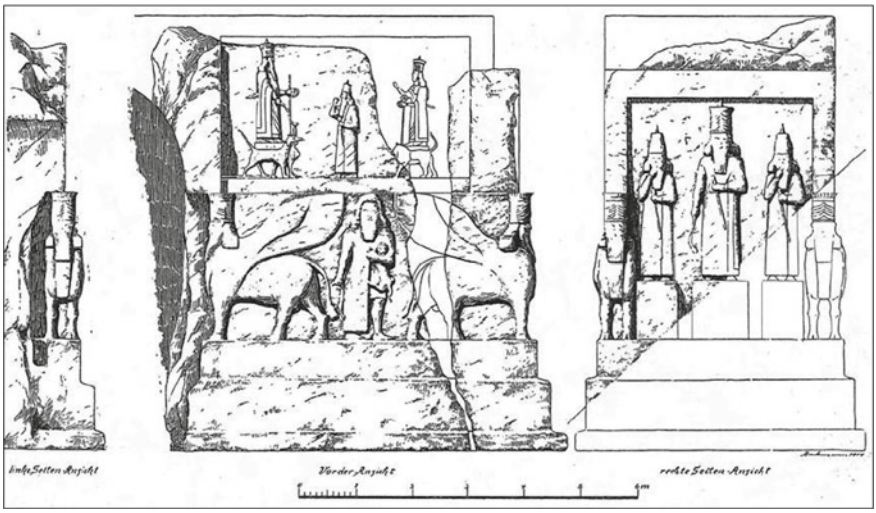

**Fig. 6** Bachmann's reconstruction of **GM**, in three views (left side, front, right side; Bachmann 1927, p. 14)

and Bachmann at Jerwan (**J**),[8] some 30 kms SW of Bavian, which they correctly interpreted as an aqueduct (Jacobsen and Lloyd 1935, pp. 2–30).[9] This vast architectural work (Figs. 7 and 8) carried water over its surface in an E-W/SW direction, i.e. from the catchment area of the Gomel towards the interior, in the general direction of the Ḫusur/Khosr river basin, passing on five cantilevered arches over a deep southward-flowing *wadi*. It represented—thanks to the information given in its main inscription, going back to Sennacherib himself—the first unequivocal proof of this king's interest in conveying water from the rainy northernmost region of Assyria southward towards his new capital, where he had erected an "Incomparable Palace".[10]

Jacobsen and Lloyd had already visited the gorge of Khinis/Bavian in 1933, during a field investigation devoted to tracing the origins of the watercourse which flows over the aqueduct; and they had already suspected that a channel leading to **J** could have originated here. In the meantime, moreover, the **BI** had yielded many of its philological secrets, especially regarding the Assyrian king's assertion

[8] Bachmann (1927, pp. 32–33, and Taf. 33) must be credited with executing the first profiles and location/ ground plans of the Jerwan aqueduct, which are remarkably precise despite the misinterpretation of the monument as the remains of 'an extensive stone dam' employed for irrigation purposes (see now Fales and Del Fabbro 2014, p. 66).

[9] For recent critical appraisals of Jacobsen's and Lloyd's work at Jerwan, and new finds and interpretations made on site concerning the inscribed texts on the monument, see Fales and Del Fabbro (2012–2013, 2014, 2016).

[10] In Akkadian *ekallu ša šānina lā īšu,* usually translated as "Palace Without (a) Rival" (see e.g. Lackenbacher 1990; Russell 1991, etc.); but this rendering by J.E. Reade (1978, 61) is indisputably effective, with no concession to "exotic" undertones. Perhaps even "Palace Incomparable" might be employed, for greater effect.

**Fig. 7** The Jerwan aqueduct (**J**), from NE, present-day condition: the E half is in the foreground, the W half lies beyond the dirt track (corresponding to the wintertime bed of the *wadi*). Foto © LoNAP (2012)

of having performed wide-ranging works of hydraulic engineering for his new capital, Nineveh.[11]

In particular—starting out from a description of the countryside around Nineveh as a dry area, populated by farmers devoid of all means and know-how concerning irrigation—Sennacherib claimed to have dug and interconnected a network of 18 canals in areas north of the city, directing them all towards the capital and its outskirts.[12] In the next clause, the king speaks of a canal, from the city of close-by Kisiri to Nineveh, called *Patti-Sennacherib*; and then, with a broad geographical sweep, he connects the previously named waterworks to an origin in the far-off mountains on

[11] Cf. the recent and accurate edition of the texts by Grayson and Novotny (2014, p. 312 a–b), for the complete list of the composite copies and transliterations/translations of these inscriptions from 1870 onward. In Jacobsen and Lloyd's time, the full and largely reliable edition by Luckenbill (1924) was already available.

[12] Grayson and Novotny (2014, p. 313, ll. 6–11): "Its fields, which had been turned into wastelands due to lack of water, were woven over with spider webs. Moreover, its people did not know artificial irrigation, but had their eyes turned for rain (and) showers from the sky. I climbed high and I had eighteen canals dug from the cities Masitu, Banbarina, Šapparišu, Kār-Šamašnāṣir, Kār-nūri, Talmusu, Ḫatâ, Dalāyin, Rēš-ēni, Sulu, Dūr-Ištar, Šibaniba, Isparirra, Gingiliniš, Nampagātu, Tīlu, Alum-ṣusi, (and) the water that is above the city Ḫadabitu and I directed their courses into the Ḫusur River."


**Fig. 8** The remains of the Jerwan aqueduct (in white) from S, with the darker *wadi* bed at centre, in an OrbView satellite photo (Fales and Del Fabbro 2012–2013, Fig. 8b)

the border of Urartu (i.e. the Kurdish mountains).[13] The text goes on to relate in detail of a further canal, the *Nār-Sennacherib*, insisting to some extent on the small workforce of 70 men required for the task, and again indicating Nineveh as the final destination of all the watercourses.[14]

Based on these textual indications—despite their inner intricacies, and the overall difficulty in relating them to the modern topography of the northern Mesopotamian region—Jacobsen and Lloyd were able to put forth the first coherent suggestion for a reconstruction of Sennacherib's system of waterworks for Nineveh, in which the Khinis/Bavian gorge played a specific role (Jacobsen and Lloyd 1935, pp. 31–43).

[13] Ibid.: 11b-13a: "I had a canal dug from the border of the city Kisiru to Nineveh (and) I caused those waters to flow inside it. I named it Patti-Sennacherib. [*I directed*] the mass of those waters from Mount Tas, a rugged mountain near the land Urarṭu, to my land. Previously, that canal was called the [] canal." The integration in the name of the last-mentioned canal as *Pulpulliya* was first made in Jacobsen and Lloyd (1935, pp. 22, 42); it was upheld by Frahm (1997, p. 153).

[14] Ibid.: 13b–17a: "Now, I, by the command of the god Aššur, the great lord, my lord, added to it the waters on the right and left of the mountain, which are beside it, and [the waters] of the cities Mēsu, Kukkinu, (and) Piturra, cities in its environs. I d[u]g [that] canal with (only) seventy men and I named it Nār-Sennacherib. I added (its water) to the water from the wells and the canals that I had previously d[ug], and (then) I directed their courses to Nineveh, the exalted cult center, my royal residence".

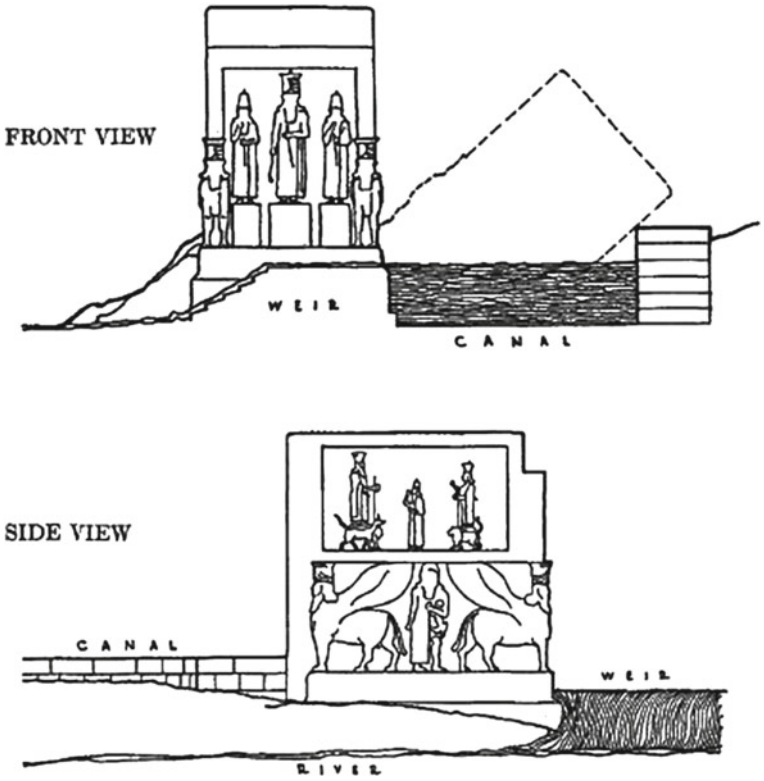


**Fig. 9** The reconstruction of **GM** as a monumental element at the canal head (Jacobsen and Lloyd 1935, p. 49, Fig. 12)

At Bavian, they surmised the existence of a weir which fed the *Nār-Sennacherib* canal, flowing parallel to the west bank of the Gomel, and as such clearing a natural low hill, whereupon it departed westward towards the Jerwan aqueduct.

The two scholars also radically reinterpreted the nature and position of the **GM**, not as a commemorative architectural feature which had fallen into the river from the rock face above, but as a "monumental figurehead", fashioned in situ from solid stone, erected to mark the connecting point (the head or the gate) between the Gomel and Sennacherib's artificial canal, which eventually toppled over from its brick base into the water over time (Fig. 9). This reconstruction not only makes sense, but also accounts for the physical state of the semi-submerged monument, which has in fact suffered a massive vertical break, but is otherwise in a fair condition of preservation to this day—whereas a fall from a greater height would have caused it to be smashed much more minutely.

After Jacobsen and Lloyd's quick and efficient publication of their results in book form (1935), field research on the Jerwan aqueduct and the Khinis/Bavian complex lay dormant for more than seven decades, due to political and wartime difficulties:

the comprehensive re-examination of the Assyrian monuments of the region was only taken up in 2011 by the Udine LoNAP expedition, led by Daniele Morandi Bonacossi.[15] But this dormancy did not apply to wider-scale topographical work and historical(-economic) considerations on Sennacherib's canal system in northern Assyria. In one of the studies resulting from his travels and surveys around northern Iraq, the British archaeologist David Oates formalized in 1968 the observations by Jacobsen and Lloyd on Sennacherib's waterworks for Nineveh, indicating four stages of advancement in different years:

I. "The canalization of the Khosr river for the irrigation of orchards and of a royal park planted with a great variety of trees, collected in the course of Sennacherib's campaigns. (…). This stage was completed in or shortly after the second year of Sennacherib's reign (*c.* 703 B.C.).
II. The clearance and canalization of the sources at the western foot of Jebel Bashiqa, north-east of Nineveh, which were then led into the Khosr. First mentioned in 700 B.C.
III. The diversion into the Khosr of a part of the waters of the Gomel river, by the construction of a canal from the point where the Gomel emerges from the mountains, about 50 km. north-east of Nineveh. This major work included the construction of a stone aqueduct to carry the canal across a watercourse near the modern village of Jerwana, and was completed about 695 B.C.
IV. The diversion of a stream which emerges from the same mountain chain, Jebel al-Qosh, at the modern village of Bandwai, some 30 km. west of Hines…. This part of the scheme is not attested by any surviving inscription, but the two canals can be traced on the ground and it seems to be the logical complement of Sennacherib's known work."[16]

Oates' reconstruction and mapping of the four stages of Sennacherib's hydraulic engineering leading water from the rain-rich mountains of Kurdistan to the parched plain of Nineveh (Fig. 10) has in general withstood the passage of time, but it was revised in various aspects a decade later, by Julian E. Reade (1978), who pointed out first of all that the main project by Sennacherib—the building of his new capital city, Nineveh, in pomp and splendour—was performed leaving "substantial traces on the landscape of what is now northern Iraq".[17] The most significant addition to Oates' observations concerned the so-called "northern canal system", in which the outline of new courses of channels and numerous new insights made by Reade during a field survey—including the retrieval of half-hidden Assyrian sculpted panels—radically expanded the horizon of waterworks around Faida/Bandaway(a) in the NW corner of Iraqi Kurdistan, close to the Tigris riverbank. Reade also clarified that the Khinis/Bavian operation to the NE was surely the conclusive one of the lot.

[15] A first result was an in-depth re-examination of the **J** aqueduct, with its inscriptions viewed per se and in their structural context (Fales and Del Fabbro 2012–2013, 2015, 2016). The **BI** will be also presented anew in a forthcoming publication.

[16] Oates (2005[2], pp. 49–51) and Fig. 4.

[17] Reade (1978, p. 47).

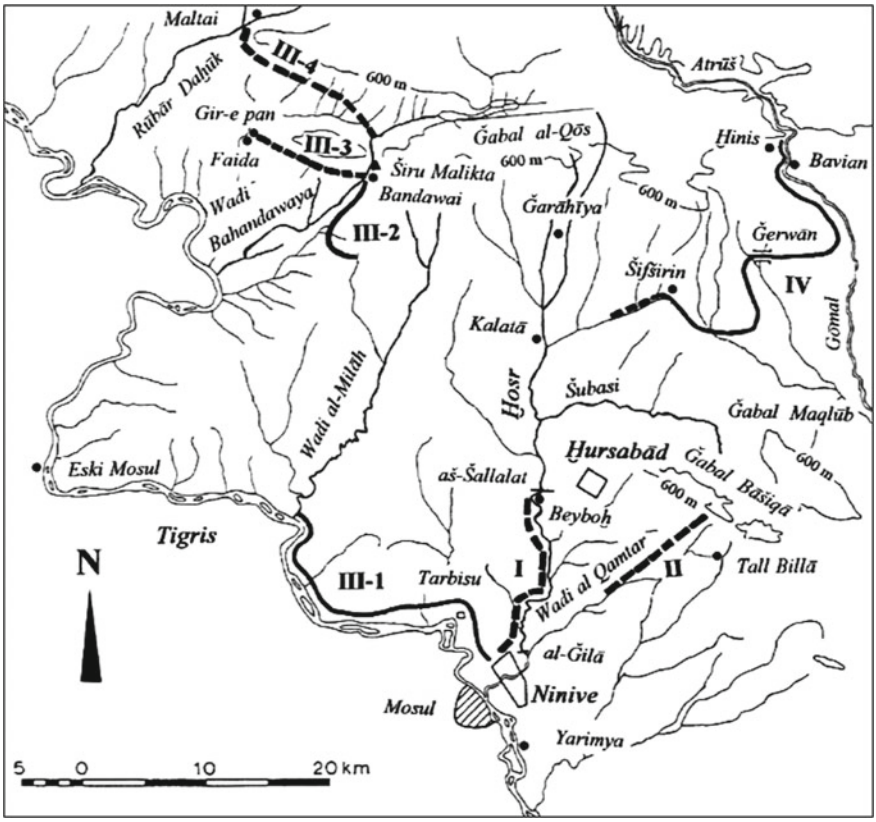


**Fig. 10** Sennacherib's waterworks for Nineveh: sketch map in Bagg (2000), Taf. 63, re-elaborated on the 1968 base map by David Oates (with new numbering). The Khinis/Bavian complex, with the canal leading to the Jerwan aqueduct, is located in the upper right-hand corner (zone IV)

However, despite these numerous innovations of detail over Oates' previous results, Reade shared, by and large, his predecessor's sceptical view concerning the overall economic impact of Sennacherib's wide-ranging hydraulic program. Oates believed that, similarly to the efforts of his imperial predecessors, Sennacherib's system of canals would not have been sufficient to sustain the massive populations of Nineveh without contributions from beyond their immediate agricultural hinterland.[18] In his turn, Reade stated that:

> the economic benefits of the Kalhu and Nineveh canal-systems… may not have been very important to Assyria as a whole. (…) In fact the principal aim of both projects may have been, not so much to augment agricultural production (though this was certainly involved), as to improve the landscape and living conditions of the two great cities, for the benefit most

[18] Oates (2005[2], p. 51): 'It is clear that although the size of the undertaking reflects the notion of grandeur so characteristic of the Late Assyrian kings and it cannot have been an economic proposition, yet it had a practical motive, 'To increase the productivity of the low-lying fields'.

> obviously of the kings who lived in them… It is hard to avoid the conclusion that these canals were luxuries, constructed without serious regard for any requirement of the Assyrian economy.[19]

Partially similar views were brought forth by the German scholar Ariel Bagg in 2000, who allowed for a technical and economic interest on the part of the Assyrian ruler, but all within "a main scope of representative nature". On the other hand, Bagg underscored the fact that Sennacherib could have developed a veritable "office for hydraulic engineering" to carry out his majestic hydraulic projects.[20]

We finally come to the research on Khinis/Bavian during the last two decades, marked first by international conflict in the area under investigation and then by its rapid conclusion entailing thorough political change.[21] Consequences thereof were of two types. In the first place, an important technical instrument for archaeological research in the area came to be introduced, vis-à-vis the previous exclusive recourse to ground observations and—very rarely—to aerial photography: this was the widespread use of satellite photography, even through de-commissioned images previously employed by military and intelligence authorities.[22] The second consequence was represented since 2009 by a policy of openness pursued by the Directorates of Antiquities of Iraqi Kurdistan and the State Board of Antiquities and Heritage of Baghdad towards mid- to long-term international fieldwork (archaeological surveys and excavations).[23] On both counts, results which grounded more firmly, or even somewhat modified, previous findings regarding the Khinis/Bavian gorge and its monumental complex were not long in coming.

Published in 2005, Jason Ur's visual survey of the Sennacherib's canal system for Nineveh through remote sensing and satellite photography aimed at demonstrating—against the scepticism variously expressed by Oates and Reade—that, given the relatively deep and rich soils to the north and east of Nineveh:

> Sennacherib's canal system was an ingenious attempt to redirect springs, rivers and wadis onto such soils and thus to remake the hydrology of Assyria in a form which was much more amenable to human control. Such control would have reduced the inherent risks that come with unpredictable annual rainfall.[24]

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[19] Reade (1978, p. 174).

[20] Bagg (2000, pp. 223–224). See Fales (2017a, pp. 252–253), on the details of Bagg's position, within the history of scholarship on Khinis/Bavian, that a native Assyrian "task force" should have carried out Sennacherib's hydraulic projects.

[21] See Fales (2017a, p. 253, fn. 56), for an assessment of possible, but altogether not exceedingly heavy, damages due to wartime activities and/or local vandalism in recent decades, especially involving the **GR.**

[22] This is the case, e.g., of the CORONA images published in Ur (2005); see ibid, pp. 318–319, for the advantages of these images over more recent realisations (LANDSAT, ASTER, SPOT) due to their higher resolution. Ur also employed aerial photographs from the British Expedition at Nimrud, dated 1955 (ibid., p. 318).

[23] Cf. e.g. Morandi Bonacossi and Iamoni (2015, p. 9).

[24] Ur (2005, p. 320).

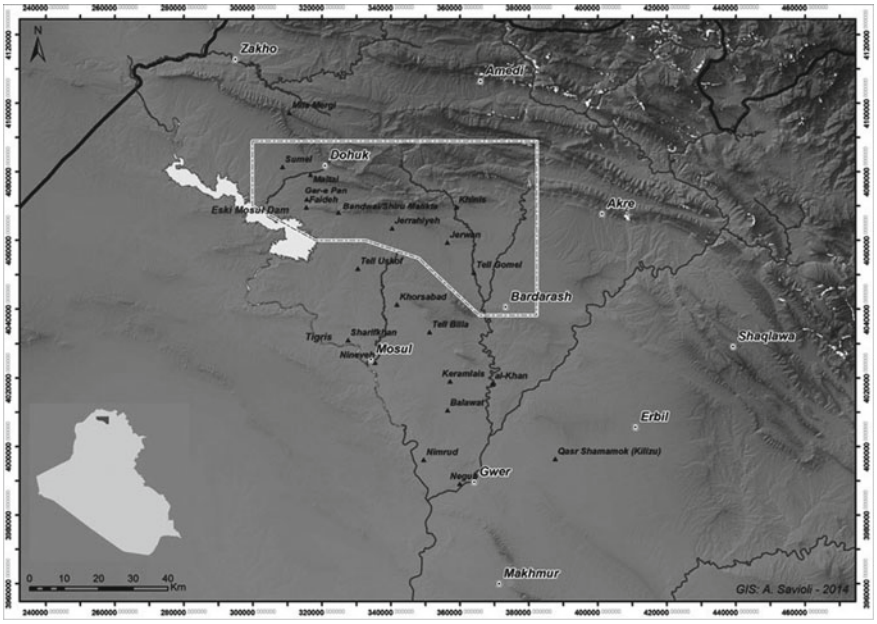


**Fig. 11** Location of the Land of Nineveh Archaeological Project (LoNAP) allotted area in northern Iraqi Kurdistan (from Morandi Bonacossi and Iamoni 2015: 11, Fig. 1)

A further innovation in Ur's results lies in the idea that the very vastness, and the detailed topography, of Sennacherib's waterworks in northernmost Assyria, might indicate that the ruler had different economic purposes in mind:

> the canals all flowed in the general direction of Nineveh and the Khosr but were not all intended actually to reach these places. (….) not *all* the waters were added to the Khosr. An unknown portion was devoted to local irrigation in areas much closer to the canals' sources.[25]

Where are we nowadays on the matter? In recent campaigns, the Italian LoNAP expedition to the Dohuk province in Iraqi Kurdistan (with an extensive survey activity over the 2,900 km$^2$ of the assigned area: Fig. 11) has found support for the overall picture first suggested by Ur, that Sennacherib's lists of toponyms and canals in the **BI** and elsewhere reveal a merely partial cogency with a single master plan for the irrigation of Nineveh. Further suggestions have thus been brought forth concerning the fact that some of the named waterways in the **BI** (and perhaps not only these) could have served a vaster and more diffuse project: that of providing water for irrigation in the entire northern sector of Assyria, from the Tigris to the Greater Zab, and of facilitating the downriver transport of merchandise of various types.[26]

[25] Ibid., pp. 334–335.

[26] It may be recalled that a small but interesting corpus of written evidence from the Assyrian empire (especially in letters sent to the kings by their officials) concerns the widespread and expert navigational activities of the Assyrians on the greater and smaller rivers of the region (both downstream

The first suggestion came from philological studies on **J**. In a renewed appraisal of Sennacherib's main inscription carved in various copies on the ashlars of the aqueduct of Jerwan, R. Del Fabbro and the present author noticed that the king extolled his vast hydraulic efforts, even naming sectors of the Gomel located to the south of the westwards turn of "Sennacherib's canal" towards the aqueduct itself. This self-laudatory description should thus imply that the ruler had—more or less at the same time in which he built the aqueduct "of white stone blocks" as an indispensable waterwork for the multiple canal-fed irrigation of Nineveh to the SW—also hydraulically organized the entire basin of the Gomel/Khazir river (in the so-called Navkur plain), which leads in a southward direction afar from Nineveh itself.[27]

On the archaeological site, a strikingly consonant result was reached by D. Morandi Bonacossi, when the hard winter rainfall of 2013 caused the exposure of a stone quay-wall along the course of the river, i.e. a structure of limestone blocks measuring ca. 28.9 by 3.1 m, located on the right bank. The building technique and the materials used (mortar, limestone blocks, paving stones) are similar to those found in the **J** aqueduct, which makes a date to the Neo-Assyrian period quite plausible (Morandi Bonacossi 2014, pp. 446–447). But a crucial point is that the river quay is not directly connected with the nearby "Canal of Sennacherib", since it is located a few kilometres downriver from the point where the canal starting from Khinis turned westward in the direction of Jerwan (Fig. 12). It is therefore clear that the quay was exclusively devoted to river navigation on the Gomel.

These different results—from philology to archaeology—thus suggest concurrently that Sennacherib, apart from his repeated flaunts about building a vast and technically advanced canal system towards his new capital city, could have had an even wider economic "agenda", which implied a full and efficient use of the waterways of the Navkur plain for various purposes, from irrigation to transport. In a nutshell, despite his own words, at present it would seem that his thoughts were turned not only towards Nineveh, but also towards the entire landscape reorganization of the region north of his new capital.[28]

In recent years, the vast and ramified discipline of landscape archaeology has not only entailed the use of new methods and instruments for research on characteristics of the man-made physical and cultural environment through time,[29] but has

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and upstream) for the purpose of providing materials of various types to the main cities located on the Tigris riverbank: see Fales (1983, 1995, 2017).

[27] Fales and Del Fabbro (2014, p. 76). The official edition of the text (Jerwan inscription **B**), as well as of an abbreviated parallel text in two exemplars (inscription **C**), the second of which was discovered on site by Fales and Del Fabbro in 2012, is now given in Grayson and Novotny (2014, pp. 219–221).

[28] See also Morandi Bonacossi (2018a), where the likelihood that the combined Gomel-Khazir waterways were used for transport as well as for irrigation purposes is suggested, on the basis of more recently studied data.

[29] As is well known, techniques at present in use for non-invasive archaeological investigations comprise laser scanner survey, digital photogrammetry, 3D modeling, micro-relief recording, and Unmanned Aerial Vehicle (UAV, i.e. drone) survey.

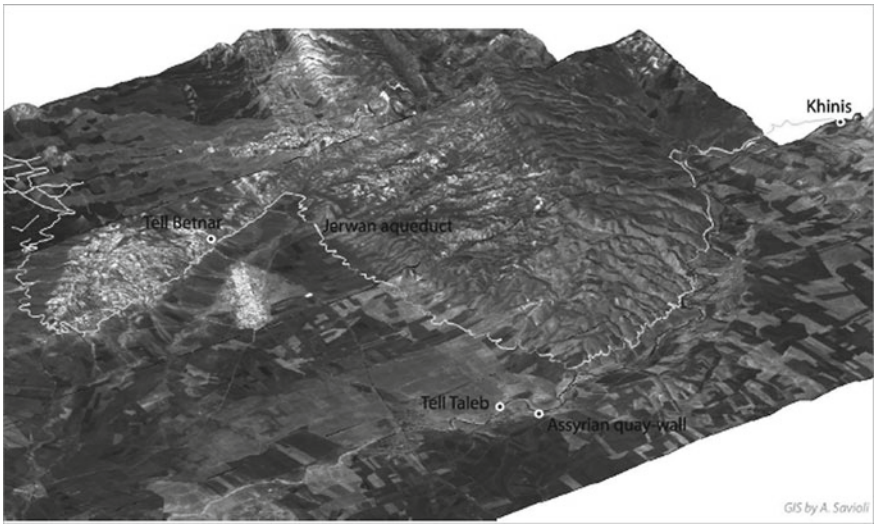


**Fig. 12** Orb-View3 image with course of the Canal of Sennacherib and location of the Assyrian quay-wall discovered by the LoNAP expedition, 2013 (from Morandi Bonacossi 2014, p. 447, Fig. 8)

also devoted attention in theoretical studies to the notions of space and its subdivisions, as well as to monumental markers of the landscape and their implications (on this point, see Harmanşah 2007, 2012). Thus, e.g. a number of contributions by the late and lamented American historian Bradley J. Parker have focused on the complexity of Assyrian imperial control, especially in its northern areas, and its possible implications on landscape modification. In this light, Parker (2013) stated:

> Imperial power was, in most cases, disseminated through regional centers (provincial and vassal capitals, military garrisons, and the like). These centers acted as nodes in networks that linked pieces of the imperial mosaic, some of which might be significantly dispersed, to the imperial core. (p. 139)

This general view, with its possible implications in the realm of agricultural production (see already Parker 2001, 2006), would confirm to a certain extent Ur's suggestion that Sennacherib's system of waterworks north of Nineveh had socio-economic aims beyond the mere provision of water for his new capital. And the present author would add here, that Sennacherib's comprehensive activity could have served the purpose of effectively "(re-)colonizing" areas of under-utilized land between Nineveh/Khorsabad and the piedmont, possibly through a planned policy of deportation ("as a means of creating agricultural surplus to support the burgeoning population in the Assyrian heartland", following Parker 2001, p. 263). But Parker's overall view of Assyrian imperial power as operating through a network of "territorially and hegemonically controlled imperial domains" (Parker 2013, p. 139) would also tally to a certain extent with the details of Neo-Assyrian occupation of the territory between the Tigris and the Navkur plain, where the LoNAP team clearly noted

that, despite the great density of small settlements recorded in the region, as a direct function of its major agro-pastoral potential:

> the Transtigridian plains were not home to widespread urbanism and the size of archaeological sites remains limited throughout their occupation history…. The lack of urbanism … has probably more to do with the rather isolated position of the Transtigridian piedmont belt in the very north of the Assyrian core area, the absence of major trade routes crossing the region, and perhaps its agricultural resources may have been less abundant than those in closer proximity to Nineveh. (Morandi Bonacossi and Iamoni 2015, p. 17)

To focus more clearly on this picture, however, it may be advisable to avoid the possible pitfall of positing a single, all-encompassing, theoretical model of imperial domination for Assyria in the age of Sennacherib (which shows, despite its brevity, various trajectories in distinct phases).[30] Rather, it seems preferable to refer to J. Burbank's and F. Cooper's recently propounded notion of "imperial repertoires", viz. the more fluid search for "actions and conditions that pushed elements into and out of empires' strategies" (Burbank and Cooper 2010, p. 3).[31]

In this light, the quest for a suggested "imperial repertoire" of Sennacherib's reign may lead us to comprise, in a position of prominence, (1) the strategic program, and action, of landscape transformation, effected through the creation of massive hydraulic networks across the piedmont belt of the Zagros in a general N-S orientation. This program was carried out for the supply of water to the new capital Nineveh, as well as, possibly, for the intensive irrigation of the entire northern hinterland—in order to increase yields and reduce the risks for dry-farming practices tied to variable yearly rainfall—for the benefit of a vast number of small rural establishments, probably manned by deportees or servile labour on behalf of the Crown or of absentee landlords from the palatial *élite.*

However—as shown by the sculptures of the Khinis/Bavian gorge, the very same "repertoire" also comprised (2) the figurative and textual commemoration of the royal program in monumental form—i.e. the fashioning of this northernmost gorge into a veritable *lieu de mémoire*,[32] such as to mark for all time the conclusion of his widespread engineering feat. In this light, the very recent retrieval of the twelfth niche-like royal stela (Fig. 13), as well as of fragments of other sculptured panels on the Khinis rock face, definitively proves that the "creation of a grandiose, ideologically extremely sophisticated figurative and textual commemoration of the king's

[30] See Frahm (1997, pp. 1–12; 2002). Also Liverani (1981, 2011).

[31] The present author is grateful to D. Morandi Bonacossi for pointing out this recent historical work and its important methodological implications for the case at hand; see in particular Morandi Bonacossi (2018b), where five elements of the overall Assyrian 'imperial repertoire' are brought forth. The present treatment focuses on the last two of Morandi's elements ('fourth, the construction of hydraulic systems of regional scale; and fifth, the symbolic appropriation of dominated landscapes'), albeit with the suggestion of a further subdivision of the latter between (a) the figurative and textual commemoration of the royal program in monumental form and (b) the communication of a political-ideological message, specific for its temporal relevance, in both documentary domains, on which cf. below.

[32] This concept, first propounded by the French historian Pierre Nora, has been taken up and readapted for Assyria and other ancient Near Eastern monumental realities by Harmanşah (2007, 2012, 2015). See also Morandi Bonacossi (2018b).

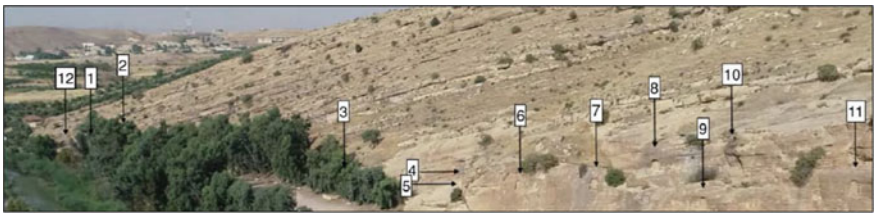


**Fig. 13** UAV view of the Khinis cliff from NNE, with the location of the newly detected 12th rock-cut stela of Sennacherib: from Morandi Bonacossi (2018c), 85, Fig. 8. The numbering is King's original one: see Fig. 5

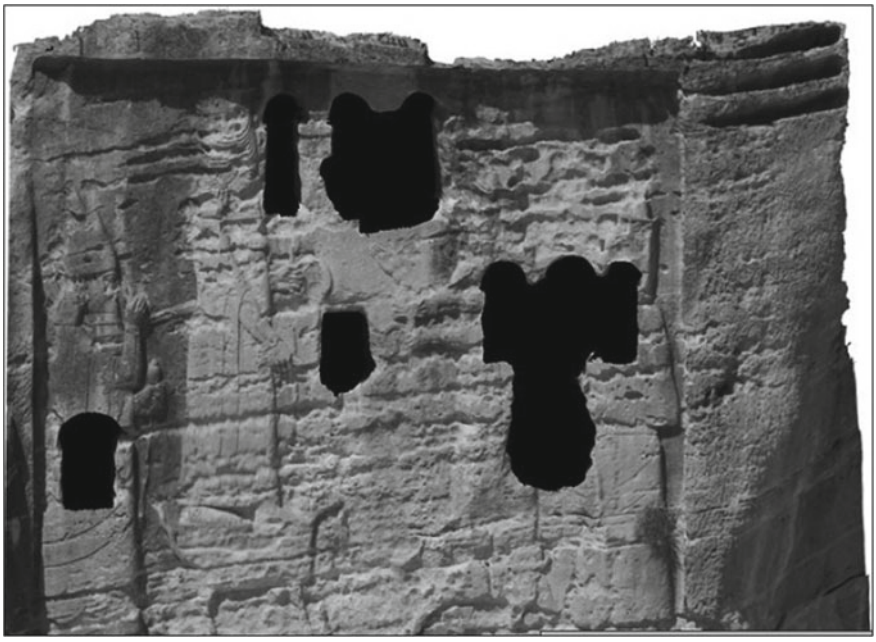

**Fig. 14** A 3D laser scanner model of **GR**, at the head of Sennacherib's Canal at Khinis, realized by Roberto Orazi, *Institute for Technologies Applied to Cultural Heritage*, National Research Council, Rome, for the LoNAP expedition (from Morandi Bonacossi and Iamoni 2015: 33, Fig. 16)

deeds" (Morandi Bonacossi 2018c, p. 89) was at the fore of the king's interests at the same time as his purely technical and economic realizations.[33]

And finally (3), we may posit that the majestic monuments of **GR, GM** and the text of the **BI** also aimed at the communication of a political-ideological message, specifically relevant to the time in which they were executed (see Figs. 14 and 15). As the present author has elsewhere shown, the rock sculptures of Khinis may be traced back to a particular stage of Sennacherib's political-ideological itinerary, centring on

[33] See also Fales (2017a, b, 266) and Morandi Bonacossi (2018b).

**Fig. 15** Reconstruction of the scene depicted in **GR** (from Ornan 2007: 177), showing the specular figures of king Sennacherib in reverential attitude at the sides, behind the god Aššur (left) and his divine consort Mullissu (right), each standing on their symbolic animal-figures. The scene is meant to commemorate the renewal of Sennacherib's tight bond with his national deity, who was exalted through a veritable religious "reform" after the king's conquest and violent destruction of Babylon in 689 BC

the so-called "religious reform", i.e. the supreme exaltation of the national god Aššur, which the king pursued and underscored—both in texts and in building activities—after his conquest and destruction of Babylon in 689 BC (Fales 2015).

At the end of the day, therefore, the Khinis/Bavian figurative and textual complex proves to be a major "soundboard" of Sennacherib's new religious policy: the substitution at all levels of the Babylonian god Marduk by the Assyrian national deity Aššur. The monumentality of the sculptures speaks of this radical change to the observer; the inscriptions exalt the heroic and destructive royal actions. To further celebrate his feats, the ruler opens up a canal in his own name, thus ending his almost fifteen years of hydraulic activity for the welfare of his land; he also builds aqueducts

and quays, and irrigates plenteously his new capital. It is a time of triumph, a time for the display of the entirety of his "imperial repertoire".[34]

The present overview has attempted to chart the changing interpretations regarding the Khinis/Bavian gorge over some 170 years, as regards its specific natural setting, its extraordinary monumental features, its functional descriptions in Sennacherib's own texts, and finally its possible geographical interrelations within the northernmost sector of the Assyrian "heartland" of the seventh century BC. Through the advancements of first-hand exploration or archaeological work in situ, as well as the intensification of philological research, and finally through the major developments in remote sensing technology on one hand, and the apt use of general models of landscape archaeology on the other, it may be stated that—conclusively—both a straightforward attempt to face a situation of economic shortcomings and the political-ideological thrust to leave a "perpetual" imprint of imperial power in a liminal region of his land, may be reconciled in the historical reconstruction of Sennacherib's extensive hydraulic activity in northernmost Assyria.

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[34] On the (still hazy) post-Assyrian history of the Khinis/Bavian complex and its adjoining monuments, see Reade and Anderson (2013, pp. 111–117), regarding the **RR**, an originally Assyrian sculptural composition which was abraded over time and re-sculpted in Parthian or Sasanian times; and Fales and Del Fabbro (2016), regarding the post-Assyrian re-positioning of so-called Inscription **D** at Jerwan, after the opening of a vast breach on the SW side of the aqueduct wall, which brought to light a vast number of inscribed slabs from Sennacherib's time, re-placed in utterly random order. The latter had originally been turned toward the inside of the wall so as to not to be visible/readable and might have come from a palatial building of the Assyrian ruler which had been dismantled/defunctionalized so as to obtain building blocks for the aqueduct. The clear findings (also through petrographical analyses) by Morandi Bonacossi (2018c, pp. 81–86), regarding a limestone quarry on the Khinis rock face, definitively support the idea—already suggested by many previous authors from Bachmann onward—that the slabs of the Jerwan aqueduct came from Khinis itself.

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# The 'Many Faces' of the Roman Economy: Modern Preconceptions and Some Considerations on Capital, Technology, and Labour


**Annalisa Marzano**

## Introduction

In 1981 an important collection of essays edited by Andrea Giardina and Aldo Schiavone was published by Laterza, the three-volume work titled '*Società romana e produzione schiavistica*', which had resulted from a series of seminars organized in Pisa under the auspices of the 'Istituto Gramsci'. The unifying perspective of the volumes, as hinted by the title and declared in the preface to the volume, was Marxist thought,[1] even though some of the chapters were not, in fact, 'Marxist' in their approach. In the case of a pre-industrial society like the one of ancient Rome, which relied heavily on slavery, talking of a 'slave mode of production' had obvious appeal when thinking about developing suitable theoretical models for the study of the Roman economy and society.

As discussed below, this approach has in some cases resulted in a selective interpretation of the ancient historiographical and archaeological records, projecting onto the primary data a set of preconceived ideas. For the ancient economic historian, a move from Marxist thought to other theoretical frameworks has led to a different outlook on the nature of the ancient economy.[2] In more recent years, we have seen Douglass North's ideas and New Institutional Economics (NIE) become central to studies of the ancient economy[3]; Human Capital Theory and Behavioural Economics

[1] In the preface to *Società romana e produzione schiavistica*, the edited volume *Analisi marxista e società antiche*, published in Rome in 1978, is cited as a basis; many of the authors of the two volumes are the same.

[2] Morley (2004) for a discussion of the use of theoretical models on the part of ancient historians.

[3] For example, see Scheidel et al. (2007) and the aims of the international research network 'Structural Determinants of Economic Performance in the Roman World' (http://www.sdep.ugent.be). Lo Cascio (2006, 221) has argued that the theoretical framework developed by North allows for

A. Marzano (✉)
Department of History and Culture, University of Bologna, Bologna, Italy
e-mail: annalisa.marzano2@unibo.it



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are the latest arrival to the investigative 'portfolio' of the ancient economic historian.[4] The re-interpretations of familiar material along the lines offered by these theoretical frameworks are pushing our knowledge forward.[5]

The 'many faces' alluded to in the title of this chapter encapsulate the different opinions ancient economic historians have expressed in the past, and still currently do, on the nature of the ancient economy: from primitivists to modernists, from believers in an 'integrated or semi-integrated market economy' to those stressing that the limited technological advances of antiquity posed a clear barrier to economic development, from those emphasising the structure and performance of the market economy to those stressing the peculiarity of some mechanisms of classical societies (e.g. euergetism), which in effect provided goods and services outside the market-place.[6] Often, specific material evidence from the past, i.e. archaeological evidence, has been interpreted on the basis of such theoretical tenets. It is in turn not surprising that the on-going re-evaluation of the Roman economy has sprung out of the wealth of archaeological data that has become available in recent decades.[7]

This chapter offers some considerations on three crucial areas for any economy—technological innovation, use of labour, and investment—to show how moving away from a preconceived idea of the Roman economy as being little sophisticated has allowed, for instance, the recognition that slave labour did not completely hamper the practical application of technological innovations or that the mechanisms of trade were very complex and involved different actors, both individuals and in some case the state/state institutions (e.g. the army).[8]

## Theoretical Frameworks and Historical Reconstructions: The Case of the 'Villa Schiavistica'

An apt example of projecting onto the primary data a set of preconceived ideas concerns the use of slave labour and the evolution of Rome's agrarian exploitation, linked to the socio-political changes occurring in the capital from about the second century BCE to the end of the Republic. The traditional historiographical narrative

a better insight into the performance of the Roman empire as 'a unified political organization'. Verboven (2015) for a discussion of NIE and other theoretical models and their application to ancient economic history. Hobson (2014) for a historiography of the study of the Roman economy and a short critique of NIE.

[4] See Verboven (2015, 41–47).

[5] For example, see the Doctoral Dissertation competed in 2016 at the University of Reading by Mick Stringer: it investigated economic rationalisms in the works of the Latin agronomists using the principles of bounded rationality.

[6] The Primitivist/Modernist debate followed Finley's seminal book on the ancient economy in the early 1970s (see 1999 edition). Finley (1965), Greene (2003), Tchernia (2011), and Temin (2013).

[7] A primary example being the Oxford Roman Economy Project, see Bowman and Wilson (2009), the first volume produced by the project.

[8] Tchernia (2011) for an insightful analysis of the mechanism and the actors of Roman trade.

saw in the considerable influx of booty and slaves into Italy, which followed in the second century BCE Rome's territorial expansion outside of the Italian peninsula, the cause of an important chain of events that ultimately led to the crisis of Republican institutions. According to this traditional narrative, which can be traced as far back as Max Weber and Michael Rostovtzeff, politically prominent and wealthy landlords expanded the size of their landholdings, dispossessing small and medium free farmers who had fallen on hard times due to the long period they had to spend abroad for the military campaigns.[9] The new estates, whose main cash crops were grape/wine and olives/oil, largely relied on slave labour.[10] This is the kind of villa 'pre-announced' in Cato's agricultural manual of the mid-second century BCE, and fully described in the treatises of Varro (116–27 BCE) and Columella (4–c. 70 CE). Thus, it was thought that the slave-based villa at the centre of large estates became a predominant feature of central and southern Italy, a model of agrarian exploitation later exported to provinces such as Iberia. Such large estates replaced small-sized rural settlements, which tended to disappear from the landscape. The dispossessed farmers moved to Rome, and augmented the urban population, becoming a tool in the hands of unscrupulous politicians, who sought to secure their vote in the assemblies. Since army recruitment was organized according to the census and how much land one owned and small and medium farmers were the backbone of the Roman army, this situation would have had repercussions on army recruitment too.[11] The formation of large estates in the hands of the rich to the detriment of small and medium landholdings relates to another important issue: the distribution of *ager publicus*, or public land, and its illegal occupation.[12] The view that large estates had had a negative impact on Republican Italy is present also in moralist writers such as Pliny the Elder, who famously wrote that '*latifundia* ruined Italy and are doing so now in the provinces'.[13]

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[9] Weber (1896) argued that ultimately the collapse of the Roman empire was the result of a long process which had started with the concentration of landed property in the Republic and the widespread adoption of slave gangs as agricultural manpower. Rostovtzeff (1911, 1926) emphasized the coexistence and conflict of social classes (including slaves) from the late Republic to late antiquity, stressing the incompatible interests of the classes as an impetus for change in Roman history. See also Toynbee (1965, vol.2, 296–312), Frederiksen (1981), Hopkins (1978). Rosafio (1994) offers a quick overview of the debate over slaves and tenants in the villa system.

[10] Two key passages from ancient literary works have been at the centre of this historiographical reconstruction: Plut., *Ti.Gracch* 8.7 and App. *BCiv.* 1.1.7–9. The passages report that when Tiberius Sempronius Gracchus passed through Etruria on his way to take up a military post in Hispania (in 138 or 137 BCE), he saw a territory supposedly depopulated of local farmers and free workers, with 'barbarian' slaves replacing them to till the soil or tend the flocks on the estates of the wealthy. Plutarch relates this story as coming from a pamphlet by Tiberius Gracchus' younger brother, Gaius Sempronius Gracchus (c. 154–121 BCE).

[11] This vision of rich and arrogant villa owners replacing hardy, independent farmers (i.e., old-fashioned family-based farming by citizen-soldiers) with slaves gave graphic clarity to Tiberius and Caius Gracchus' later political views when they were tribunes of the people. It offers a clear example of how to combine a simplifying social narrative with nostalgia for an agrarian past of 'simple' farmers.

[12] This issue occupied much of Rome's sociopolitical debates throughout the mid- and late-Republican periods; see Roselaar (2010).

[13] Plin., *HN* 18 .11.

This reconstructed historical scenario found confirmation in the archaeological record. The villa of Settefinestre excavated in the 1970s near Orbetello, in Tuscany, and the field survey of the surrounding territory were used to support this historical paradigm.[14] But do the archaeological remains really prove the existence of an estate run primarily with slave labour? The interpretation of the excavated remains had been informed by the existing historical reconstruction and by the works of the Latin agronomists.[15] At Settefinestre, a large, plantation-like estate, which housed many slaves (a '*villa schiavistica*') was expected, hence the various modular rooms identified around one large courtyard of the villa were interpreted as slave quarters to house 'hundreds of slaves'. However, there are other ways to interpret this layout, such as a multi-purpose complex comprising storage areas, stables for donkeys/mules *and* housing for both domestic servants and field labourers.[16]

In the last fifty years, the historical reconstruction of Rome's agrarian history in the middle and late-Republican period has been increasingly questioned. Various scholars have stressed that the diffusion of large villa estates did not necessarily mean that *everywhere* the small and medium farms disappeared; the increased number of slaves to be found in Roman society did not mean that the villa engaged in cash crop agriculture relied exclusively on slave labour; and finally, peasant farmers might actually have been more competitive on the market than previously thought because of the high productivity of Roman agriculture.[17]

Nowadays, more scholars admit that the Roman economy was highly complex and presented several mechanisms (e.g. credit-money) that were not too dissimilar from later historical periods which have always been recognized as being more 'sophisticated', e.g. the Middle Ages.[18]

## Technological Innovation and Investment

Investment and practical applications of technological innovation in production facilities are cornerstones of any economy. Therefore, also in the case of the ancient Roman economy, these areas have been at the centre of attention.[19]

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[14] Carandini (1985) and Carandini and Cambi (2002).

[15] Marzano (2007, 129–148).

[16] Marzano (2007, 129–148) for a full discussion of the evidence; Marzano and Metraux (2018, 16–18). In the case of villas in northern Italy, such architectural typology is normally associated with *mansiones* offering lodging to travelers.

[17] See, e.g., Frederiksen (1970–1971) (pre-dating the excavation of Settefinestre); Bringmann (1985), Launaro (2011), Kron (2008).

[18] Harris (2006, 2019a, 2019b).

[19] For example, Greene (2000), Wilson (2002), and Harris and Iara (2011) and the conferences (and resulting volumes) organized by the Structural Determinants of Economic Performance in the Roman World network based at Gent/Brussels (http://www.rsrc.ugent.be/sdep), with the 2015 conference devoted to 'Capital, Investment, and Innovation'. The volume by Scheidel et al. (2007) comprises a chapter on 'Technology' by Helmuth Schneider (pp. 144–71).

After Moses Finley published his influential *The Ancient Economy* in 1973, one of the tenets of those who saw the ancient economy as fundamentally 'primitive' concerned the cases of technological innovations that never developed into widespread practical applications.[20] In this view, the fact that slave labour was readily available meant that wealthy landlords, who had the capital to invest in new technologies, had no immediate incentive to do so. In addition, the availability of unskilled labour in large urban centres such as Rome, would have also discouraged the adoption of inventions. The oft-quoted anecdote in this respect is the episode recounted by Suetonius in the *Life of Vespasian*: a new machine to move heavy columns is not adopted by the emperor for his building projects in the capital, because he needed to 'feed his people',[21] i.e. employ the many unskilled and poor inhabitants of the capital, who may otherwise have bred social unrest.

The water mill is a good example of how modern preconceived ideas about Roman mentality and society (the 'slave mode' of production theory) have informed incorrect reconstructions of the past.[22] Although it was known that in the Hellenistic and early Roman periods several scientists at the Museion in Alexandria researched water-powered machines, it was believed that the various mechanical principles known theoretically were not developed into utilitarian applications.

Although Vitruvius's *de Architectura* contained a description of the geared water-mill,[23] thus proving that some practical application of the theoretical principles had occurred, this invention was believed not to have had any diffusion, thus proving the ancients' fundamental reluctance to accept technological innovation. The lack of much archaeological and written evidence for the use of water mills confirmed historiographical reconstructions contrasting the economy of classical antiquity with that of the Middle Ages. On the one hand, there was a society that, because of the ready availability of slaves, had no immediate incentive to ameliorate production with the practical application of technological innovations; on the other, there was a booming, mercantile society with a highly entrepreneurial bourgeoisie.

As we shall see further on, there is now good archaeological evidence showing that, in fact, by the early first century CE,[24] the watermill had spread widely in various regions of the empire.[25] Yet, it took some time for certain beliefs to change and

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[20] Finley (1999, 146–147). An example often referred to is the invention of the steam engine by Hero of Alexandria (first century AD), which did not lead to the practical exploitation of steam power. See Hero, *Pneumatics*, II.11.

[21] Suet., *Vesp.* 18.

[22] For a discussion see Wilson (2002).

[23] Vitr., *Arch.*, X.5.1–2; the other two occurrences in early imperial literature mentioning the water mill are Strab., *Geogr.*, XII.3.30 and Antipater of Thessalonica, *Anth. Gr.*, IX.418.

[24] It is now believed that the water mill was invented in the mid-third-century BCE, was widely spread by the first century CE, and the full range of vertical wheel types were in use by the late second century: Wilson (2008, 355). The earliest archaeologically known water mill, dated to *c.* 58 CE by dendrochronology, is the Avenches mill: Wikander (2000, 394–97).

[25] The study published by Wikander in 1984 listed twenty-three known watermill sites; in 2000, he listed 56, and in 2006, this number had grown to just above 70 Bowman and Wilson(2009, 34) and Fig. 1.2; see also Wilson (2014).

allow correct interpretation of the archaeological data. Let us consider the impressive complex of Barbegal in southern France, 7 km west of Arles (ancient Arelate). It consists of a complex of sixteen watermills built along a steep hillside and powered by a branch of an aqueduct which until recently was thought to have supplied flour for the entire population of nearby Arleate. A new study has argued that in fact the mills operated only for part of the year to produce hardtack (*panicus panis*) for the ships that visited the ports of Arelate and Fossae Marianae.[26]

Since it was believed that the watermill had not been adopted by early imperial Roman society because of the reliance on slaves, this complex was for some time dated to around the late third century CE, thus establishing a link between the appearance of such practical application of technology and the decline of slavery in ancient society.[27] But a reassessment of this complex has in fact dated it to the second century CE, when slavery was still permeating every level of Roman society.[28] Clearly, the general idea that the reliance on slave labour hampered the Romans' willingness to invest in technological innovation could no longer be sustained. Rather, at least in the case of wealthy landowners and private estates, what seems to have had a greater bearing on the decision to adopt, or not to adopt, a particular technological innovation was whether they resided on the estate: absentee landlords seem to have been more indifferent to investing in technological innovation than landlords who resided on their property.[29]

Once the practical application of water power in antiquity was not being denied a priori, more evidence has been identified or earlier, forgotten identifications have become more widely known and used by scholars in their discussion of ancient technology, economy, and organization of production.[30] At Saepinum in Italy, a stamp mill to crush bark to produce tannin for a tannery was identified and the use of stamp mills to crush ore at Roman mines is very strongly suggested by archaeological evidence.[31] Water-powered stone saws, which were used to cut marble slabs for revetment, have been identified at Ephesus (in a room on the lowest level of Terrace House 2)[32] and at Gerasa (in the cryptoportico of the Tempe of Artemis). These examples date to late antiquity,[33] but the depiction of a stone sawmill in a relief on

[26] Sellin (1983), Sürmelihindi et al. (2018).

[27] Leveau (1996, 142).

[28] Leveau (1996).

[29] Lewitt (2008).

[30] Example, see the large horizontal mills, dated to the fourth century CE, identified at Chemtou during Toutain's excavations in the 1890s (Toutain 1895 *Les cités romaines de la Tunisie: essai sur l'histoire de la colonisation romaine dans l'Afrique du Nord* page 77, note 3.) Other mills of the same type have been recognized at Testour: Wilson (1995).

[31] Wilson (1995, 2008, 356); Brun and Leguilloux (2014) for the Saepinum mill.

[32] At least five water mills were built in a row along the slope of the Bülbül Dâg Mountain; the stone sawmill of Ephesus has been dated to the sixth or early seventh century; see Ritti et al. (2007).

[33] The *terminus post quem* for the installation of the mill is the fifth century, *the ante quem* is 749 CE, when a devastating earthquake occurred; see Ritti et al. (2007).

the lid of a third-century CE sarcophagus from Ierapolis, proves that this 'invention' occurred earlier in the empire.[34]

In addition, it has become clearer how some of those very wealthy landlords, that past historiography described as resistant to innovation because of their reliance on their slaves, were in fact the ones introducing the watermill on their estates. The case of several watermills excavated in the context of large villas investigated in Gaul is exemplary.[35] These villas had estates producing wine and oil, as shown by the presence of presses and a *cella vinaria*; in fact, it is likely that these were the main cash crops of these Romano-Gaulish estates, and that grain was cultivated mainly to satisfy internal needs. One good example is the villa site of St. Martin (Taradeau), which underwent some important changes in the use of space and production facilities in the second century CE. In this period, a watermill was installed on the estate and part of the residential quarters was converted into enlarged wine-processing facilities.[36] Many more Roman villa sites than those identified to date will have had watermills in the imperial period. A mill would not necessarily have been built in proximity of the main building of the villa, but close to a river or other source of waterpower. These more peripheral areas of a villa estate are rarely investigated archaeologically, a factor to be reckoned with when considering the number of watermills known from villa sites.

The known examples of watermills in the context of rural villas in Gaul are interesting for another reason.[37] The mills do not seem to have been used to grind surplus cereals destined for the commercial market. The watermills were often located next to the kitchen and a bread oven and appear to have satisfied the internal needs of the villa estate and its inhabitants/workers; in other words, money was invested in the installation of equipment which would expedite *recurrent* tasks. Since a watermill was more efficient than a mill powered by humans or by animals (it had a higher output and, unlike humans or animals, it could operate continuously), the installation of watermills shows that there was a general interest in investing in technological advances which allowed the rationalization of the use of the available labour resources. It is not surprising that several cases of excavated watermills are on large villa sites which present signs of other investment for market-oriented production (multiple presses and larger production facilities for wine and oil). This is indicative of the presence of some kind of planning in deciding in what area to invest available resources and rationalize the use of manpower so that commercial productions would not be neglected. Large villa estates point to wealthy owners who would not only have had available capital but also better and larger social networks and connections, which had an important role in establishing commercial links; such owners may have had additional incentives in trying to increase the productivity of their estates and in using the time and manpower at their disposal more efficiently.

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[34] Ritti et al. (2007); on the dating, p. 140.

[35] Brun and Borreani (1998).

[36] Brun (2005, 45 and 43) for a plan.

[37] See also discussion in Marzano (2015).

## Capital and Organization of Labour

In my recent work I have investigated the role large-scale fishing, fish salting, and aquaculture had in the Roman economy.[38] In that context, I made some considerations on how fish salting and large-scale fishing were organized: the Roman institution of the *societas* or business partnership had a crucial role in allowing individuals of modest means to pull their resources together, while professional *collegia* provided an avenue to access capital and wider social networks.[39] I focussed on the 'fish-salting sector' because, thanks to archaeology, one cannot deny that the production of salted fish and derived fish sauces was a large 'industry' in the Roman world. Both the geographic diffusion and number of amphorae used to transport the final products and the number of fish-salting sites known are indicators of a 'sector' whose cumulative production, although not quantifiable with precision, was on a large scale.[40] The fish-salting sites that were not large factories often clustered together, an arrangement that probably was not only the result of the needs of that particular type of exploitation (e.g. access to a specific geographic spot with rich fisheries), but may have also helped the medium-sized producers access supply and distribution networks.

The cumulative possible production of the various Roman fish-salting sites (as expressed by the volume of the salting vats) for which some data on their chronological phases exists, indicates a peak in the second half of the second century CE, when, for a total of 34 factories located at 22 sites, vat capacity was *c.*2,600 cubic metres; this number represents only a crude assessment of production.[41] In addition to giving us an idea of the production capacity, the variation in the salting capacity of factories as reflected by the construction of their masonry salting vats is also an indication of the degree of capital investment, over time, in the creation of permanent infrastructure for salting fish. The peak in construction activity, as indicated by current available data, occurred in the second half of the first century CE and continued at a good rate for the whole of the first half of the second century CE.[42]

Obviously larger fish-salting establishments needed more labour and also a higher number of other commodities essential to the fish-salting industry, such as salt, than the smaller workshops did.[43] The number of identified Roman fish-salting sites and the attestations of commercialization of their products far and wide are indicative of the successful establishment of a series of supply networks alongside the creation of the material infrastructure and the securing of the needed manpower. Fish-salting sites needed, first of all, fish, so they must have either directly employed groups of fishermen or must have worked in close collaboration with fishermen engaged in large-scale fishing. Then the fishing operations required large quantities of salt, the

[38] Marzano (2013).

[39] Broekaert 2012 on *societates* as a means to combine resources and share risk.

[40] Not only amphorae were used, but probably barrels too, at least in some case, e.g. for the fish-salting sites Brittany: no Roman kilns have to date been identified in the area.

[41] Wilson (2006).

[42] Wilson (2006).

[43] On salt production in antiquity Carusi (2008).

amphorae in which to pack the products, and good distribution channels. How was all this organized? Why did Roman fish-salting factories seem to have been more successful than later ones?

The answer, I believe, is not simply the political unity of the empire, the low taxation levels when compared to later historical periods, or the development of good transport infrastructure, but also the existence of institutions such as the *societates* (business partnerships) and *collegia* (professional associations), which provided a framework that helped communications and connections, established social ties that worked following the same principles found in patronage, and, ultimately, addressed the problem many small and medium producers and traders must have faced: finding the necessary capital.

## *The Role of Societates*

Although we have abundant physical evidence of salting factories, largely from the western Mediterranean, and the various literary passages mentioning geographic locations renowned for their fish sauces and salted fish—Pliny the Elder for instance mentions Leptis, Pompeii, Antipolis, and Carthago Nova among others[44]—we do not know exactly how the business operations were organized and who owned the large fish-salting establishments. Business partnerships, however, must have played an important role, as suggested by some fascinating pieces of evidence. A business partnership, *societas* in Latin, was a contract of partnership concluded between two or more persons with the purpose of sharing profits and losses. The partners contributed to the common business money, other goods, rights, or their professional skills and labour and funds or other things collected became joint ownership of the partners, either equally or according to different shares if the contributions of the partners were not equal.[45] In Roman law, partnerships would normally dissolve at the death or withdrawal of one of the partners, and therefore never achieved the status of juristic entity that allowed the *societas* to function 'as a legal entity distinct from the individuals comprising the partnership'.[46]

Interesting evidence for the use of business partnerships in the context of large-scale fishing comes from the Marmara Sea in the form of two inscriptions in Greek which date to the Roman period.[47] I discuss here the longer of the two, *I. Parion* 5, a text of 16 lines, which I report in translation:

> During the second imperial priesthood of Lucius Flavius, the 'masters of the nets' and tax-farmers (dedicated this) in Neilaion; the lessee being Publius Avius Lysymachus; the 'masters of the nets' being Publius Avius Lysymachus, Publius Avius Ponticus, son of Publius, Marcus Apicius Quadratus, Epagathus son of Artemidorus, and Publius Avius Bithus; the

[44] Plin., *HN* 31.94.

[45] Berger (1991, 708), s.v. *societas.*

[46] Kehoe (2011, 146).

[47] *I. Parion* 5 and *I. Parion* 6 (this one is rather fragmentary); Marzano (2013, 42–47; 74–77).

scouts being Epagathus son of Artemidorus and Publius Avius Bithus; the helmsmen being Secundus, son of Avius Lysymachus, and Tubellius Laetus; the 'loosener of the floats' being Tongilius Cosmus; the accountant being Cassius Damasippus; the controller being Secundus son of Avius Lysymachus; and the captains of the boats being Asclepiades son of Asclepiades, Hermaiscus son of Avius Lysimachus, Eutychus son of Avius Bithus, Menander son of Leucius, and Hilarius son of Asclepiades.

(Together with) the shipmates.

This epigraphic text attests a group of people who had constituted a business partnership and leased out a fishing lookout, probably to fish for tuna or other migratory fish such as mackerel.[48] As I have discussed elsewhere, the fact that this group of people was engaged in fishing is revealed by the descriptors that accompany each name, which denote the role each member had in the fishing operation, from those in charge of the fishing nets, to the scouts signalling the arrival of the schools of fish, the boat captains, etc.[49] This was not a small group of subsistence fishermen, but a large, well-organized group: it operated a minimum of five boats (five boat captains are named in the text), manned, in total, by at least thirty men, but probably more.[50]

The advantages of constituting a business partnership for fishing operations are the same as those offered in the case of other activities: the possibility to pull together the required resources, both financial and human, and share the losses. Ethnographic evidence suggests that boats and the long and large fishing nets needed in this type of fishing, together with the lease of lookouts, were rather costly and beyond the means of individual fisherman; in the Middle Ages and in later periods wealthy individuals, not physically involved in the fishing, owned the boats and equipment.[51] While we do not have precise information for the Roman period on the cost of fishing boats and the very large nets used in tuna fishing, it is unlikely that the situation was any different from the Middle Ages, considering that the fishing technique employed was the same.[52]

The role played by business partnerships can be seen also in the establishment of the fish-salting factories themselves and in the marketing of the products. Carthago

[48] Robert and Robert (1950, 81–91) on the correct attribution of this inscription to a business partnership that had leased a lookout. It was initially thought that the place name Neilaion in line 3 referred to the cult of Isis and that the group was a religious group. The inscription had a religious dimension, however, as it was on a block (altar?) which on one side had a relief depicting the god Priapus (who had connection with fishing in this geographic area) next to an altar with a fish on it.

[49] Marzano (2013, 73–76).

[50] Six men per boat, including the captain, is the very minimum; this would comprise four at the oars, one helmsman/captain, one in charge of releasing the seine net. Although artistic depictions of Roman fishing boats normally show small vessels with two people on board, the texts of Aelian (*NA* 15.5), in talking of the boats engaged in fishing on the Black Sea, mentions 12 rowers per vessel and very long and heavy fishing nets, clearly alluding to large boats than those depicted in art.

[51] Bresc (1985, 112): the Bishop of 1380 Arnaud financed fishermen by providing them with boat, wood for night fishing, and cash, and received 50% of night catches and 33.3% of other catches; Faber (1883), 115: wealthy individuals in the Adriatic owning the fishing nets and, in effect, keeping the fishermen in their employ.

[52] A detailed discussion of this issue and the question of when the fix complex tuna traps (*tonnara*) were first used in Marzano (2013, 66–79), with previous bibliography.

Nova (modern Cartagena) seems to have been a case in point. We know, both from literary texts and *tituli picti* on amphorae, that the high-quality and expensive *garum* produced in Carthago Nova was marketed under the label '*garum sociorum*' (from the plural noun *socii* = allies or business partners).[53] Translated at times as 'the *garum* of the allies', *garum sociorum* actually referred to the products of a *societas*, a business partnership. Some scholars believe that a *societas* was formed with the purpose of exploiting the salt-works at Carthago Nova right after the Roman conquest during the Second Punic War and that once this *societas* had control of the salt, it extended its operations also to fish salting, as the area could count on the migratory passage of fish and also on the fish seasonally moving between the Mar Menor, a very large coastal lagoon, and the sea.[54]

When it comes to commercial distribution and shipments of salted fish, business partnerships and professional associations appear to have had an important role. An association of traders from Malaca (Malaga) kept its headquarters in Ostia, as has been inferred from a funerary inscription that mentions the *corpus negotiantium Malacitanorum* ('the association of traders from Malaca') and one of its high officials, P. Clodius Athenio.[55] This *corpus* was, in all likelihood, trading largely in salted fish and fish sauces, since one of its officials, the *quinquennalis* P. Clodius Athenio was a trader in salted products: he defines himself in the funerary inscription as *negotians salsarius*.[56] In the area of Malaca, production of the typical amphorae for salted fish is well-attested from the Flavian period down to the later empire, with kilns located at Huerta del Rincon, near Torremolinos, so exports of salted products and the existence of traders specializing in these foodstuffs for Rome and environs are possible.[57] If the suggestion made many years ago to identify this P. Clodius Athenio with the prominent citizen *P. Clodius* […]*io* mentioned in a second-century CE honorific inscription discovered in Malaca itself is correct, it is evident that the label *negotians salsarius* that defines Clodius in the Italian funerary inscription could be applied to individuals of a certain social standing and indicated trade operations on a large scale.[58] Indeed, the inscription from Malaca honours Valeria Lucilla, the wife of L. Valerius Proculus, prefect of the *annona* in 144 CE. P. Clodius is

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[53] Mart. 13.102; Strabo 3.4.6; Plin. *HN* 31.93–94. *Tituli* attested on amphorae for fish sauces/salted fish are '*SOCI*'; '*SOC*'; '*S. CET*': see Étienne and Mayet (1994).

[54] See Étienne and Mayet (2002, 19–26). Marzano (2013, 48). On the cutting of an artificial channel to connect the lagoon to the sea, possibly to allow the fish to migrate and ergo fishing activity: Polybius 10.10.12.

[55] *CIL* 6.9677: *D(is) M(anibus) / P(ublius) Clodius Athenio / negotians salsarius / q(uin)q(uennalis) corporis negotiantium / Malacitanorum et / Scantia Successa coniunx eius / vivi fecerunt sibi et liberis suis et / libertis libertabusque suis posterisque eorum / in fronte p(edes) XIII in agro p(edes) XII*.

[56] Curtis (1991, 63).

[57] Amphora types Beltrán IIA and IIB; IVA and IVB (=Dressel 14); see Haley (2003, 93).

[58] *CIL* II.1971: *Valeriae C.f. / Lucillae / L. Valeri Proculi / praef(ecti) Aegypti / d(ecreto) d(ecurionum) Malac(itanorum) / cives e[…]/ aere co[nla]to / posue[runt] / P. Clodius […]io / honore accepto / conlationem / reddidit*. See introduction to *CIL II*, p. 251 by Hubner, and Manacorda (1977, 325, n. 47).

recorded as having paid back the sum that the citizens had collected in order to erect a statue to Valeria, thus gaining considerable honour for himself for this generous act. Considering Roman social norms and the workings of patronage ties, Clodius' intervention in the matter of the statue to be erected to Valeria Lucilla signals that he was close to her and her husband Valerius Proculus. As pointed out by Haley, such personal ties as indicated by the epigraphic text may signal that there was a close involvement of the *annona* with traders from Baetica supplying Rome with foodstuffs such as salted fish.[59] Associations of traders with representation at the locations receiving most of the products they traded in (or other forms of associative order, such as religious groups, which expressed a clear foreign, ethnic identity in port towns and commercial hubs) as the *corpus* of traders from Malaca attested in Ostia absolved an important function. They helped with logistics, but above all they helped in establishing ties and links with other similar groups, in creating connections with prominent figures who would be chosen as patrons, and also in establishing trust within the local communities.[60] To continue with the example of P. Clodius Athenio, he was probably also one and the same with the *Klodios* honoured as patron in a fragmentary Greek inscription, also from Malaca, set up by an association (*koinon)* of Syrians and Asians (? the reading of the text is uncertain), also to be understood as a group of traders, perhaps importing wine from the Aegean.[61]

This phenomenon has been seen as an example of mechanisms that developed to somehow address the problem of enforcing Roman law when it came, for instance, to compensation in a business lawsuit. An established and known foreign group such as the foreign traders resident in Puteoli could act as a sort of guarantor for a new individual coming from their same town. Institutional and market mechanisms in practice worked thanks to personal ties. The web of social relations thus encapsulated, with its criss-crossing among different geographic regions, goods traded, social ranks of individuals involved, and recurrent key players (e.g. P. Clodius in the example examined above) reminds us that the capillary trade networks attested in the Roman world relied as much on personal and social ties as on the physical transport infrastructure (roads, canals, ports).

## *Key Factors*

The geographic distribution of Roman fish-salting installations, from large factories to smaller workshops, and the spread of preserved fish products commercialized across the empire indicate a complex organization behind this activity. As we have mentioned, it required not simply the ability to find capital to build the installations and to mobilize the necessary manpower, but it also needed salt in abundance and the

[59] Haley (2003, 94).

[60] Verboven (2009, 2011) and Terpstra (2013).

[61] *IG* XIV.2540; the inscription is now lost; the transcription was made in the seventeenth century. Manacorda (1977, 325, n. 47) and Haley (2003, 94).

amphorae for the distribution of the product. In this respect the difference between the phenomena observed in the Roman era and later epochs is striking. In the late nineteenth-century Adriatic, large quantities of shad, mackerel and pilchard caught by the fishermen went to waste because there was not enough salt to preserve them. Contemporary fishermen engaged in tuna fishing in the Argolic Gulf faced similar problems: they had to try to deliver the entire catch fresh, as no salting operations existed.[62] In the former case, the problem was a monopoly on salt imposed by the Austro-Hungarian Empire and the limited quantity of salt sold at a controlled price that the salting operations could receive. In the latter, the problem was the lack of economic means, i.e. of capital, that could have allowed the establishment of salting operations.

In the Roman Empire, political unity, the existence of a limited number of custom barriers when compared to later period, and commercial organization permitted the development of fish-salting activities even at smaller settlements. The relative facility with which business partnerships could be created and dissolved, and the possibility to find capital with loans provided by patrons or bankers, helped the creation of small and medium businesses. But the most successful cases, those which reached a notable volume of production are not simply those which had more capital available and the backing and connections (social, political) of some prominent individual. Another important element is the diversification of the production, in order to have an optimum working cycle. Large-scale fishing operations relying on migratory fish are not a year-round activity but seasonal, running roughly from April/May to October. The large fish-salting factories complemented this with the salting of other foodstuffs. In Brittany, excavations at fish-salting sites have found evidence that also meat was being salted, as bones of sheep, mutton, and cow have been found.[63] At Iulia Traducta, in Spain, joints of horse meat, beef, and mutton were discovered, as well as molluscs, such as oysters.[64] Once the production infrastructure had been created, manpower secured, and the supply and distribution channels put in place, it made sense to operate throughout the year by turning to the salting of meat when the fishing season was over. In the case of salting operations in Iberia and in Brittany, which appear to have regularly supplied the Roman army on the German frontier and in Britain, such diversification was very sensible, as both salted fish and salted meat featured prominently among the military food supplies.

## Conclusions

In this paper I offered some considerations on three fundamental facets of the Roman economy: technological innovation, organization of labour, and economic investment in production facilities. My starting point has been how our understanding of some

[62] Marzano (2013, 120–21).

[63] Wilson (2006, 536).

[64] Bernal Casasola (2007, 2009).

aspects of the Roman economy has changed according to the theoretical framework adopted by the researchers over time. From Marxist thought and emphasis on the slave mode of production, which prevented researchers from recognizing the application of technological innovation, to the focus on the role of the state and the market, propelled by the adoption of NIE, all these shifts in approach have resulted in new interpretations and new understandings of the workings of the ancient economy and society.

I have used the case of the watermill and other practical applications of water-powered machines as an example of technological innovation, which, to a degree, was adopted on wealthy estates in order to increase efficiency and rationalize the use of manpower. Availability of capital and reliance on good social networks were crucial elements when considering adoption of new technology or the development of large-scale commercial operation in the Roman world. However, Roman society had some institutions, such as *societates* and *collegia*, which allowed middling individuals to pull resources together and have access to funds and labour. Under many respects, this was a more dynamic situation than in later periods. There were also ways in which the capital and labour investment in a given activity, such as the example of fish salting discussed above, could be optimized by diversifying production and thus offsetting the problem posed by what was essentially a seasonal activity. However, the Roman economy, particularly trade, ultimately relied greatly on *personal* ties and social networks; the institutional framework, important as it was, had crucial limitations, such as the inability to enforce judicial decisions stemming from law suits among private parties. As such, trade networks centred on the personal contacts of one main individual were not resilient to serious disruptions affecting the networks, but rather fragile. Perhaps this is the reason why, as noted by André Tchernia,[65] a fundamental difference between Roman merchants and those of later epochs is that by and large Roman traders appear to have limited themselves to a single domain (e.g. the trade in salted fish; trade in wine). The specialization and the tendency to maintain over time commercial relationships with the same groups, which included one's slaves and freedmen, contributed to the stability of the network. As with so many aspects of the ancient world, there is always the other side of the coin to consider.

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[65] Tchernia (2011, 70).

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# Trade, Specialisation and Growth

# Weight-Based Trade and the Formation of a Global Network: Material Correlates of Market Exchange in Pre-literate Bronze Age Europe (c. 2300–800 BC)


**Nicola Ialongo**

## Introduction

The beginning of the Bronze Age[1] of western Eurasia coincides with the formation of a global connectivity network, involving the movement of people and things on a continental scale. Bronze becomes a central asset of regional economies. The extreme rarity of tin sources—and the uneven distribution of copper mines—forces regional economies to rely on long-distance trade in order to acquire the necessary raw materials (Vandkilde 2016). This necessity sets in motion a far-reaching process, prompting the development of a network of mid-to-long range connections. People, things and ideas appear to circulate faster, farther away and in greater amounts than ever before (Vandkilde et al. 2015), suggesting a high level of economic integration, with little impediment to free trade between regions (Earle et al. 2015).

In the Near East and the Aegean, the formation of the global network in the 3rd millennium BC is accompanied by the generalized adoption of weight-based trade as one of the main means of exchange, involving private merchants and public administrations (Rahmstorf 2010). Weight systems become the standard means to quantify exchange value in economic transactions; this implies the existence of shared indexes of value that made it possible to commensurate different quantities of different goods

[1] The term 'Bronze Age' broadly refers to a period of the late prehistory of western Eurasia, where copper alloys become central assets of regional economies. The duration of the Bronze Age varies according to different macro regions. This article addresses the Bronze Age of three macro regions: pre-literate Europe (i.e., the part of Europe where writing did not exist), referring to most of contemporary Europe including the British Isles and Scandinavia, with the exclusion of Greece (c. 2300/2200–800 BC). The Aegean, including Greece, the westernmost part of Turkey and all the Islands in between (c. 3100–1050 BC). The Ancient Near East, including Anatolia, the Levant and Mesopotamia (c. 3100–1200 BC).

N. Ialongo (✉)
University of Göttingen, Seminar für Ur- und Frühgeschichte, Nikolausberger Weg 15, 37073 Göttingen, Germany
e-mail: nicola.ialongo@uni-goettingen.de



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(Renfrew 2012). The adoption of weight-based trade in the Ancient Near East properly defines a form of market exchange, regardless of whether or not the economy as a whole was governed by a price-making market (Powell 1977).

In pre-literate Europe, the beginning of the Bronze Age (hereafter BA) coincides with the appearance of the earliest balance weights (Ialongo 2018). The widespread adoption of weighing technology, however, has been only seldom addressed as a global phenomenon (e.g., Rahmstorf 2010; Pare 2013), and its implications for the reconstruction of the exchange economy remain largely unexplored.[2]

Is the adoption of weighing equipment in prehistoric Europe a correlate of the development of an integrated trade network, at least partly based on market exchange? I will address the question through an outline of the spread of weighing technology in Europe—west of Greece—between the end of the 3rd and the beginning of the 1st millennium BC. In order to formulate a working hypothesis for pre-literate Europe, I will discuss the implications of weight-based exchange in connection to barter- and currency-based systems, through a comparison with the Ancient Near East. The hypothesis will be tested based on the statistical analysis of European balance weights.

## Weighing Equipment in Pre-literate BA Europe: Chronology and Distribution

The sample comprises 551 potential balance weights (358 in stone, 165 in bronze and 28 in lead) and 18 balance beams and represents the current state of an ongoing research (Ialongo & Rahmstorf 2019). The identification of balance weights in the archaeological record is largely a statistical problem (Pakkanen 2011); therefore, a positive interpretation is only valid for large samples, while single finds will always be affected by some degree of indeterminacy (Ialongo 2018). Despite the sample having more than doubled since the beginning of the research project, the evidence is still discontinuous. Some areas are still not investigated or just superficially explored (e.g., Spain, the British Isles, Scandinavia and eastern Europe). The distribution of context-types is also uneven. While most of the documentation from Italy and Switzerland comes from settlements (297 weights in settlements vs. 25 in burials),

[2] This work was supported by the European Research Council under the European Union's Horizon 2020 Framework Programme and was carried out within the scope of the ERC-2014-CoG 'WEIGHTANDVALUE: Weight metrology and its economic and social impact on Bronze Age Europe, West and South Asia', based at the Georg-August-Universität of Göttingen, Germany [Grant no. 648055], Principal Investigator: Lorenz Rahmstorf. The main aim of the project is to assess the archaeological evidence related to weighing technology in the BA of western Eurasia and to study its relationship with modes of exchange in pre- and protohistoric societies. I wish to thank Agnese Vacca, Eleonore Pape, Raphael Herrmann, Małgorzata Siennicka, Thomas Terberger and Lorenz Rahmstorf for their constructive critiques and advice on early drafts. It is not without regret that Papesteine are not mentioned in this text. My special gratitude goes to the anonymous reviewers, whose punctual observations greatly helped in improving the chapter.

the evidence in central Europe (between France and Hungary) is mainly concentrated in burials (15 vs. 110). In Portugal, burials with weighing equipment are not attested, with 31 weights coming from settlements and eight from hoards. Finally, only eight weights are documented in England so far, equally distributed among different types of contexts.

Earlier studies on weighing equipment in pre-literate BA Europe only addressed limited regions and were mainly concerned with establishing typologies of balance weights and metrological relationships (Pare 1999; Cardarelli et al. 2001; Vilaça 2003, 2013; Feth 2014; Ialongo 2018). Based on these studies and on new evidence it is possible to propose a general outline of the spread of balance scales and weights. The chronology illustrated in Fig. 1 is based on the loose correlation of at least six distinct local relative sequences and their commonly accepted absolute chronologies (Italy, Central Europe, France, Northern Europe, Atlantic Europe and British Isles; main references: Pacciarelli 2001; Primas 2008, p. 7; Olsen et al. 2011; Roberts et al. 2013), and represents a simplification of a highly complex problem. Regional sequences are, in most cases, still debated, and attempting a cross-regional correlation must inevitably rely on a certain degree of approximation. The chronology illustrated

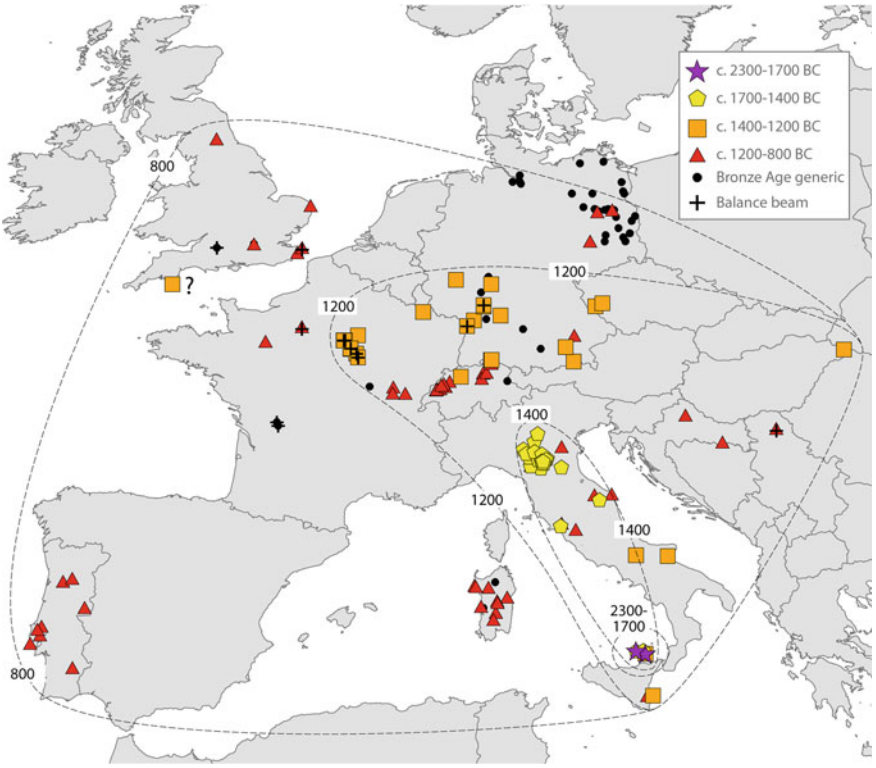


**Fig. 1** Diachronic distribution of weighing equipment in pre-literate BA Europe

in the map always corresponds to that of the archaeological context in which the objects were found; hence, stray finds are always considered non-datable.

The sample was divided into four arbitrary phases, based on the rough correlation of regional sequences, in the attempt to provide the highest possible detail. The first phase (c. 2300–1700 BC) is only represented by finds from the Aeolian Islands (Sicily, Italy; Ialongo 2018). Thirty potential balance weights were identified in several settlements which are dated between c. 2300 and 950 BC, among which 15 belong to layers dated to the Early BA (Fig. 2A).

The distribution of the second phase (c. 1700–1400 BC) is still limited to Italy. Many potential balance weights are documented in the *terramare* settlements in the Po Plain, all in stone (Fig. 2B). Very few finds have reliable find contexts, most of them coming from old excavations (Cardarelli et al. 2001). However, the *terramare* seem to begin around 1600 cal. BC (Vanzetti 2013). Not all the finds illustrated in the map may date so early; however, at least one balance weight from the site of Gaggio comes from a reliable context (Fig. 2B), belonging to a settlement-phase beginning approx. 1600 BC (Balista et al. 2008).

Finds belonging to the third phase (c. 1400–1200 BC) are widespread between Italy and central Europe, and mostly belong to funerary contexts. A research on the unpublished materials from Thapsos (Sicily, Italy; Orsi 1896), led to the identification of 19 bronze balance weights from two collective rock-cut tombs. Grave 6 contains 17 small weights (Fig. 2C), while a single weight comes from grave 14 (Fig. 2D). The site of Thapsos is dated between Middle BA 3 and Recent BA (c. 1400–1200 BC). Weighing equipment is also widely attested in central European graves dating to Bronze D (c. 1350–1200 BC), where weights are often associated with balance beams (Fig. 3A; Pare 1999; Roscio et al. 2011; Roscio 2018). The easternmost finds known to date belong to the same phase, from the hoard of Tiszabecs, in Hungary (Pare 1999). In the site of Salcombe (England) two balance weights (Fig. 3B; Rahmstorf 2019) were found together with nearly 400 metal objects on the bottom of the Channel, off the coast of Devon (Needham et al. 2013); part of the objects date to the Ewart Park phase (c. 1000–800 BC), and part to the Penard phase (c. 1300–1150 BC). However, the balance weights cannot be assigned with certainty to either of the two phases; therefore, the find-spot is indicated with a question mark on the distribution map.

The fourth phase (c. 1200–800 BC) also includes finds from northern Germany, England, Portugal and Sardinia. The finds from northern Germany coming from reliable contexts are dated between Periods IV and V of the Nordic Bronze Age (c. 1100–800 BC); they consist of three cremation graves (Busse 1900: 55; Seyer 1967; Schmalfuß 2008, Fig. 2) and a small votive deposition containing weapons, ornaments and scrap metal (Reinbacher 1956; Fig. 3C). All these contexts contain *Kannelurensteine*, a class of stone objects widespread between Italy and central Europe, for which statistical tests support the interpretation as balance weights (Cardarelli et al. 2001; Ialongo 2018). In England, all the collected evidence is dated between the phases Wilburton and Ewart Park (c. 1150–800 BC; Rahmstorf 2019). The balance weights from Portugal seem to belong to the end of the Iberian Bronce Final (c. 1000–800 BC; Fig. 3D; Vilaça 2003, 2013). Finally, finds from

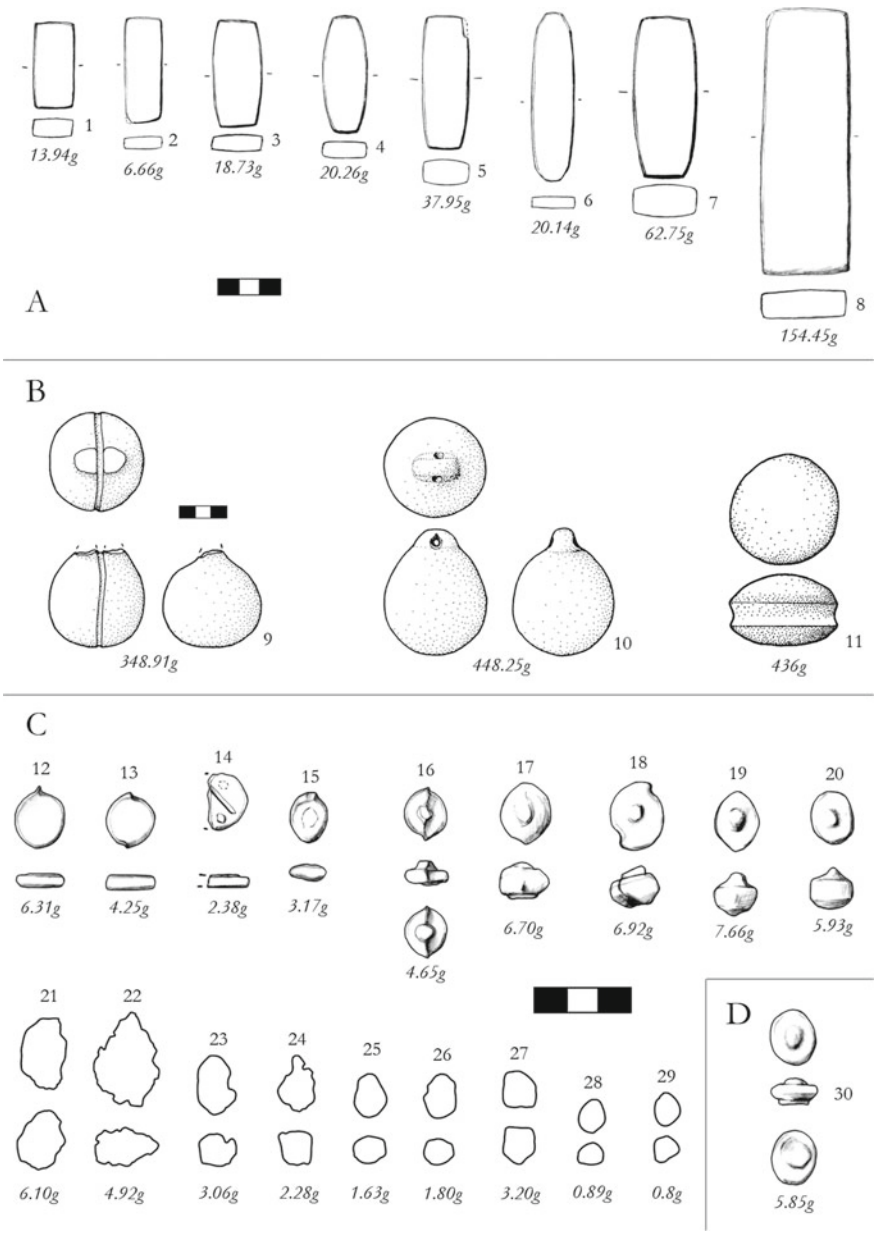


**Fig. 2** Potential balance weights from pre-literate BA Europe. **A** Stone rectangular weights from the Aeolian Islands, Sicily, from contexts dated to c. 2300–1700 BC (after Ialongo 2018). **B** Stone piriform weights and *Kannelurensteine* from the terramare settlements, northern Italy; 1–2: Gaggio di Castelfranco, phase II (c. 1600–1500 BC; after Balista et al. 2008); 3: Scandiano (after Cardarelli et al. 2001). **C** Disc-shaped weights from Thapsos-grave 6, Sicily (c. 1400–1200 BC; unpublished); 21–29: corroded. **D** Disc-shaped weight from Thapsos-grave 14, Sicily (c. 1400–1200 BC; unpublished)

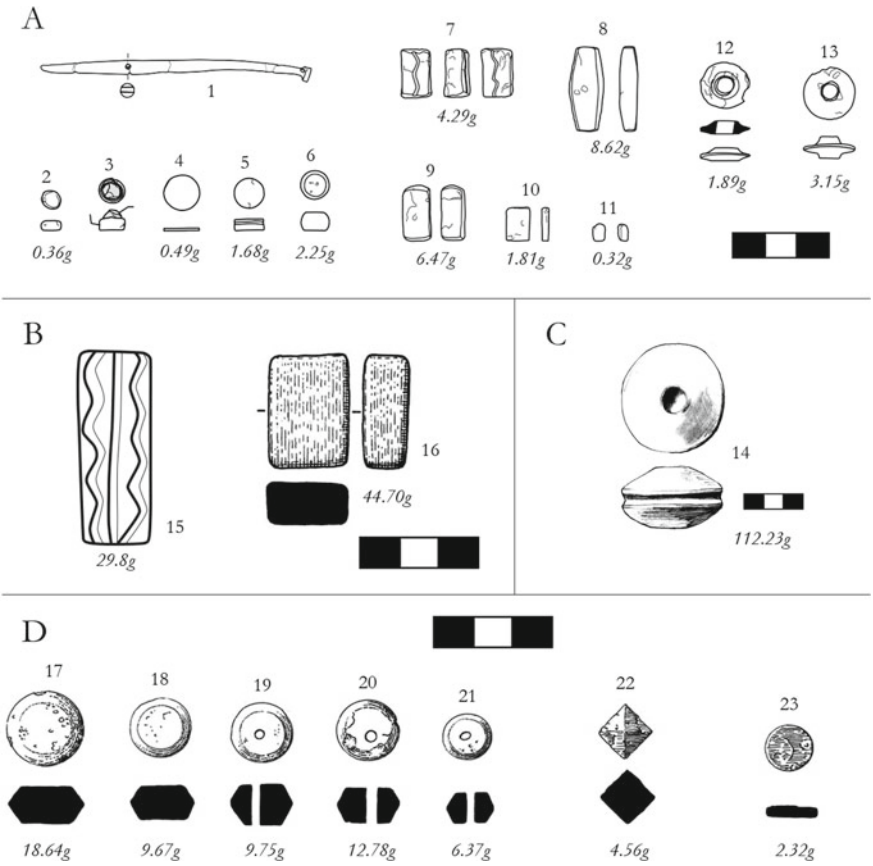


**Fig. 3** Weighing equipment from pre-literate BA Europe. **A** Etigny, 'Le Brassot' Ouest, Inhumation 90 (after Roscio 2018, pl. 85); 1: balance beam (antler); 2–11: balance weights (bronze). **B** Bronze rectangular weights from Salcombe, southern England (c. 1300–800 BC; after Rahmstorf 2019). **C** *Kannelurenstein* from the hoard of Krampnitz (c. 1100–800 BC; Reinbacher 1956; drawing by the Author). **D** Disc-shaped and octahedral weights from the hoard of Baleizão, Portugal (c. 1000–800 BC; after Vilaça 2013)

Sardinia entirely belong to the Primo Ferro period, datable between c. 950 and 725 BC (Ialongo 2018).

In summary, weighing technology is first attested in the western Mediterranean around 2000 BC, and it is widely adopted between Italy and central Europe by at least c. 1400 BC. The seemingly late appearance in the Atlantic façade is based on scanty and discontinuous data and shall require further investigation. The unbalanced documentary framework suggests caution in interpreting the distribution map. The 'appearance' of weighing equipment in different regions of Europe should be regarded, for the time being, as a *terminus ante quem* for the adoption of weight-based trade, rather than an accurate representation of a gradual spread.

## Weight Systems, Prices and Market Exchange

### *Premise*

In order not to incur in the pitfalls of the 'substantivists vs. formalists' debate, it is crucial to consider that market exchange is never the only mode of exchange in human societies, and, most importantly, that a market economy is never directed—contrarily to what Polanyi believed—'*…by market prices and nothing but market prices*' (1944/57:43). Substantivist models generally incur in the paradox of considering ancient economies 'different' and driven by agents that were 'other'—anthropologically speaking—than modern ones (Adams 1974). Since the late 1970s, economic anthropology demonstrated that the notion of such an assumed 'otherness' is fundamentally biased (Bourdieu 1977, pp. 183–197; Appadurai 1986; Swedberg and Granovetter 1992). Labour, scarcity and the balance of supply and demand are not the only factors determining the value of commodities in modern markets. Value, on the contrary, 'is never an inherent property of objects, but is a judgement made about them by subjects' (Appadurai 1986 p. 3). The idea that value is a relational quality rather than an inherent property dramatically reduces the gap between market exchange and supposedly 'primitive' means of exchange, such as reciprocity and ceremonial gift-exchange. Contemporary Western market economy is, in many instances, as embedded in social relationships as 'primitive' economies are often supposed to be and drawing a line that sharply separates the former from the latter is counterproductive (Beckert 2011). For the same reason, admitting the existence of market exchange in primitive economies does not imply denying the existence of other forms of exchange. One of the challenges of a research on prehistoric economies lies in determining when, how and to what extent different modes of exchange contributed to the general framework.

The Ancient Near Eastern economy of the BA is generally thought to be largely based on market exchange. Transactions rely on the quantification of prices—based on accepted indexes of value—regardless of whether or not the economy as a whole is governed by a price-making market (Adams 1974; Powell 1977). Socially embedded dynamics—such as trust, kinship and power—can still play a role in the quantification of prices. What sets market exchange apart from ceremonial gift-exchange is that, once the price is paid, the transaction is formally concluded and no further obligation persists between the agents involved. The earliest forms of market exchange are documented by BA texts in the Ancient Near East, where weight systems were systematically employed to assess exchange values of goods and services, and various forms of currency were used as standards of value (Powell 1996). Prices were not attached only to goods. Widely shared indexes provided the frame of reference to commensurate the economic value of commodities and services: cross-references between different documents allow the formulation of pricelists, describing the equivalences between different commodities and the cost of wage labour (Englund 2012).

The situation for the Bronze Age Aegean is less clear. Texts mostly consist of inventory lists, whose primary utility was to assess incomes and expenditures, and to

keep track of the stocks of the palatial reserves (e.g., Bennet 1980, 1983), and direct references to trade are rare and difficult to interpret (Fischer 2016). However, words for 'price' and 'currency' occur in a few documents, and always refer to weight as a measure of value (Lujàn 2011).

## *Barter or Currency?*

Harding (2013) suggested that the term 'trade' is inappropriate to describe the exchange economy of pre-literate Europe in the BA, because the term would imply the existence of 'currency and markets' which, in turn, are assumed not to exist at that time. Even though the term 'barter' does not appear in Harding's article, one would assume that, if market exchange and currency did not exist, then barter is the only possible alternative. Interpretive accounts on prehistoric economies that tend to underplay the complexity of BA trade rarely rely on barter as an alternative model, preferring, instead, to focus on reciprocity and ceremonial gift-exchange to model the social context of exchange (e.g., Brück 2016). However, a full-scale economy cannot rely solely on gift-exchange, and although barter likely represented a viable means of exchange, its role in the economy of BA Europe has been poorly explored. This is, probably, at least in part due to some persisting ambiguities in the definition of barter itself: some authors see barter and gift-exchange as entirely independent from one another (including, e.g., Polanyi 1977, p. 42), while others allow their respective fields of action to overlap (Chapman 1980). On the other hand, when barter is intended simply as 'moneyless transaction', it is not always easy to distinguish from 'moneyless market-exchange' (Dalton 1975), which raises the problem of the relationship between barter and currency. In order to solve this ambiguity, Appadurai (1986, p. 9) proposed a working definition of barter as 'the exchange of objects for one another without reference to money, and with maximum feasible reduction of social, cultural, political, or personal transaction costs'. This definition has the advantage of establishing a clear relationship between barter and money: the point is not whether or not money actively intervenes as a medium of exchange, but if the transaction makes any reference to it. The question is whether this definition reflects the evidence available for BA modes of exchange, and in particular for weight-based transactions. The evidence suggests that this definition of barter is not appropriate for exchange systems that rely on weight to quantify economic value.

The implementation of weight systems in large-scale exchange networks requires the existence of an abstract frame of reference for the quantification of value, on which the majority of the agents in a network tend to agree; otherwise, it would be impossible to commensurate the *value per unit* of two different commodities, and weight systems would simply have no reason to exist (Renfrew 2012). There is no use, in fact, in assigning a quantity to a good being exchanged, if one could not convert that quantity in terms of a different quantity of a different good. Commensuration is a basic property of weight systems and implies the existence of an 'accepted index of value', which must be relatively stable across a given exchange network,

according to which agents commensurate the exchange value of commodities and services (Powell 1979). When implemented in large-scale networks, this kind of system cannot ignore the fact that different regional locales have unequal access to different commodities, and that this determines different costs in their acquisition (Earle et al. 2015). Therefore, indexes of value must take into account—at least to some extent—the balance between supply and demand across very large territories when assigning a value to a good being exchanged. This particular instance of value ascription corresponds to the common meaning of *price* (Powell 1996), and transactions based on prices belong to the definition of *market exchange*.

The necessary precondition of weight-based exchange system is, therefore, the existence of shared indexes of value, without which no commensuration would be possible. Commensuration of different quantities of different goods requires abstracting the concept of inherent value and transforming it into that of *value per unit*. Commensuration, in turn, requires the exchange values of different goods to be transitive. One can imagine, for example, a three-commodity circuit: if 640 g of copper are worth 8 g of silver, and 8 g of silver are worth 4.7 kg of wool, then 4.7 kg of wool must be worth 640 g of copper. The concept of value per unit allows to commensurate exchange values, implying that any of such commodities is equally viable, as a medium of exchange, to purchase any other commodity in the circuit. These practical examples represent an approximation of the actual exchange rates of commodities, as they can be inferred from the cuneiform archives of the Ur III period in Mesopotamia (c. 2050–2000 BC; Englund 2012). Texts from the Ancient Near East provide documentation about currency, prices and value-equivalences between different commodities, and represent an ideal case study to approach the problem of barter and currency in weight-based exchange systems. Ancient Near Eastern economy was based on a multi-currency system. In the Ur III period, the salaries of state dependants were mainly paid in grain (mostly barley, measured by volume), while commercial transactions were generally based on silver (measured by weight; Steinkeller 2004). Both barley and silver could change hands indefinite times and be effectively used as currencies in further transactions. Other commodities could also function as currencies, but barley and silver are the most frequently mentioned. Barley and silver, in turn, were not just mediums of exchange, but also *standards of value*. Texts quantifying transaction prices in grain or silver do not necessarily imply that silver and grain were physically employed as mediums of exchange (Powell 1996). Therefore, different goods could be exchanged for one another, in a barter fashion, without using currency as a medium of exchange, but still maintaining a *reference* to currency as a standard of value. Whether or not currency plays an actual role in the transaction, weight-based exchange is, in fact, entirely based on abstract indexes of value, and corresponds to the definition of market exchange.

## *Weight Systems and the Problem of Currency*

Weight-based trade does not require money to be effective. However, textual and archaeological evidence shows that the adoption of weighing technology between the Ancient Near East and Greece in the BA is always accompanied by the emergence of currencies (Rahmstorf 2016). Currencies always circulated both as *commodities* and as *money*, the distinction between the two functions being more dependent on scholarly jargon than on actual differences in their use (Powell 1996). Metal currencies, in particular, were never cast or struck into any kind of standardized shape. The adoption of a limited number of commodity currencies as standards of value represents a convenient device, since it provides a ready-to-use parameter on which all the agents in the network tend to agree. The adoption of currencies as standards of value does not even require the existence of a governing body. Silver, in the Ancient Near East, was the most used currency in transactions; however, it was never imposed by state administrations as an 'official' currency (Peyronel 2010) and circulated freely in the private economic sector as well (Steinkeller 2004). Silver simply came into use by virtue of its peculiar characteristics: it was more valuable than copper (which was often used as a 'cheaper' currency), but not as rare as gold (which was seldom used as currency), easily transportable and durable. The function of silver as a purely abstract standard of value was well understood by the people of ancient Mesopotamia, at least since the 3rd millennium BC. One of the so-called 'Debate Poems' (short satirical texts in Sumerian language) describes a 'quarrel' between copper and silver[3] (Peyronel 2014). Copper boasts about having many practical uses, and mocks silver calling it 'a mouse in a silent house'—blaming it for having no other use than being hidden in 'an obscure place, a grave'—with reference to the custom of hoarding silver in jars buried under the house floor (e.g., Peyronel 2014; Bachhuber 2018). Copper further adds 'they cut you to pieces with the strength provided by me', a direct reference to the habit of breaking silver into fragments in order to facilitate weighing operations, widely documented archaeologically (Ialongo et al. 2018a).

In Aegean texts, words for 'price' and 'currency' occur in a few documents, and always refer to weight as a measure of value (Lujàn 2011). Silver, in particular, is often mentioned as a standard of value, without this implying that it was actually employed in transactions (Michailidou 2001).

The spread of weighing technology in pre-literate Europe may have been accompanied by the adoption of some form of currency. Unfortunately, the absence of writing makes it difficult to test this hypothesis; since the properties of currencies are mostly abstract, the material record alone can hardly provide unambiguous evidence for their identification. Furthermore, even perishable goods—such as barley—could function as currency, but their recognition in the archaeological record is even more complicated. The main requirements for a commodity to be used as currency are to be equally available over a vast territory, and to possess a relatively stable value per unit. In order to recognize a certain material as a standard of value, in turn, one should

[3] The debate between Silver and Copper, Segment D, translation from the Electronic Text Corpus of Sumerian Literature (http://etcsl.orinst.ox.ac.uk/section5/tr536.htm, accessed February 4, 2019).

also ascertain that a number of commodities possess a comparable equivalency rate within a given network. Under the assumption that weight-based trade implies the latter condition, archaeological evidence should be investigated in order to find out which materials best satisfy the former. In this respect, the most likely candidate for a 'Pan-European' metal currency in the BA is bronze (e.g., Sommerfeld 1994; Peroni 1998; Pare 1999). Bronze is the only material—among those that are still preserved from the BA—whose distribution on a continental scale is completely unrelated to the distribution of its sources: bronze products are literally ubiquitous, while copper mines are relatively rare and concentrated in specific regions. In other words, archaeological evidence attests that bronze was equally available everywhere in Europe, regardless of the distance from mining regions. Whether it was mined or acquired via trade, it is quite clear that the supply of bronze did not represent a problem: even regions completely lacking copper ores and situated far away from the sources—such as Denmark, for example—developed advanced metallurgies and accumulated rich material records, even in comparison to mining regions (e.g., Ling et al. 2014; Vandkilde et al. 2015). Provenance studies suggest that most of the copper circulating in Europe came from a few sources at any given time, and even regions with local availability of ores seem to have imported copper from far away (e.g., Begemann et al. 2001; Pernicka 2010). Such a distribution pattern supports the Ricardian model of *comparative advantage*, proposed by Earle et al. (2015)—i.e., different regions will tend to specialize in the production of demanded commodities that allow for local maximum reduction of costs, while relying on trade to acquire commodities that are locally unavailable, or simply too costly to produce—and suggests that the exchange value of bronze was relatively stable everywhere in BA Europe.

Another argument in favour of bronze as a potential currency is the fact that it is systematically found in fragments (e.g., Sommerfeld 1994; Hansen 2016; Brandherm 2018; Wiseman 2018). Metal currencies, in fact, always tend to be intentionally fragmented in order to facilitate weighing operations. In the Ancient Near East, silver was systematically fragmented in order to comply with weight systems (Ialongo et al. 2018a). The same happened, e.g., in the Viking period in northern Europe, where silver lumps and even coins normally circulated in weighed fragments (Kershaw 2017). Finally, bronze has a long-standing status as a viable currency in Europe. Before the introduction of coinage, the Roman republic issued heavy cast-bronze 'medals' (first half of the third-century BC) with an exchange value by weight that was exactly equal to that of the corresponding raw material (Mattingly 1960, pp. 24–28). Cast bronze—a technological transition to struck coinage—represents a form of bullion-money that was widely spread in Italy during the 1st millennium BC (Crawford 1985, pp. 39–40). Cast bronze was commonly exchanged and hoarded in fragments, which, in turn, is in clear continuity with the BA custom.

Since a multi-currency system is expected, it is plausible that other metals were also used as standards of value. Gold fragments, for example, are often associated with weighing equipment and bronze scraps in burials in central Europe (Pare 1999). Based on statistical analyses, Rahmstorf (2019) suggests that gold objects from the British Isles corresponded to weight-standards. The distribution of gold objects in Europe, however, is highly uneven, and it is not clear if it is related to the vicinity

to the source. Therefore, it is possible that its exchange value was not stable in long-distance networks, which could have undermined its utility as a Pan-European currency. Finally, other metals such as silver, lead and tin might be considered. However, their occurrence is so rare that is very difficult to make any meaningful observation.

## A Pan-European Weight System

**Hypothesis**
Comparisons with contemporary trade networks in the Near East provide the groundwork to formulate a hypothesis for the function of weight systems in pre-literate BA Europe: the spread of weighing equipment is the material correlate of a form of trade based on shared indexes of value, possibly making use of currencies, that can be classified as market exchange. The statistical analysis of balance weights aims at testing the hypothesis through a controlled experiment. In order for the test to be positive, the metrological analyses on the European sample of balance weights are expected to give results that are analogous to those given by Near Eastern samples: if European weights 'behave' similarly to their Near Eastern counterparts, then it is likely that their function was the same.

The statistical analysis of balance weights will be introduced by a discussion of the concepts of *unit* and *weight system*, the description of the analytical method and the definition of expectations for the experimental results.

### *Theoretical Units*

Units of measurement are purely theoretical concepts. Their only purpose is to measure finite quantities according to an arbitrary frame of reference, which can be, in turn, either officially enforced or customarily accepted (Chambon 2011; Ialongo and Vanzetti 2016). The field of ancient weight metrology is particularly developed for the Ancient Near East, especially in philological disciplines. The wealth of documentation available allows to reconstruct weight systems and to establish correlations and conversion factors between different theoretical units, used in different regions (e.g., Parise 1971; Powell 1979). On the other hand, identifying units in the archaeological record is highly problematic. Establishing equivalences between *shekels* (the usual denomination of basic units) and grams, in fact, is only possible when balance weights or weight-regulated objects possess inscriptions listing their theoretical weight. Inscribed weights, however, are rather rare (Rahmstorf 2010). A further problem is represented by the inherent approximation of physical measurements. Units are only exact in theory, and any attempt at reproducing them in the physical world produces a more or less marked variability (Ialongo et al. 2018b); some of the weight units of the Ancient Near East, for example, are very similar to

one another, and due to the inherent approximation of physical measurements they can be often confused in the archaeological record (Hafford 2012). Finally, it is a documented fact that balance weights belonging to different units are often found together in the same assemblages (e.g., Ascalone & Peyronel 2006; Ialongo et al. 2018a). All these problems are even more complex to solve in prehistoric contexts, where texts and inscribed weights simply do not exist.

## *Meta Systems*

The materiality produced by weight systems is not only shaped by the constraints imposed by theoretical units. Custom, habit and tradition also come into play (Ialongo & Vanzetti 2016), and a methodological framework aiming at understanding weight-regulated material records must account for all these variables. The *meta system* model was developed to aid the study of the materiality correlated to weight systems (Ialongo et al. 2018b). The model focuses on recognizing the materiality produced by recurrent practice in the framework of a well-established habit. It is based on the hypothesis that frequent trade relationships between different locales will cause different local weight systems to converge, until forming a *meta system* of fraction and multiples, representing average approximations of fractions and multiples of all the individual units involved in the same trade network. It is based on three assumptions: (1) long-distance networks always imply the simultaneous presence of multiple weight units; (2) balance weights belonging to different systems will be kept in every locale within a given network; (3) trade agents will tend to choose quantities that are easily convertible into more than one theoretical unit. As a thought experiment, one can imagine a trade situation between two agents, coming from different countries. Trader A uses a unit of 6 g, and trader B a unit of 9 g. Converting directly at the unit level could be tricky, since the ratio between 6 and 9 is not as straight as, for example, a 1:2 ratio would be. The easiest way to overcome this difference would be to use a *meta system* based on the least common multiple (or on the greatest common divisor) of the two units, that is, a system based on multiples of 18 g (or multiples of 3 g). If the two traders used 18 g/3 g as a unit, then converting any quantity into the former units would be instant and effortless. In a network composed of many agents making use of several different units, the continued practice would produce a well-recognizable materiality based on *meta units* (or *standard average quantities*) among which, however, the individual *theoretical units* would be extremely difficult, if not impossible to disentangle.

Empirical tests of the *meta system* model confirmed the expectations: assemblages of BA balance weights distributed between eastern Anatolia, Syria and southern Mesopotamia—based on different units and belonging to different normative systems—possess, in fact, the same metrological structure (Ialongo et al. 2018a). The *meta system* model is not only a device to circumvent the lack of textual evidence but represents a further layer of insight into the properties of weight systems. Whereas *theoretical units* give information on the normative aspects of the regulation of weight

measures, *meta systems* provide the opportunity to observe how intensively different locales were involved in the same trade network. If the balance weights of two distant regions present the same metrological structure, it is very likely that such regions were highly engaged in trade within the same network.

To summarize, *meta systems* are prominently visible in the archaeological record, while *theoretical units* are not. Since only *meta systems* can be confidently identified in pre-literate societies, a study of the metrological properties of balance weights in BA Europe is expected to give information on the degree of commercial interconnection between different regions, rather than on the normative aspects of each local weight system. The following section will describe the analytical method, in order to introduce the experiment and its expectations.

## *Method*

The study of balance weights is mainly a statistical problem (Pakkanen 2011) and requires a proper methodology. Cosine Quantogram Analysis (CQA) is a powerful tool in determining whether a sample of mass values is the product of one or more units (Kendall 1974). CQA looks for *quanta* in distribution of mass values. A 'quantum' is a single value for which most of the mass values in a sample are divisible, for a negligible remainder. If the sample is *quantally configured*—i.e., if most of the values are divisible by the same number—then most values will give a rational number (i.e., 2, 5, 8, 1/2, 1/3…) when divided for the *best quantum.* Approximation is a key aspect of metrological analyses. Exactitude only exists in theory, and all real measurements always imply an error. The concept of 'remainder' is key to understand how CQA works. All values in the sample are simultaneously divided by a series of quanta, and the analysis gives positive results only for those quanta that give a negligible remainder for most of the values in the distribution.

CQA tests whether an observed measurement $X$ is an integer multiple of a *quantum* $q$ plus a small error component $\varepsilon$. $X$ is divided for $q$ and the remainder ($\varepsilon$) is tested. Positive results occur when $\varepsilon$ is close to either to 0 or $q$, i.e., when $X$ is (close to) an integer multiple of $q$, where $N$ is the sample size:

$$\phi(q) = \sqrt{2/N} \sum_{i=1}^{n} \cos\left(\frac{2\pi\varepsilon_i}{q}\right)$$

When visualized in a graph (*quantogram*), the results show high positive peaks where a quantum gives a high positive value for $\phi(q)$. Technically, the CQA tests the results for $\phi(q)$ for a given quantum. Since the 'right' quantum is not known a priori, many different quanta must be tested; this is typically obtained by instructing a software with testing a range of quanta with fixed small increments (e.g., a series of 1000 quanta, ranging from 1 to 10, with a fixed increment of 0.01). Each quantum is tested for each single measurement in the sample, and the individual results for

$\phi(q)$ are summed. Thus, a high peak in the graph indicates that a large number of measurements in the sample gives a high result for $\phi(q)$ for a given quantum, i.e., that the corresponding quantum is a 'good fit'.

If the sample is not quantally configured, the analysis does not highlight any peak. However, false positives can occur. Monte Carlo tests for statistical significance can exclude the occurrence of false positives. The test is based on the reiterated generation of random numbers, in order to check whether random datasets would give better results than the actual sample. The null hypothesis is that the sample is randomly constituted, i.e., that the observed quantal configuration is only due to chance. Following Kendall's method, a simulation of randomly generated datasets is produced. Each original sample is randomized, by adding a random fraction of ±15% to each measurement. As shown by Kendall (1974), a slightly different dataset can produce higher peaks; if this happens consistently, it means that the real dataset is not perfectly quantally configured. The simulation is applied 1000 times for each sample, and each generated dataset is analysed through CQA. If equal or better results occur more often than a predetermined threshold (typically 1% or 5% of iterations), it means that it cannot be excluded that the results obtained from the actual sample are simply due to chance, and therefore they should be rejected. Considering that the sample is collected from an extremely wide territory, and that the mass values are partially taken from earlier publications with uneven levels of accuracy, the threshold for the results to be considered valid is set to 5%. If better results occur in less than 5% of the iterations, then the null hypothesis is rejected and the sample is very likely the result of predetermined quantification.

CQA, however, is not capable of univocally identifying *units.* According to the *meta system* model, a highly significant quantum can be a unit, but it can also represent a fraction or a multiple of a single unit, or even a fraction or a multiple common to different units (Ialongo 2018). Nevertheless, the identification of a highly significant quantum proves that a sample of potential balance weights is very likely the product of a *weight system*, whether normatively enforced or customarily accepted.

## *Expectations*

From an analytical point of view, *meta systems* assume the aspect of a sequence of significant peaks, representing a consistent series of multiples and fractions of a given quantum. Statistical analyses show that different samples of balance weights distributed between eastern Anatolia and southern Mesopotamia in the BA possess the same *quantal configuration*, regardless of the ascertained existence of different official units, and hence they are structured along the same *meta system* (Ialongo et al. 2018a). We know from textual and archaeological evidence that the Ancient Near East was widely interconnected, and that long-distance, weight-based trade was carried out on a frequent basis. This observation provides the groundwork to formulate the expectations for the analysis of the European sample: if weight systems in Europe have the same function as their eastern counterparts, and if different regions

were involved with the same intensity in a long-range trade network, then different regional assemblages of balance weights are expected to share the same quantal structure.

## *The Sample*

The complete sample includes 441 objects. Fifty-eight objects were chipped or slightly corroded; these objects were subject to 3D scanning and were digitally reconstructed in order to calculate the original weight (Ialongo 2018). The figure of 441 objects is smaller than the total record because not every balance weight could be reconstructed or was published with its mass value. The total range of mass values goes from 0.16 g to 3073 g. Weights heavier than 200 g ($n = 207$) are almost exclusively concentrated in northern Italy, Switzerland and northern Germany, while lighter weights ($n = 236$) are equally distributed among different regions. The heavy weights are too unevenly distributed, and their relevance would be limited to the relatively small areas in which they are attested. Since the purpose of the analysis is to verify the existence of long-distance connections, heavy weights will not be considered here, and the analysis will be limited to balance weights weighing up to c. 200 g (Table 1). On the basis of comparisons with the Ancient Near East, light weights—up to c. 200 g—are probably used to weigh metal currencies (Ialongo et al. 2018a); hence, according to the hypothesis of a Pan-European weight system, they are more likely to show long-distance similarities.

CQA must be executed on samples of consistent magnitude. Therefore, the complete dataset must be further divided, so that the biggest value in each subset is not much bigger than c. ten times the smallest one. This operation helps preventing the emergence of both false positives and false negatives. Therefore, the dataset was divided into three smaller, overlapping subsets, based on natural breakpoints in the distribution (1.5 g–10 g; 7 g–70 g; 17 g–200 g). Making the subsets overlap greatly reduces the risk of artificially separating actual orders of magnitude that might have existed in antiquity, further reducing the possibility of obtaining false results. Finally, weights smaller than c. 1.5 g are excluded from the analysis, due to the high error on very small measurements.

## *Analysis*

The analysis gives significant results, forming a consistent series of multiples and fractions (Fig. 2A). The mid and high ranges are extremely significant, showing peaks above the 1% threshold. The low range, on the other hand, is below the 5% significance level. However, since the formal types—and often even the archaeological contexts—of the small weights are the same as the bigger ones, it is likely that the low result is due to the higher inaccuracy of small measurements. Moreover, the separate

**Table 1** Dataset of mass values used to obtain the quantograms in Fig. 4

| Mass (g) | Zone | Mass (g) | Zone | Mass (g) | Zone | Mass (g) | Zone | Mass (g) | Zone |
|---|---|---|---|---|---|---|---|---|---|
| 1.4 | A | 4.56 | A | 9.67 | A | 21.4 | C | 82.4 | I |
| 1.59 | C | 4.65 | I | 9.75 | A | 21.45 | C | 87.78 | C |
| 1.63 | I | 4.65 | A | 9.8 | I | 22.83 | I | 93 | C |
| 1.63 | C | 4.79 | A | 9.9 | C | 23 | I | 93.70 | I |
| 1.68 | C | 4.84 | C | 10 | C | 23.28 | C | 94.84 | C |
| 1.73 | C | 4.86 | C | 10.26 | I | 25.1 | C | 96.1 | A |
| 1.80 | I | 4.92 | I | 10.59 | C | 25.89 | C | 98.5 | C |
| 1.82 | A | 4.92 | A | 10.7 | C | 28.22 | C | 100 | C |
| 1.89 | C | 5.25 | C | 10.8 | C | 29.3 | I | 102.3 | C |
| 1.89 | C | 5.5 | C | 11.26 | C | 29.43 | I | 107.6 | I |
| 2 | C | 5.83 | C | 11.7 | C | 29.8 | A | 112.23 | C |
| 2 | C | 5.85 | I | 12.78 | A | 30.05 | I | 112.3 | A |
| 2.1 | C | 5.93 | I | 12.88 | I | 30.05 | I | 113.72 | C |
| 2.12 | C | 6.2 | A | 13.06 | C | 32.66 | A | 117.93 | I |
| 2.25 | C | 6.28 | A | 13.32 | C | 36.02 | I | 119.05 | C |
| 2.28 | I | 6.31 | I | 13.42 | C | 36.5 | I | 120 | C |
| 2.32 | A | 6.37 | A | 13.72 | C | 36.6 | I | 122.56 | I |
| 2.86 | A | 6.37 | A | 13.88 | I | 36.8 | I | 123.37 | I |
| 2.91 | C | 6.38 | C | 13.94 | I | 36.86 | I | 124.85 | I |
| 3.06 | I | 6.44 | C | 14.55 | C | 37 | A | 125.08 | C |
| 3.15 | C | 6.47 | C | 15.01 | C | 37.60 | C | 132.59 | C |
| 3.16 | C | 6.50 | C | 15.55 | C | 37.95 | I | 137.3 | I |
| 3.17 | I | 6.66 | I | 16.29 | C | 38.23 | I | 138.41 | I |

(continued)

**Table 1** (continued)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3.17 | A | 6.7 | I | 16.7 | C | 38.5 | I | 144 | A |
| 3.18 | C | 6.7 | C | 16.8 | C | 39.27 | C | 151.48 | I |
| 3.19 | C | 6.9 | C | 17.77 | I | 39.31 | I | 152.30 | I |
| 3.2 | I | 6.92 | I | 18 | I | 41 | I | 153 | C |
| 3.2 | A | 7.45 | C | 18.13 | C | 41 | I | 153.30 | I |
| 3.29 | A | 7.60 | C | 18.64 | A | 41 | C | 154.45 | I |
| 3.66 | C | 7.66 | I | 18.7 | I | 41.13 | I | 158 | A |
| 3.69 | A | 7.86 | I | 18.72 | A | 43 | C | 164.7 | C |
| 3.74 | C | 7.86 | C | 18.73 | I | 43.2 | I | 179.95 | C |
| 3.8 | A | 8 | I | 19 | C | 44.7 | A | 181.45 | I |
| 3.8 | C | 8 | A | 19.01 | A | 48.5 | C | 183.14 | I |
| 3.83 | C | 8.1 | C | 19.1 | C | 50.5 | I | 185.1 | C |
| 3.86 | C | 8.2 | C | 19.48 | A | 50.73 | I | 194.28 | C |
| 3.87 | A | 8.56 | C | 19.69 | I | 51 | C | | |
| 3.98 | A | 8.62 | C | 19.69 | C | 55.02 | C | | |
| 4.08 | A | 8.7 | A | 19.82 | C | 56.76 | I | | |
| 4.1 | A | 8.7 | A | 19.89 | C | 57.58 | I | | |
| 4.21 | A | 8.8 | C | 20 | I | 59.32 | I | | |
| 4.25 | I | 8.94 | C | 20.14 | I | 60.65 | C | | |
| 4.29 | C | 9.1 | A | 20.26 | I | 62.75 | I | | |
| 4.32 | C | 9.32 | A | 20.48 | C | 77.33 | I | | |
| 4.34 | A | 9.54 | A | 20.8 | C | 77.6 | C | | |
| 4.54 | A | 9.58 | C | 21 | I | 82.34 | I | | |

I: Italy; C: Central Europe; and A: Atlantic Europe

analysis of regional samples shows that the highest peak of the low range is always located in the same position, further supporting the validity of the analytical results.

The value at c. 20 g is probably not a real 'unit'. It was chosen as a reference point for no other reason than being the most convenient for fractional calculations; however, any other value in the sequence would give just the same good fit. It is likely that the weight system highlighted by CQA is the product of different local units, which tend to converge around recurrent quantities. This European system is fully compatible with the Aegean one, albeit probably based on different units (Ialongo 2018).

What are the chances that this sequence of significant values reflects a Pan-European *meta system*? In order to answer this question, the sample was divided into three smaller datasets on geographical basis: Italy ($n = 74$; Fig. 4B), central and eastern Europe (including France, Switzerland, Germany, Czech Republic, Croatia, Serbia and Hungary; $n = 101$; Fig. 4C) and Atlantic Europe (Portugal and England; $n = 45$; Fig. 4D). The experiment has the primary purpose of testing whether three completely different datasets—selected on geographical basis—give the same results. The comparative analysis shows that the three datasets have a very similar configuration corresponding, in turn, to that of the complete sample. The high range of the Atlantic area was not analysed, because it does not include enough data ($n = 10$).

## *Discussion*

The statistical tests support the model of a *Pan-European meta system* for balance weights up to c. 200 g. The results show that balance weights from different regions of Europe present the same quantal structure. This outcome supports the hypothesis of the existence of a long-distance trade network based on weight-based trade. Furthermore, it suggests that weight systems in Europe possessed the same function as their counterparts in the Near East, that is, to commensurate values per unit of different commodities in the framework of market exchange.

Since weighing equipment is attested in different regions in different periods, it seems that the *meta system* remained stable through time. The European system is fully compatible, for example, with the Aegean one, but the comparison of the statistical results suggests that they were based on different units (Ialongo 2018). It has been proposed that the Portuguese system was based on a 'Ugaritic unit' of c. 9.4 g (Vilaça 2013). However, the results of the statistical analysis do not support this interpretation. The values of c. 9.3 g, c. 9.8 g and c. 9.9 g—given, respectively, by the Portuguese, central-eastern European and Italian samples—fit within the commonly accepted error range of ±5% (e.g., Petruso 1992; Hafford 2012). The average value of 9.3 g, 9.8 g and 9.9 g is 9.7 g, and an error of ±5% results in a range of 9.2 g–10.2 g; therefore, all the aforementioned values cannot be separated from one another. This can mean that these numbers simply represent a normal dispersion around a single value, which only happens to be similar enough to the supposed 'Ugaritic unit' to be confused with it. On the other hand, this does not rule out the possibility that 'foreign'

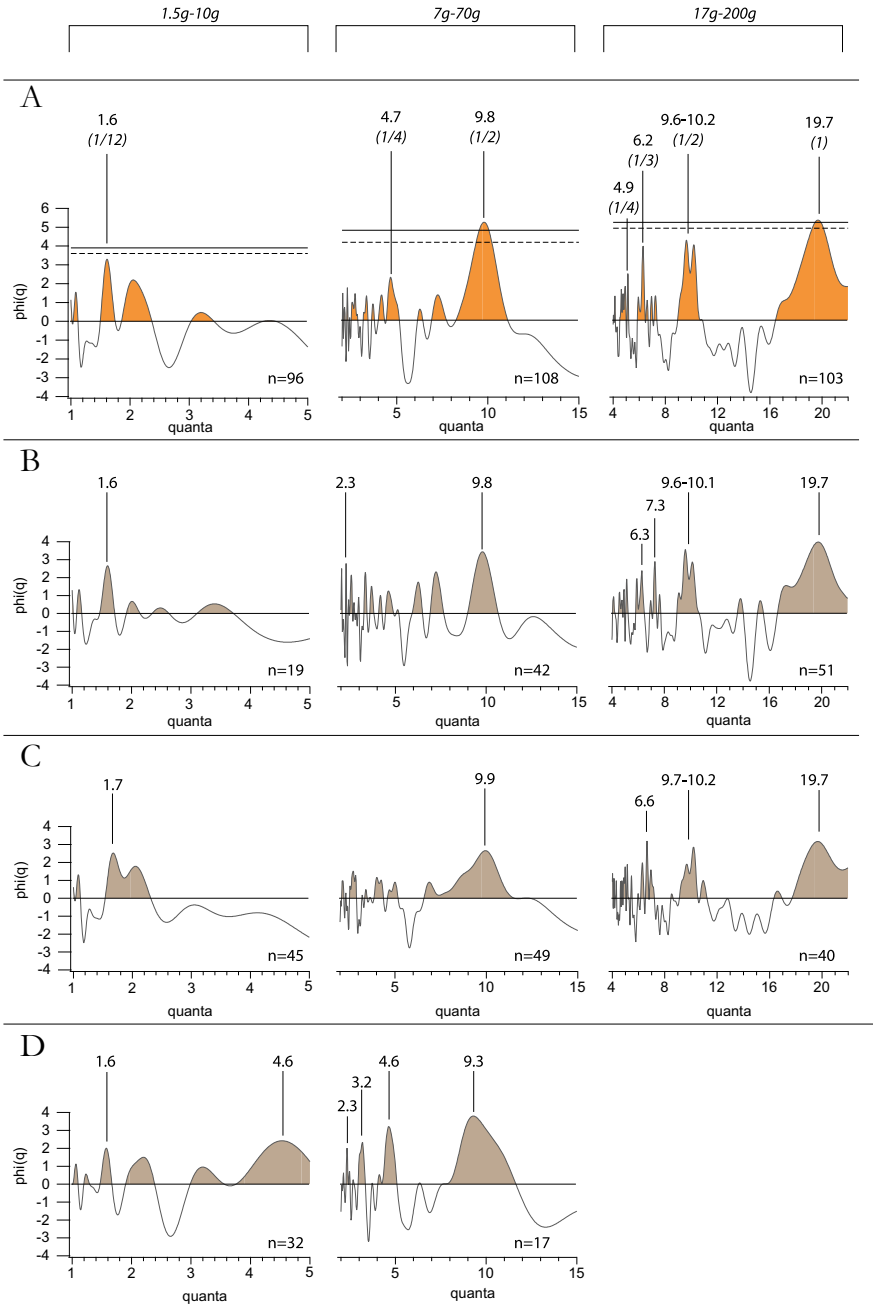


**Fig. 4** Cosine Quantogram Analysis of balance weights. **A** Total sample; dotted lines: 5% significance; solid lines: 1% significance. **B** Italy. **C** Central Europe. **D** Atlantic Europe (Portugal and England)

units played a part in the formation of European systems. The *meta system* model still accounts for this possibility. Frequent trade between some regions of Europe and the central/eastern Mediterranean can have produced a convergence in local assemblages of balance weights, even though it is unlikely that European systems were entirely based on foreign units.

As already remarked, a shared *meta system* does not imply the existence of a single unit. The contemporary use of many different local units in large-scale trade networks is a well-documented fact throughout history, and it never prevents international trade. The homogeneous structure of different assemblages of balance weights throughout pre-literate BA Europe indicates that, regardless of local units, trade agents from different regions were constantly in contact.

## Conclusions

The appearance of weighing equipment in the archaeological record is one of the distinctive material correlates of the BA in western Eurasia, accompanying the formation of a global trade network. The evidence discussed in this article suggests that the two phenomena are interdependent. The adoption of weighing equipment represents the proxy of a form of economic transaction that can be modelled as market exchange. Weight systems require shared indexes for the commensuration of exchange values of different commodities, which must remain relatively stable across wide areas in order to be effective. Being based on objective frames of reference and being free from the ceremonial obligations typical of gift-exchange, weight-based exchange improves the speed of transactions and facilitates cross-cultural, long-distance trade.

The evidence related to weighing equipment in pre-literate BA Europe meets the expectations set for an integrated exchange system. Based on available evidence, weighing technology is first documented in southern Italy around c. 2000 BC, becomes widespread between Italy and central Europe at least by c. 1400 BC and reaches the Atlantic façade slightly later, around c. 1200 BC. Statistical analyses suggest that, by the time weighing technology was widely adopted everywhere in Europe, a widespread *meta system* had formed, based on shared fractions and multiples. Whether the existence of a single unit of measurement may or may not be the point, the existence of a common *meta system* suggests that trade agents coming from different regions of Europe engaged in long-distance relationship on a constant basis.

The existence of a widespread *meta system* is also in line with the evidence related to long-distance mobility of commodities and people in BA Europe. Copper, for example, was equally available almost everywhere, regardless of the distance from ore sources, and the growing corpus of isotope analyses on human remains suggests that highly mobile individuals might have amounted to between 10 and 40% of the total population (Vandkilde et al. 2015). Traders travelled with their own weighing equipment, negotiated with other agents from elsewhere in Europe and established stable relationships that proved fruitful in the long term. The convergence of regional

systems into a Pan-European one is likely the result of continuous practice, keeping the continent interconnected through generations.

The study of weight systems in pre-literate societies yields great potential in modelling the level of integration of long-distance networks. Future research should focus on gathering more data, while maintaining the focus on testing hypotheses within a rigorous methodological framework. The chronology of the spread of weighing equipment in Europe represents a primary issue. The available evidence would suggest that the process of acquisition of weighing equipment by all regions of Europe took almost a millennium. However, the data from the Atlantic façade are still scarce, and further research might change the picture substantially. More data would also shed more light on the structure of weight systems. The analysis presented in this paper relies on very broadly defined groupings, in order to keep the size of the samples acceptable. A larger database would allow to analyse the data with much higher geographical and chronological detail, opening the way to a deeper understanding of local specificities. Finally, the study of find contexts in settlements and graves would provide information on the context of use and on the agents of weight-based trade.

Research on weight-based trade in prehistoric societies provides the opportunity to study the development of advanced modes of exchange in stateless societies. Contrary to what happened in oriental countries, in fact, states did not develop in pre-literate BA Europe. This implies that trade was less conditioned by formal restrictions. Near Eastern states actively regulated weight systems, and public administrations strived to oversee the correct application of conversion factors between local and foreign units. Furthermore, palaces and temples—as physical incarnations of the state—possessed disproportionate economic capacities if compared to any other private subject, thus significantly influencing the balance of the economic network (e.g., Steinkeller 2004). The European situation, on the other hand, is more similar to the ideal model of free market. Weight-based trade developed in spite of the total lack of far-reaching territorial authorities, bureaucracy and public officers. A looser definition of boundaries and the absence of huge disproportions in the distribution of economic capacity provided the precondition for an alternative development:

> …an international commercial system linked up a turbulent multitude of tiny political units. All these […], while jealously guarding their autonomy, and at the same time seeking to subjugate one another, had none the less surrendered their economic independence by adopting for essential equipment materials that had to be imported. (Childe 1958, p. 172)

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# Specialisation, Exchanges and Socio-Economic Strategies of Italian Bronze Age Elites: The Case of Aegean-Type Pottery

**Marco Bettelli**

To Lucia

## Introduction

The circulation of specialised pottery of Aegean and Cypriot origin is one of the most significant indicators of the development of social complexity in the Central Mediterranean during the local Middle and Late Bronze Age[1] (MBA, LBA) (17th–11th c. BC). Mycenaean pottery has been found at more than 100 sites throughout peninsular Italy and its neighbouring islands, including Sicily and Sardinia (Vagnetti et al. 2014) (Fig. 1).

In recent years the progress of research has greatly increased the evidence of interrelations between the local communities of protohistoric Italy and the Mycenaean people. In addition to already known areas, such as south-eastern peninsular Italy with the walled sites of Roca Vecchia (Pagliara et al. 2007, 2008; Scarano 2012), Coppa Nevigata in Apulia (Cazzella et al. 2012) and Broglio di Trebisacce in Calabria (Peroni and Trucco 1994; Peroni and Vanzetti 1998), very important new evidence has been located in the eastern Po valley (Bettelli et al. 2015, 2017) and in the central Tyrrhenian and Adriatic regions, including sites not just limited to the coast (Jones and Levi 2014; Barbaro et al. 2012; Bettelli 2019).

Archaeometric analyses, most of the chemical (using AAS, INAA and ICP-ES) for information regarding provenance, have been carried out on nearly 500 samples of Mycenaean pottery—about a quarter of the published corpus—from nearly half of the above-mentioned sites. There have been some 850 analyses featuring not only

[1] This "label" of relative chronology includes here both Recent and Final Bronze Ages (RBA, FBA).

M. Bettelli (✉)
Consiglio Nazionale delle Ricerche, Istituto di Scienze del Patrimonio Culturale, Rome, Italy
e-mail: marco.bettelli@cnr.it



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chemical but also petrographic and mineralogical analyses of specialised wares, such as Grey ware and *Dolii* in addition to, for reference purposes, the local indigenous hand-made burnished ware (*impasto*) (Jones and Levi 2014). A technological component of the archaeometric work has assumed increasing importance, using the scanning electron microscope for information regarding decoration and firing conditions (Levi and Jones 2014).

Collectively, the analyses indicate that the majority of the pottery examined was produced in Italy (hereafter this pottery will be referred to as "Italo-Mycenaean") and that while the main source of the imported pottery was the Peloponnese, imports from elsewhere in the Aegean were also present, as were imports from Cyprus and the Levant (Jones and Levi 2014).

In summary, the chronological trend is evident: in the earliest phases all Mycenaean pottery was imported, while later phases saw an increase in local production; this may imply the presence in Italy of Aegean craftsmen, even if possibly on a temporary basis (Jones et al. 2014a)

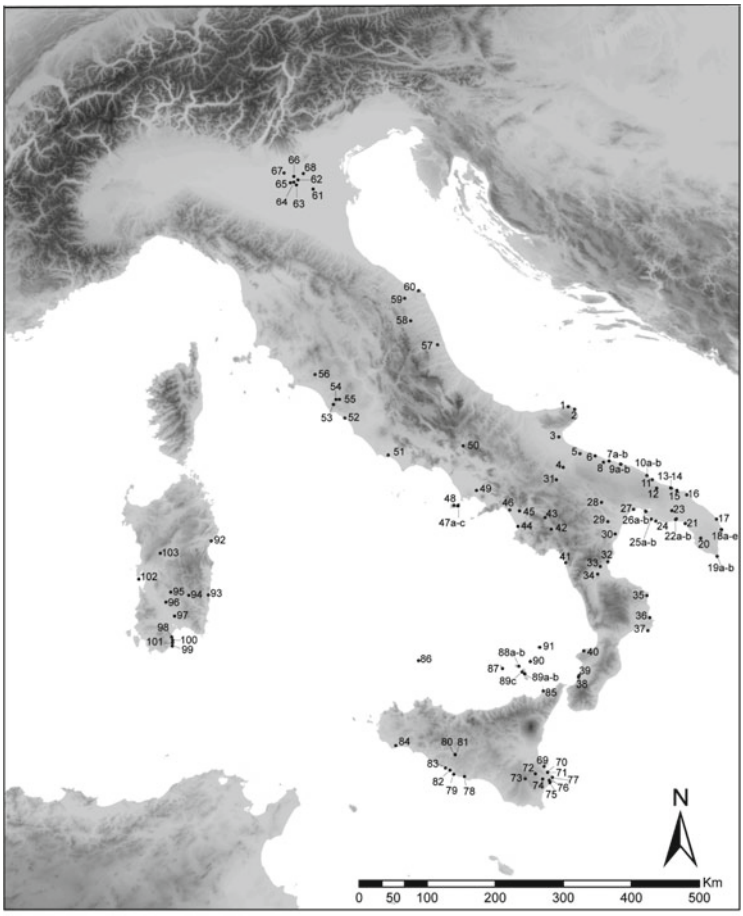
## The Archaeological Framework

### *Local Pottery Technology*

The typical Bronze Age Italian pottery production is the so-called *impasto*. The main characteristics of this production group are the use of specific raw materials: coarse; a mixture of non-calcareous clay, silt and intentionally added temper (Levi 2010; Borgna and Levi 2015; Bettelli et al. 2018a). The manufacturing technique is hand-made (with the use of molds or coils); the surface treatments are based on smoothing or burnishing. Decoration is mainly geometric, impressed or incised before firing, which is performed in single chamber kilns.

There was a limited circulation of *impasto* pots, and those exported were medium- to large-sized closed vessels that were used as containers. The circulation of raw materials is rarely attested for this period and mainly included specific tempers or high-quality clays. The social organisation of *impasto* production ranges from household to workshop level, the latter type particularly in later periods (van der Leeuw 1984; Levi et al. 2006; Levi 2010; Levi and Muntoni 2014).

Scholars have tried to distinguish a number of characteristics and trends in ceramic production especially during the RBA (13th–12th c. BC). These primarily concern ceramic style, and, in some cases, the technology used. Some specific, extensively studied cases (*e.g.* Coppa Nevigata and Broglio di Trebisacce) have shown that 13th c. BC *impasto* is characterised by an even greater standardisation of fabrics and manufacturing techniques when compared to previous periods (Levi et al. 1995, 1998; Cannavò and Levi 2018) (Fig. 2).




1. Manaccora
2. Molinella
3. Coppa Nevigata
4. S. Maria di Ripalta
5. Madonna del Petto
6. Trani - Capo Colonna
7. Giovinazzo
8. Giovinazzo - S. Silvestro
9. Bari
10. Monopoli
11. Egnatia
12. Chiancudda
13. Torre S. Sabina - C. Morelli
14. Torre S. Sabina-Tumulo
15. Torre Guaceto
16. Punta le Terrare
17. Rocavecchia
18. Otranto
19. Capo S. Maria di Leuca
20. Parabita
21. Scalo di Furno
22. Avetrana
23. Oria-S. Cosimo
24. Torre Castelluccia
25. Porto Perone-Satyrion
26. Taranto
27. Cozzo Marziotta
28. Timmari
29. S. Vito
30. Termitito
31. Toppo Daguzzo
32. Broglio di Trebisacce
33. Francavilla Marittima
34. Torre Mordillo
35. Motta di Cirò
36. Crotone
37. Capo Piccolo
38. Grotta Petrosa
39. Taureana di Palmi
40. Punta Zambrone
41. Grotta Cardini
42. Grotta del Pino
43. Grotta di Polla
44. Paestum
45. Eboli
46. Pontecagnano
47. Vivara
48. Castiglione d'Ischia
49. Afragola
50. Monteroduni
51. Casale Nuovo
52. Vaccina
53. Monte Rovello
54. Luni sul Mignone
55. S. Giovenale
56. Scarceta
57. Treazzano di Monsampolo
58. Tolentino
59. Jesi
60. Ancona~Montagnolo
61. Frattesina
62. Lovara
63. Fabbrica dei Soci
64. Fondo Paviani
65. Castello del Tartaro
66. Terranegra
67. Bovolone
68. Montagnana
69. Mulinello di Augusta
70. Thapsos, settlement
71. Thapsos, necropolis
72. Pantalica
73. Buscemi
74. Floridia
75. Cozzo del Pantano
76. Matrensa
77. Siracusa
78. Madre Chiesa
79. Monte Grande
80. Milena-Monte Campanella
81. Milena-Serra del Palco
82. Cannatello
83. Marina di Agrigento
84. Erbe Bianche
85. Milazzo
86. Ustica
87. Filicudi
88. Salina
89. Lipari
90. Panarea
91. Stromboli
92. Orosei
93. Nuraghe Nastasi
94. Nuraghe Arrubiu
95. Su Nuraxi
96. Nuraghe Corti Beccia
97. Monte Zara
98. Nuraghe Antigori
99. Nuraghe Domu s'Orku
100. Nuraghe Is Baccas
101. Nora
102. Tharros
103. Duos Nuraghes

**Fig. 1** Distribution map with the list of Italian sites with Aegean pottery (after Vagnetti et al. 2014, Fig. 2.1)

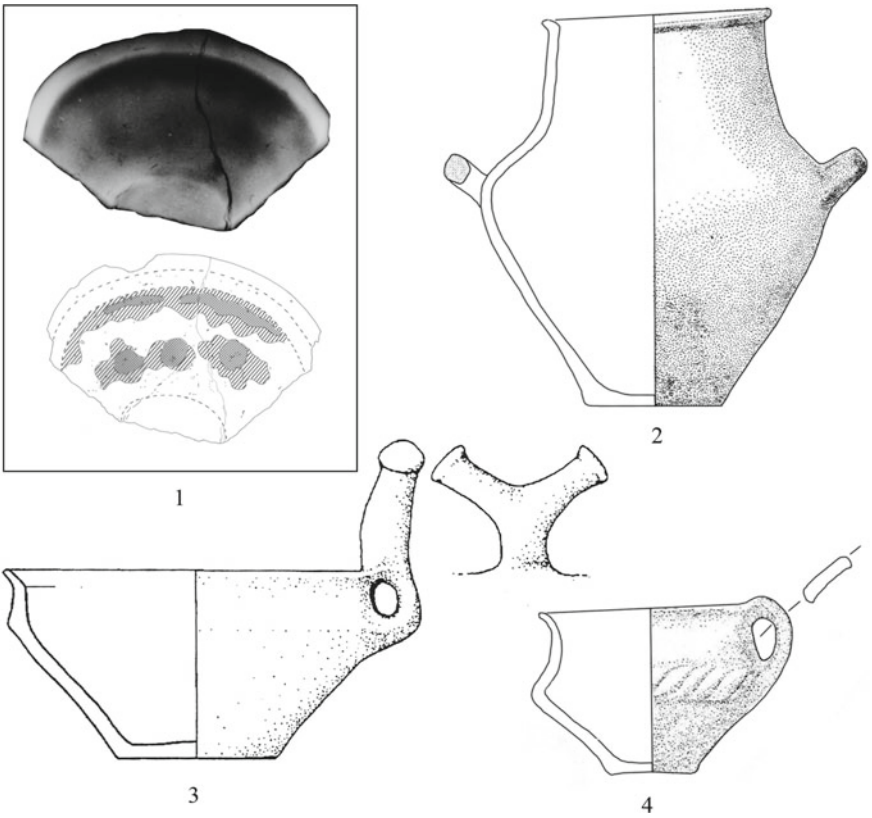



**Fig. 2** 1. X-Ray and X-Ray drawing of an impasto carinated cup manufactured with pressure (after Levi and Jones 2014, Fig. 5.5a); 2, 4. FBA Impasto necked jar and necked cup from Rocavecchia (after Malorgio and Maggiulli 2011, Figs. 9 and 7; scale 1:6 ca. and 1:4 ca.); 3. RBA impasto carinated cup from Broglio di Trebisacce (after Damiani 2010, tav. 61.B2; scale 1:3 ca.)

## *Aegean and Italo-Mycenaean Pottery*

As mentioned above, starting from the 17th c. BC a new kind of pottery of Mycenaean and Late Minoan style spread in the Central Mediterranean. These productions of Aegean origin are characterised by the use of levigated calcareous clay (*figulina*), a potter's wheel, dark on light painted decoration and firing in double-chambered kilns, in order to obtain homogeneous colours on surfaces and painting. The result was a specialised ware manufactured at workshop level in Greece and Crete (Evely 1988, 2000; Mountjoy 1993; Berg 2007, 2013). As already mentioned, in the initial periods of contact between the two areas, exotic pottery was systematically imported in Italy from various regions of the Aegean, but above all from the Peloponnese. Imports continued for the entire duration of these relationships. Results of the archaeometric analyses demonstrate that, starting from an advanced phase of the local MBA (14th c.

BC), Mycenaean and Late Minoan-type pottery began to be locally made in different production centres in the Central Mediterranean with the same technologies used in Greece and Crete (Jones and Levi 2014; Jones et al. 2014a). Italo-Mycenaean pottery production continues and intensifies in the later periods of the Bronze Age, representing—in particular areas such as the Ionian Arc—almost the totality of this type of findings (Figs. 3 and 4).

## *Technological Transfer*

The use of new technologies of Aegean origin involved a transfer of know-how and specific skills that were hitherto unknown to local communities of the Central Mediterranean. Such a technological transfer certainly took place—at least at the beginning—via specialised craftsmen travelling from the Aegean. The styles of exotic pottery found in Italy, both Mycenaean and Late Minoan, indicate that these craftsmen probably arrived from various regions (Jones et al. 2014a). Considering some specific aspects of Italo-Mycenaean pottery often not conforming with Aegean models (Bettelli 2014), it can be assumed that from a certain period onwards even native artisans were involved, through training, in the use of these specialised technologies of foreign origin (Jones et al. 2014a; Cazzella and Recchia 2018). Italo-Mycenaean pottery can in turn be expressed in various stylistic sub-sets characterising the different production centres (Bettelli 2014) (Fig. 5).

## *Italo-Mycenaean Pottery and Other Wares of Aegean Derivation*

Italo-Mycenaean pottery, completely innovative within the local cultural framework of its time, was essentially used as sophisticated tableware mainly for drinking and pouring/containing (Bettelli and Levi 2014; Bettelli et al. 2021). In the south-eastern regions of the Italian peninsula the new pottery technologies of Aegean origin were also adopted for the production of further innovative ceramic categories, such as Grey ware and *Dolii* (Jones et al. 2014b, Tab. 1.2; Bettelli and Levi 2003). The former served as tableware (Belardelli 1994; Bettelli 2002, pp. 198–233; Castagna 2002); *Dolii* were used for the conservation of particularly valuable goods, usually foodstuffs (Tenaglia 1994; Guglielmino 1999; Levi 1999a; Levi and Schiappelli 2004; Schiappelli 2006, 2015). Technological and stylistic features both of Italo-Mycenaean pottery and Grey ware support the hypothesis that these were valuable productions intended for the social representation of their consumers. This idea is further corroborated by the fact that these ceramics are in any case in the minority within the local archaeological record, whereas *impasto* pottery is always largely predominant.

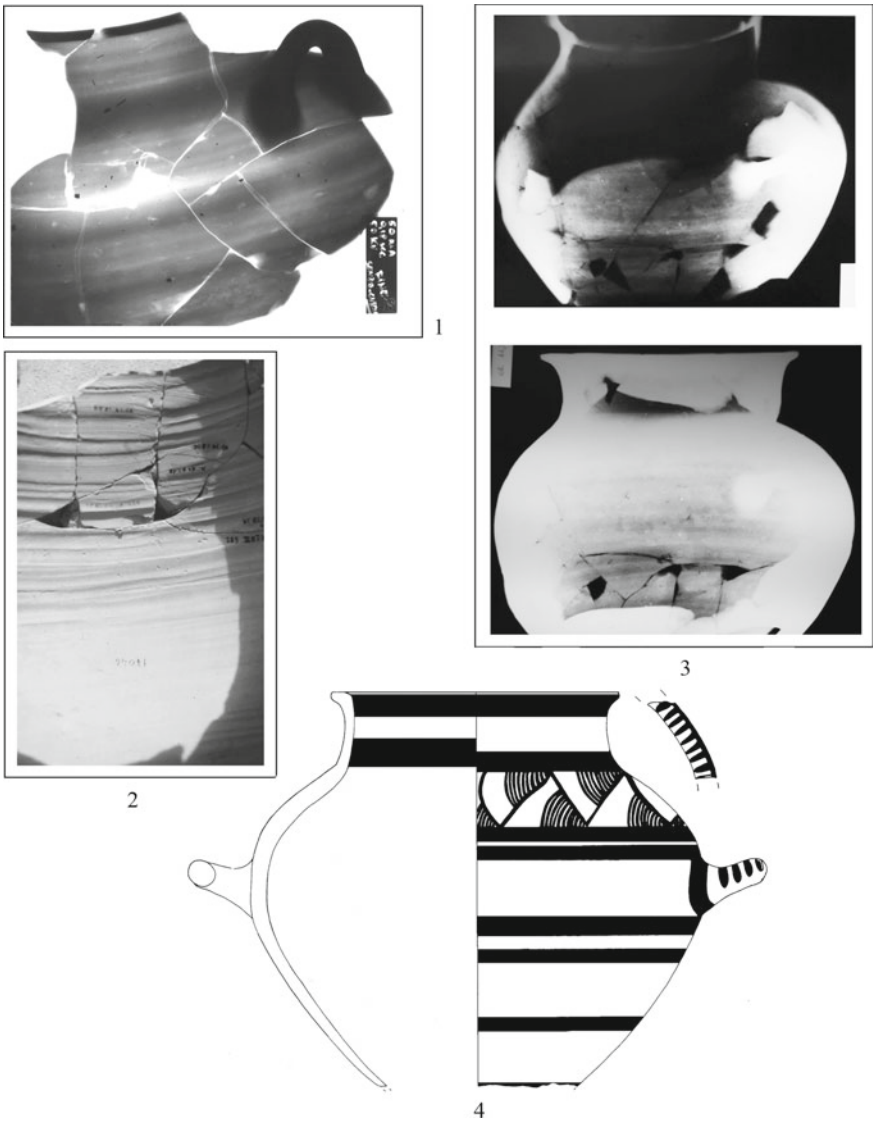



**Fig. 3** 1, 3. X-Rays of Italo-Mycenaean necked jars from Broglio di Trebisacce manufactured with a potter's wheel (after Levi and Jones 2014, Figs. 5.2c, 5.2d); 2. Internal surface of an Italo-Mycenaean closed vessel from Broglio di Trebisacce, clearly showing the use of potter's wheel (after Levi and Jones 2014, Fig. 5.2f); 4. Italo-Myceanaean necked jar from Broglio di Trebisacce (after Vagnetti 1984, tav. 46:3; scale 1:4 ca.).

**Fig. 4** Double-chamber kiln from the Bronze Age settlement at Kommos, Crete (after Shaw et al. 2001, Fig. 9)

In the FBA (mid-12th–10th c. BC) Protogeometric ware—a further specialised ceramic production which inherited many technological and functional aspects of Italo-Mycenaean pottery—widespread especially in south-eastern Italy (Bettelli et al. 2018a) (Fig. 6).

## Technological Specialisation and Social Organisation

Within this framework the problem arises of the link between producers and consumers of these specialised ceramics of foreign origin but local (Italian) production (Bettelli 2021). It seems evident that this was based on production relationships which differed from the traditional ones. Ethnographic studies on this subject—which has also inspired archaeologists—suggest that technological specialisation

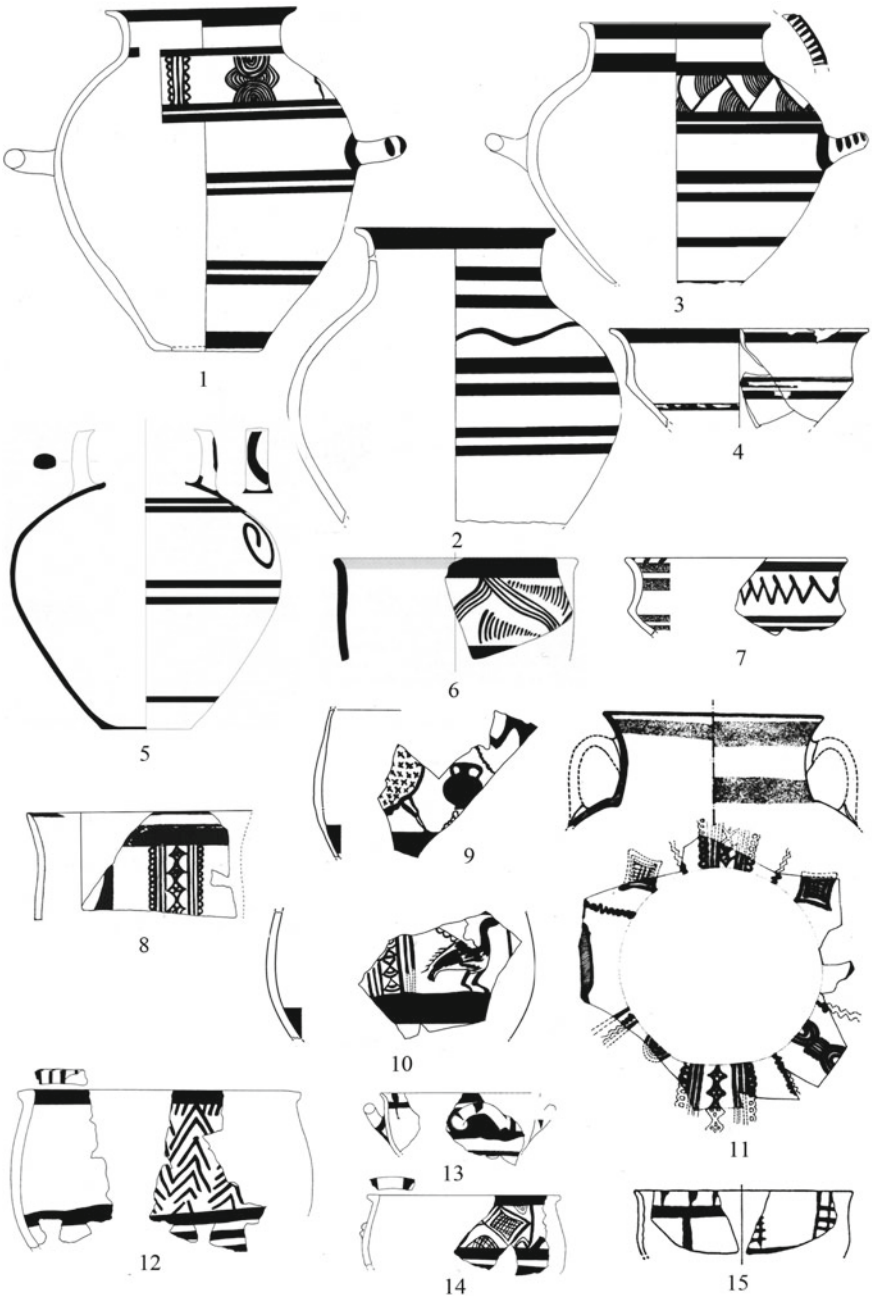



**Fig. 5** Different styles of Italo-Mycenaean pottery: 1–4. Broglio di Trebisacce; 5–6. Rocavecchia; 7. Porto Perone-Satyrion; 8–11. Termitito; 12–15. Antigori (after Bettelli 2015, Fig. 2; 1–3. 5. 11 scale 1:6 ca.; 6–10. 12–14 scale 1:4 ca.; 15 not to scale)

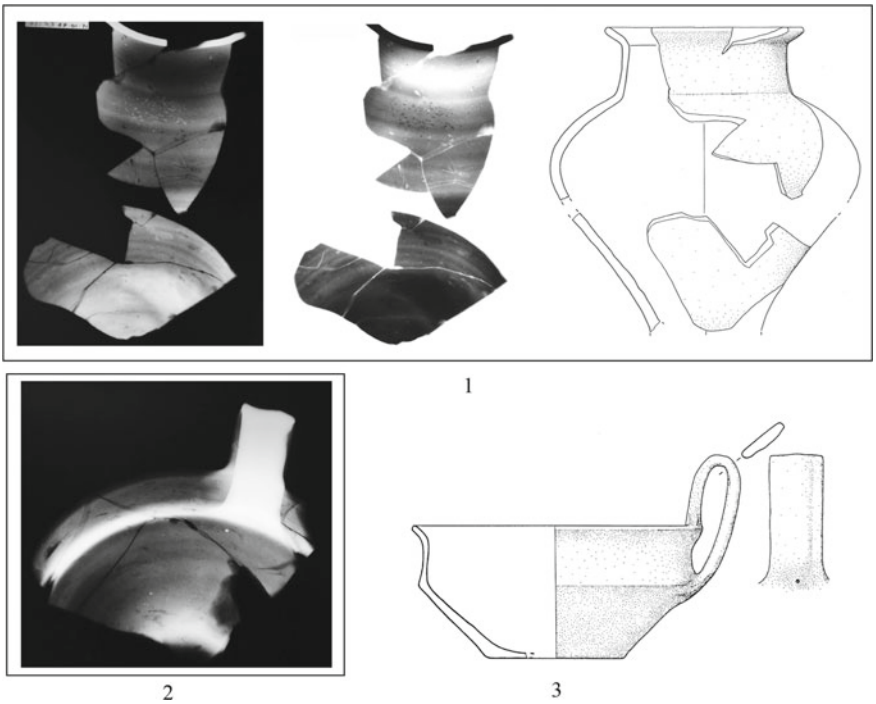



**Fig. 6** 1. X-Rays and drawing of a RBA Grey ware necked jar from Broglio di Trebisacce manufactured with potter's wheel (after Levi and Jones 2014, Fig. 5.4a; Castagna 2002, Fig. 104:33; scale 1:6 ca.); 2. X-Rays of a RBA Grey ware carinated cup from Broglio di Trebisacce manufactured with potter's wheel (after Levi and Jones 2014, Fig. 5.4e); 3. RBA Grey ware carinated cup from Broglio di Trebisacce (after Castagna 2002, Fig. 103:26; scale 1:4 ca.)

emerges in specific socio-economic conditions. According to E. Brumfiel and T. Earle (1987), specialisation can be expected when natural resources are unevenly distributed or when the production process involves some gradually acquired skills. Specialisation involves economic differentiation and interdependence: the existence of individuals who produce goods or services for a broader consumer population. It encompasses a number of dimensions: the affiliation of the specialist (independent or attached); the nature of the product (subsistence goods, luxury items or services); the intensity of specialisation (part-time or full-time); the scale of the production unit (individual industry, household industry, workshop industry, village industry or large-scale industry).

According to the models proposed in the above-mentioned studies, independent specialists produce goods or services for a broad group of consumers that varies according to economic, social and political conditions. They operate within a framework with an increasing population density, in which urbanisation and market development can also be present. Attached specialists, instead, usually produce goods for a patron, either a social elite or a government. In this case specialisation arises from

the explicit desire of the ruling elites to control the production and distribution of certain politically significant commodities. Attached specialisation develops largely as a function of elite coercive control and elite income (Brumfiel and Earle 1987; Roux 2010).

It is worth noting that patron/client relationships in terms of acquisition of prestige goods may also be formed in simple societies, not necessarily in the presence of specialisation, as ethnographic studies suggest.[2] That is to say that structures of patronage of this type may also exist in societies which are not extremely hierarchical, or in which a process of social stratification has recently begun.

The specific interconnections between social organisation and technological innovations in the field of pottery production have been thoroughly studied by V. Roux (2008, 2010; Roux et al. 2013; Baldi and Roux 2016). Among other important concepts, she proposes that, in traditional societies, discontinuous innovations—such as the wheel-coiling and the wheel-throwing techniques—are promoted by individuals having some form of religious, political or financial power; they are changed not for practical or techno-economical convenience but for symbolic and social reasons connected to the elite's demand. In other words, these kinds of technological innovations take place in an elite context, and they spread only later to other social strata; this is because only elites have the material resources necessary to face the possible failure which a new practice always entails.[3]

## *Continuous and Discontinuous Technological Innovations: Disappearance and Reappearance of Technological Innovations*

In this section the concepts of continuous and discontinuous innovations in the field of pottery technology, as proposed by V. Roux, will be briefly explored; together with the phenomena of end consumption and the reintroduction of specialised techniques in a given territory. Roux, who has studied the introduction of the potter's wheel in some areas of the Levant between the Chalcolithic and the Bronze Age (IV-III millennium BC), takes up some concepts from R. Creswell (1996) concerning the relationship between technologies and socio-cultural phenomena. In the evolutionary perspective embraced by the French scholar, technological innovations can be continuous or discontinuous (Roux 2013; Roux and Courty 2013). The former ones are characterised by a continuous process of social learning between generations or peers. The latter takes place with a complete cessation of cultural transmission processes; for instance, in the case of a total population substitution in a given territory, or when—within the same community—one or more transmission units corresponding

[2] Douglas (1967), quoted in Brumfiel and Earle (1987, 7).

[3] Roux (2010, 225–228). In this regard see also the important considerations by R. Peroni concerning the production of Italo-Mycenaean pottery and Grey Ware in the Plain of Sybaris (Peroni 1994, 846–847). See also di Leo (2018, 104).

to social or institutional components disappear or emerge. Within this framework, in addition to the new needs of the elite in stimulating the introduction of technological innovations, figures and social groups able to realise these needs are fundamental (di Leo 2018: 104), in this case specialised potters.

According to V. Roux (2008, 2010), the study of the interaction between technology and society also helps to understand why in many cases, over the course of history, important technological innovations, such as the potter's wheel, have appeared, disappeared and reappeared again in the same area, even after a long time, in different chrono-cultural contexts, such as the Chalcolithic and the last phases of the Early Bronze Age in the southern Levant. According to her studies, in both these periods the use of the potter's wheel remained the prerogative of a small circle of specialists employed by an elite for the production of politically significant artefacts and did not invest the majority of the ceramic repertoire that continued to be produced with traditional techniques by other categories of craftsmen. This specific organisation of work, restricted in terms of learning and transmission, would have created a fragile productive system which did not react to the profound changes in the economic and social structures that marked the final phases of both these periods (Roux 2008, 2010). On the contrary, in other Near Eastern chrono-cultural contexts when the use of the potter's wheel was extended to the totality, or near totality, of ceramic production by specialised workshops, this technology persisted in a long time. In other words, according to Roux, the more restricted the transmission network is, the greater the chances that it can be interrupted in periods of systemic crisis, causing the loss of the involved technologies.

## Back to Italy

The results of our research suggest some answers and considerations: the local production of Italo-Myceanaen pottery, as we have seen, implies the introduction of new and sophisticated skills from the Aegean which were probably acquired gradually by local people; the innovative character of Italo-Mycenaean pottery in comparison to the Aegean repertoire could be an indication of this.

It is reasonable to assume that, due to its technological complexity, sophistication and exoticism, Italo-Mycenaean pottery, as well as Grey ware, belonged to the category of luxury items.

S. Levi and R. Jones categorise this kind of production as workshop industry (Levi 1999b: 259–260; Levi and Jones 2014) and this notion is important in that it implies the existence of masters and apprentices (Roux and Corbetta 1989), once again with the very probable inclusion of local people in the manufacturing cycle.

Some points remain to be clarified: even in the presence of socio-economic structures capable of maintaining specialised craft productions, part-time or full-time intensity of specialisation may depend on the fluctuations in supply and demand, so it is difficult to consider it as a priori.

Also, it is not easy to establish the specialists' affiliation. It is difficult to consider the figure of the specialised potter who, either full-time or part-time, produced Italo-Myceanean pottery—or other wares of Aegean inspiration—as an independent specialist in the sense described above, given that the socio-political and socio-economic framework of LBA Italy was far from concepts such as "market" or "urban society". The definition of attached specialists working for the needs of a patron member of the social elite is undoubtedly more fitting, although it would need to be further detailed in the light of specific socio-economic contexts, which are not always clear.

So, what we observe is the existence of a specialised pottery production, realistically the result of the work of specialised artisans. As already mentioned, there is an almost unanimous agreement in considering the function of this pottery for purposes of social display (Peroni 1994, 847; Levi 1999a; Cazzella and Recchia 2009, 32; Jones et al. 2014a, 456; Vanzetti 2014). Although it is still controversial to define the specific character of the segment of the community that acted as customer to this commodity,[4] we may think about the direct involvement of the socially emerging groups. It is also difficult to determine whether and to what extent there were relationships of dependence between producers and consumers, especially at the beginning of the local production of this pottery, when craftsmen were coming from the Aegean and therefore were not integrated in native social systems.

## Conclusions

Considering the models proposed by V. Roux, the introduction of the potter's wheel in the Central Mediterranean—together with the technological package of which it is part: fine calcareous clay, painted decoration and double-chamber kilns—seems consistent with the category of discontinuous innovation. This is because it appears to be linked to the emergence of new social components both on the side of consumers (social elites) and producers (specialised artisans).

Regarding end of use phenomena and the reintroduction of the potter's wheel, as discussed by V. Roux, it is worth noting that they also occurred in the Central Mediterranean between the LBA and the Early Iron Age (EIA) (11th–8th c. BC).

As already discussed, the use of the potter's wheel, introduced towards the end of the MBA in south-eastern peninsular Italy, spread throughout different regions of the centre up to the north-eastern Po Plain. While in central and northern Italy the phenomenon had a relatively short duration, in the south-eastern sectors of the peninsula, although with phases of contraction, the use of the potter's wheel—and of fine calcareous clay, plain or painted—was never completely abandoned. It must

[4] See, for example, Bietti Sestieri (2008, 22–27); according to this scholar Italo-Mycenaean pottery was produced by Aegean craftsmen who moved to the central Mediterranean and settled in the local communities, just for their personal consumption. For a critical discussion of this issue see Bettelli (2011, 113 –114) and Jones et al. (2014a, 453–454).

be said that in central and northern Italy it remained substantially limited to the manufacture of Italo-Mycenaean pottery. In south-eastern Italy, instead, it extended to the production of other ceramic categories: tableware, such as Grey ware, and productions functional to specific economic activities, such as *Dolii*. It is certain that everywhere the majority of ceramics continued to be manufactured according to traditional methods, likely by different and generally not specialised artisans.

The model proposed by V. Roux may help to explain why the potter's wheel disappeared in the areas of central and northern Italy, while in the South it lasted for centuries. During the LBA in both areas, this technology was used by a small circle of specialists for the production of ceramics aimed at an elite consumption. Although the spread through the south-eastern peninsula of various wheel-thrown (or wheel-formed) specialised wares suggests a more complex productive system—with the presence of different specialised potters for the large *Dolii* and tableware, both Grey and Italo-Mycenaean—in any case the craft network must have been restricted. A possible explanation could be proposed by considering the aspects of the organisation of ceramic production within the different historical scenarios in which the different communities acted.

It is well known how both the Po Plain and the Marche region in which a significant local production of Italo-Mycenaean pottery developed were hit by a series of turbulences and radical transformations during the Recent Bronze Age (RBA) and FBA (late 13th–11th c. BC), first and foremost the collapse of the *terramare* system south of the Po river (Bernabò Brea et al. 1997; Cardarelli 2009, 2015; Cardarelli et al. 2017; Bettelli et al. 2018b). In both regions, although in very different ways and with very different outcomes, settlements and socio-economic systems underwent prolonged periods of instability, transformations and restructuring. For instance, in the eastern Po Plain north of the Po river—the only area in which the *terramare* system persevered—important changes in settlement organisation took place towards the end of the RBA (mid-12th c. BC), with the progressive abandonment of the central place of Fondo Paviani and the development of the important *emporio* of Frattesina along the Po river, which in turn would have a relatively short duration (Balista and De Guio 1997; Bietti Sestieri 2008, 2010; Bietti Sestieri et al. 2015; Cupitò and Leonardi 2015; Cupitò et al. 2015; De Guio et al. 2015). In the Marche region evidence of this process includes the abandonment of important settlements such as Tolentino and Moscosi di Cingoli and those of the Arcevia area, as well as the subsequent foundation in the same area of the large settlement of Monte Croce Guardia, the life cycle of which was substantially limited to the FBA (12th–10th c. BC); a series of events which occurred in rapid succession (Cardarelli et al. 2017). In southern Etruria as well, another area where locally produced Italo-Mycenaean ceramics are attested, the period between the MBA and FBA (14th–10th c. BC) is marked by dynamism and rapid evolution of settlement patterns, which would soon lead to the structuring of the earliest proto urban centres between the end of the FBA and the EIA (10th–9th c. BC) (Pacciarelli 2001, 93–108).

The instability and dynamism that characterised the aforementioned regions may have contributed to the further weakening, and eventual disappearance, of the production networks—fragile according to V. Roux—which had produced the wheel-thrown

(or wheel-formed) and painted pottery used by the local elites in the LBA (Barbaro et al. 2012; Jones et al. 2014a).

The situation in south-eastern Italy, especially in some specific areas such as the Plain of Sybaris or Ionian and Adriatic Apulia, is completely different. In these zones, centuries-long settlement continuity is attested, at least in the case of the major coastal centres, which would only be interrupted by the foundation of the Greek colonies towards the end of the 8th c. BC (Peroni 1994; Radina 2010; Vanzetti 2014). This long-lasting settlement continuity was probably associated with a greater stability of the socio-economic and socio-political structures of those communities, as well as different capabilities, or possibilities, of exploitation of local territorial resources. In this sense, the probable LBA development in those areas of a specialised arboriculture, such as the cultivation of olive trees for the production of oil, must be highlighted (Peroni 1994; Terral et al. 2005; Fiorentino 2010; Vanzetti 2014; Primavera and Fiorentino 2021). It is also possible that such specialised agricultural activity could in turn have contributed to a greater settlement stability, considering the long investment in terms of time necessary to obtain optimum production. Olive oil production probably took place on a significant scale, if the surplus produced was stored—possibly together with other commodities—in storerooms within settlements inside the large wheel-turned (or wheel-formed) *Dolii*, as we will discuss below (Peroni 1994; Levi 1999a; Levi and Schiappelli 2004; Schiappelli 2006, 2015; Bettelli 2011; Vanzetti 2000, 2014; de Neef et al. 2017) (Fig. 7).[5]

Therefore, we can suppose that—although the productive network of specialised potters and its technological correlates was limited, and therefore fragile according to V. Roux—in these zones of southern Italy it was not hit by systemic crises or radical socio-political transformations as had happened in the central and northern regions.

This is a possible explanation of the phenomenon as pertains to craftsmen, but what about the consumers? It should be noted that in south-eastern Italy at the end of the Bronze Age, the use of the potter's wheel was mainly concentrated in the production of Aegean-inspired large containers for food—the *Dolii*—, which began as early as the RBA. As mentioned, they were often collected in storerooms linked to specific houses within the settlements, as happened at Broglio di Trebisacce, Rocavecchia and Santa Maria di Leuca (Peroni 1994; Schiappelli 2006, 2015; Orlando 1990; Guglielmino 1999) (Fig. 8). Thus, in these areas, there seems to be a direct link between a specific socio-economic organisation and the establishment and development over time of a particular ceramic technology (Peroni 1983, 250–251; Vanzetti 2000). In no other area where local production of Aegean-type ceramics was taking place, the storage practices included large containers of this type.

Regardless of the socio-economic complexity that they represent, the containers must have been used for specific economic practices probably related to specific

[5] The recent discovery of an important FBA site at Contrada Damale, in the internal region behind the Plain of Sybaris, adds important elements to the patterns of circulation and consumption of the wheel—turned *Dolii*, although the excavation data are still too scanty to formulate a new interpretative framework (de Neef et al. 2017).

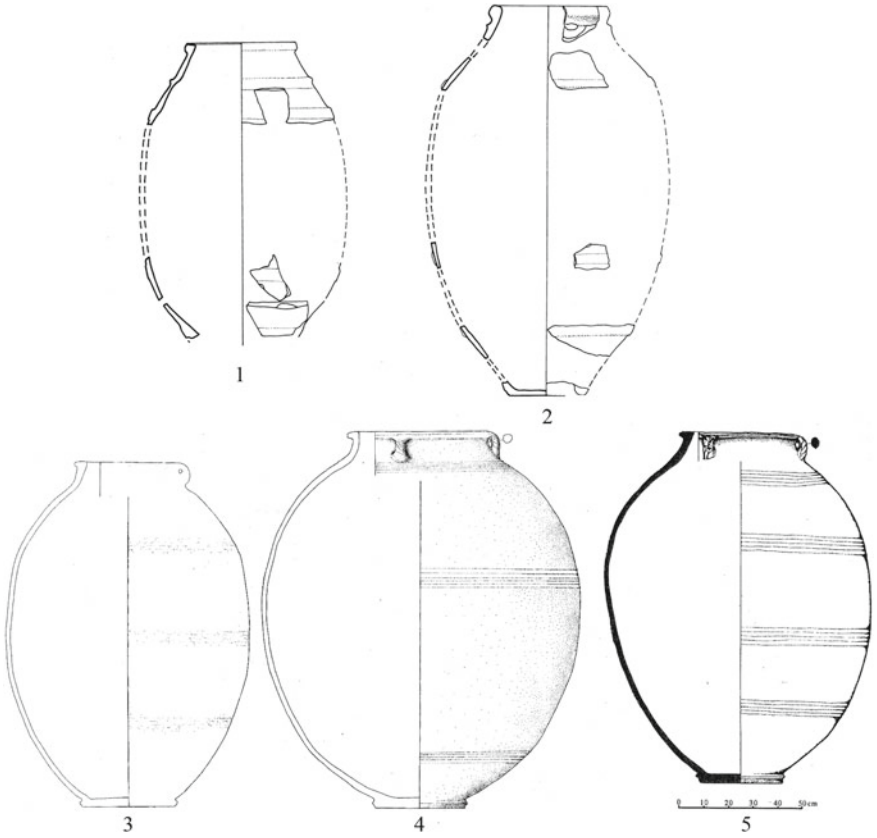



**Fig. 7** 1–2. RBA Levigated clay Dolii from Broglio di Trebisacce (after Tenaglia 1994, Fig. 126; scale 1:16 ca.); 3–4. FBA levigated clay Dolii from Broglio di Trebisacce (after Tenaglia 1994, tav. 66; scale 1:20 ca.); 5. FBA levigated clay Dolio from Rocavecchia (after Guglielmino 1999, Fig. 3)

social figures. If these social figures correspond to the elites of the communities, it could be argued that the continuity of use of Aegean-inspired ceramic technology occurred here also because it was soon directed not only towards productions destined for social representation, but towards those aimed at technological improvements to the advantage of the economic activities managed, probably, by the same elites who self-represented through the "ceremonial" use of tableware technologically and stylistically exotic and sophisticated.

Regarding the elites of the communities living in central Italy and the Po plain, they probably based their distinction on socio-economic structures different from south-eastern Italy. For instance, it is important to stress the economic characters of the communities living in the Monti della Tolfa area and along the valley of the Fiora river, both in southern Etruria, and with important metal resources. As pointed out by several scholars, the period between the RBA and FBA is crucial for the development in this area of an increasingly intense exploitation of those resources and flourishing

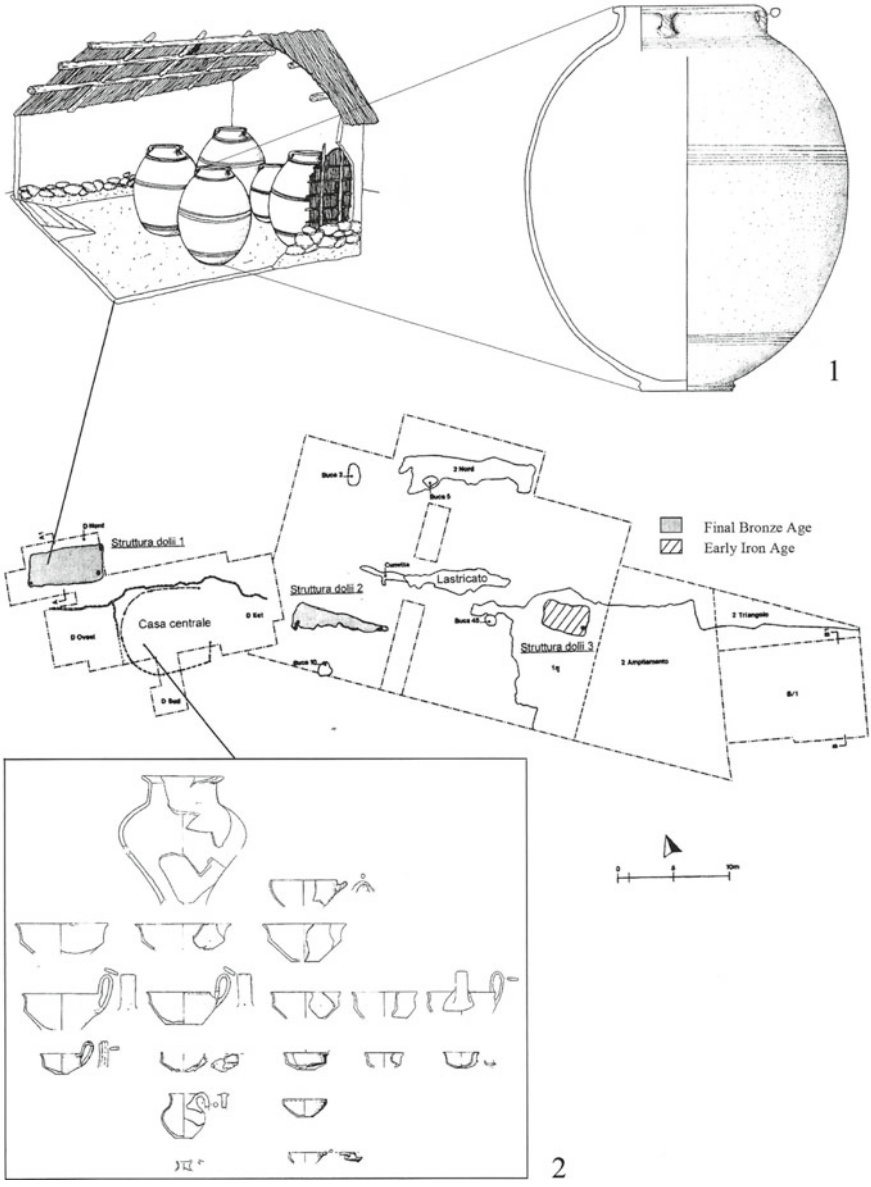



**Fig. 8** Broglio di Trebisacce. Map of a sector of the excavation showing the RBA "Central hut" with the Grey ware pottery set as reconstructed by A. Castagna (2), and two FBA storerooms with Dolii, with the proposed reconstruction (1) (after Bettelli 2011, Taf. 21)

of metal-based crafts (Bietti Sestieri 1981, 1988, 2008; Peroni 1983; Giardino 1995). At Scarceta fragments of Mycenaean pottery have been found in levels related to an outstanding structure connected to metallurgical activities. In southern Etruria, strategic economic activities therefore seem to have focussed on the exploitation of metal resources, accompanied by other types of specialised crafts. It is possible that those who were responsible, directly or indirectly, for these metallurgical activities occupied a role in the community, the importance of which was determined by the strategic centrality of this economic branch.

Notably, also the settlements in the Veneto region and some of those in Marche were sites of specialised craft activities, probably to a greater extent focussed on bone and ivory, glass and amber production, together with metalwork. The development of these activities in the settlements of Veneto is evident at the important site of Frattesina towards the end of the Bronze Age where a number of specialised crafts—in metals, glass and exotic materials such as amber and ivory—are attested, which were then distributed over a wide area (Bietti Sestieri 2008, 13, 30–34; 2010; Bellintani et al. 2015; Bietti Sestieri et al. 2015). The analysis of the FBA necropolis at Frattesina has highlighted how a well-structured elite was recognisable by cremation burials of warriors with swords (Bietti Sestieri 2008, 14–15, 31, Fig. 4; Cardarelli et al. 2015).

In all the above-mentioned zones there was a relationship between elite status and the management of specialised crafts considered to be strategic for the community, probably since the beginning of the RBA. Such a hypothesis would help to explain, in these areas, the more limited use, and eventual disappearance, of the potter's wheel with its technological correlates (previously intended mainly for the manufacture of vessels aimed at social display) over the course of the FBA (11th–10th). It is possible that such a specialised pottery technology did not root in those communities and social groups that did not consider it economically practical or convenient for activities in which they were involved. In these cases, prestige indicators would relate to different categories of products more closely linked to a specific type of productive economy, such as metalwork, ivory, vitreous materials and amber.

In mid-Tyrrhenian Italy and Campania, the use of the potter's wheel, of fine calcareous clay and painted decoration was only to reappear, after centuries of oblivion, in an advanced phase of the EIA (8th c. BC), thanks to relations with Greek trading partners and colonisers (Bartoloni 1980, 2005). Then, a technology transfer comparable to that of the Bronze Age can be observed and in a very short time, probably a matter of decades, the use of the new specialised pottery technologies spread over a wide area, involving the local communities of southern Etruria, Latium and some zones of Campania. Scholars agree that this technology transfer to Italy took place thanks to the presence of Greek potters in the Villanovan and Latin communities from the first decades of the 8th c. BC on, in terms of traditional chronology (La Rocca 1978; Bartoloni 1980, 2005; Anzidei et al. 1985, pp. 177–194).

Archaeometric analyses (Ridgway et al. 1985; Jones 1986; Table 8.12) have confirmed the presence of local products, as well as (Euboean) imports at the Veientine cemetery of Quattro Fontanili. Evidence from other mid-Tyrrhenian contexts dating to the EIA suggests that both local and Greek shapes were immediately

produced together. In the Esquilino cemetery at Rome Geometric-type pottery reproducing local shapes is present in burials dating to the first decades of the 8th c. BC (Gjerstad 1956, figs. 187:5, 188:3; Müller-Karpe 1962, tav. 23B:6; La Rocca 1974–75; 1978; Bettelli 1997, tav. 69:6; Bartoloni 2005).

Given the current state of research, it is difficult to say if and when local potters received Greek training. Scholars usually only consider the presence of Greek potters (La Rocca 1978; Bartoloni 2005; Nizzo 2005, 354, 3.28; 355, 3.30); however, judging from the production of painted, wheel-thrown vases reproducing local shapes, it can be assumed that novice local potters trained by Greek potters may also have been present in these workshops (Nizzo 2005, 354, 3.28; Gjerstad 1956, figs. 187:5, 188:3).

There is a general consensus on the fact that these exotic and sophisticated vases were produced for the local elites, as suggested by the relevant tombs at Veio, Tivoli, Osteria dell'Osa, La Rustica, Rome Esquilino and Quirinale (Bartoloni 1980; Anzidei et al. 1985, pp. 177–194).

Of course, it could be argued that a comparison of two apparently analogous phenomena which developed in two different socio-economic and socio-political environments is inappropriate. Yet it is undeniable that examining technology transfer in the field of Iron Age pottery production could clarify similar phenomena which occurred in the Bronze Age. In particular, it can help to better understand the relationships between producers and consumers of these specialised and technologically sophisticated ceramics, and also to further emphasise the structural link between technological innovations and social organisation, regardless of the different historical scenarios.

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# The Economic and Productive Processes in the Hellenistic 'Globalization': From the Archaeological Documentation to the Historical Reconstruction


**Enzo Lippolis**

## Introduction

During his detention, Antonio Gramsci addressed a series of letters to his family, that greatly help to understand his personality.[1] Among the recommendations intended for his wife and his son Delio, there is a tale, known as 'the mouse and the mountain', marked by a strong symbolic value. The tale was written for his son, whom he would not be able to meet anymore, and refers to different aspects of reality, particularly stressing the relevance of two of them: that society is an economic system based on reciprocal relations and that there is an 'active element', consisting in the self-awareness of the society itself, on which its organization relies. Both these aspects pose an interpretative question concerning the historical understanding of social systems. In reference to pre-Medieval cultures, the issue has been considered only sporadically, partially and sometimes on the basis of prejudicial assumptions.

The belief that pre-Medieval communities and their economies should be regarded as primitivistic and marked by an extremely limited or even absent conception of the economic complexity is still under debate.[2] The lack of written sources hampers a comprehensive reconstruction of this research's questions, and the use of other types of sources, such as the archaeological evidence, does still not provide sufficient information for an adequate historical narration. The archaeologists themselves tend to avoid the concrete reconstruction of the economic dimension of ancient societies, as shared methods and models for the data analysis have still not been developed.

[1] Gramsci 1947).

[2] Descat (2008).

E. Lippolis (Deceased) (✉)
Dipartimento di Scienze dell'Antichità, "Sapienza" Università di Roma, Rome, Italy



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The two interpretative positions, i.e., the primitivistic and the modernistic one,[3] are actually prejudicial with regard to the systematic examination of the available data and do not constitute reliable alternative interpretative tools, as they cannot be assessed on the basis of precise and comparable parameters. In both cases, in fact, the hypotheses have been built upon some specific factors, often without relating them to the wider general framework, while comparing them with literary sources, that are evidence with marginal value.

Therefore, the topic, which could be developed under different chronological and thematic perspectives, should be analysed starting from an organized and overall analysis of the acquired knowledge. In this respect, the late Classical age and subsequently the Hellenistic period could be a relevant field of research, given the consistency of the available documentation and the advanced level of collection and examination of the archaeological, philological and epigraphic materials. Of course, the following observations are focused on the interpretation of the contexts and findings pertaining to the archaeological sector, pointing out some considerations that will be further addressed later on, in an overall volume still under preparation.

## Hellenism

Between the work of M. Rostovzeff[4] and the recent studies on Hellenistic economies, edited by J. K. Davies and Z. Archibald,[5] the European culture underwent social and cultural transformations that greatly influenced the research. The latter clearly demonstrated that, between the fourth and the first century B.C., a radical change occurred in the Mediterranean cultures. The political development of the Macedonian States and of the Roman Federation, extensively documented by literary sources, resulted into a novel institutional scheme and expanded the horizons of economic action and rationality; furthermore, the archaeological evidence documents an even wider and deeper process, stressing the increased importance of the economy and the spread of new behavioural models.

During this period, in fact, the Mediterranean cultures expanded in different directions: among the most noticeable novelties were the increase of the urbanization level, the re-organization and the spread of the inhabited rural areas, the growth of artisanal production and of trade, the rise of interrelated consumption schemes, the development of a private economy introducing novel models of wealth management. For the first time, homogenous behavioural and social models, in the framework of a shared material culture, marked the Mediterranean basin.

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[3] For an overall overview of the debate, see Mazza (2002), pp. VII–LXXX), with reference bibliography.

[4] Rostovtzeff (1926), Rostovtzeff (1941); *Contra*: Bowersock ( 1974): 15–23; Momigliano (1994): 32–43; Reinhold (2002): 82–100; Andreau, Berelowitch (2008), partic., Descat (2008).

[5] Archibald, Davies, Gabrielsen, and Oliver (2006) and Archibald, Davies, and Gabrielsen (2011).

Such models derived from previous contacts and traditions, but widened and spread in different ways, together with a progressive integration of production processes. The Mediterranean regions experienced a real cultural 'globalization', which preceded and accompanied the dissemination of universalistic political systems—the Roman Empire being its final and most complete expression.

Moreover, the period between the fourth and the first century B.C. is marked by archaeological phases characterized by differentiated archaeological evidence that is often interpreted prejudicially as a sign of involution, while the overall trend of social and economic growth is not always visible. To properly address the issue it is necessary to consider the long-term processes in their overall diachronic development, in order to systematize preconditions and final results, that are part of a historical process and must be considered in the context of an interpretative system able to define the diverse periods composing it and their reciprocal interrelations.

In this framework, the studies on the material culture are the main source of knowledge, although such studies started later than those concerning architecture, urbanization and artistic production as well as their function to deliver collective messages. Some of the pioneering studies on the transportation of amphorae were already published at the beginning of the twentieth century, but only around the 1950s systematic research on the material culture of the period was pursued. The latter was then constantly developed up to the 1990s, becoming completely integrated in the respective scientific fields, although, later on, it slightly decreased in importance, according to the number of dedicated studies.

During this evolution of research, some productions have been examined in-depth with a high level of interest and of detail, while others have been lesser analysed, so that the general knowledge of the topic is still quite heterogeneous. Moreover, a taxonomic analysis, with the purpose of establishing useful means to critically examine the material documentation, remains necessary, and a more advanced level of elaboration is still lacking or quite discontinuous. Notwithstanding the rare attempts of integrating the different components in a general scenario, linking together production, trade and consumption in a systemic analysis of Hellenistic economies is still incomplete at best, due to the difficulties deriving from the research methods, but also to the existing dissociation between archaeological analysis and historical interpretation.

A specific attention was reserved to the containers used for freight transport and so they acquired a special relevance as a first effort to investigate the economic system as a whole. Among other productions, similar attention was paid only to tableware and, partially, to lamps, although there are still several problems concerning the identification of production sites and specific technologies. These products pertain to a productive cycle that started in the Archaic age and experienced a diversification of products and an increase in the volume of the sales between 330 and 270 B.C. This happened in consequence of the Greek-Macedonian expansion in the Mediterranean and in the eastern world, which contributed to establish extended political systems, fostering exchanges and local economic development.

## The Management of the Production Systems

The stamping over vessels always attracted the attention of the scholars for the capacity to deliver information. Nevertheless, its partial usage, identifying only certain butches of the products, also caused uncertainty concerning its nature and scope.

The significance of the stamp over the vases has been variously interpreted. The stamp, either single or double, is usually located in the most visible spot, over the vase's handles,[6] neck or lip.

Regardless of the different conceivable interpretative proposals, it is possible to assume that, at least for some productive categories, the stamps indicate the control of some agency over the quality, the compliance and the origin of the product. The involvement of the state can be elicited, *inter alia*, by the shapes chosen, in use by the magistrates or by eponymous priests. A public commitment, in the control over the production or over its marketing, applies to at least part of the total volume of the commercialized products. Under this perspective, the study of the stamps of Thasos, Rhodes and Knidos, provides relevant information.[7] The matching of stamp and container's shape is a clear identifying tool, with regard to the origin of the product. The changes in the shapes and in the external appearance of the exported amphorae help to recognize their origin through their distinguishing features. The homogeneity of these features, in turn, testifies for a convergence that is neither spontaneous nor occasional. The little data provided by the sources, as exemplified by the polis of Mende's commissioning the sculptor Lysippus to design a special amphora to commercialize the local renowned wine, confirm this conclusion.[8] In this case, the public involvement is undeniable, as coherently testified by the archaeological evidence.

The public involvement in the quality control of similar products, for instance daily usage pots or tableware, is less evident. Even in this case, though, some archaeological data and epigraphic texts can be of help. The case of the figurative pottery of the fourth century B.C.,[9] in fact, seems to follow two main directions, through the usual commercialization of the products and the mobility of artisans connected to the main workshops.[10] These artisans seem to gain an increased fame by manufacturing huge productions of figurative pottery, found in a limited series of places. The possibility that this is due to the mobility of the artisans, rather than to the mobility of the products, is suggested by the recognizability of the individual producers, who acquire visibility by being constantly engaged in the production commissioned by local authorities.

Although such development can be only indirectly inferred for the productions of Southern Italy, conversely, for the mainland Greece, the process is particularly

[6] Lund (2007), Lawall (2005), Porro (1916).

[7] Garlan (2000), Jörens (1999), Brugugnone (1986), Gentili (1958).

[8] Athenaeus 11 784c.

[9] Lund (2011), Eiring, Lund (2004), Whitbread (1995).

[10] Capdetrey and Zurbach (2012).

evident, especially as far as the Attic tradition is concerned. A correspondence between the archaeological evidence and the epigraphic documentation, for example, can be found in a decree of the polis Ephesus that testifies the mobility of two Athenian artisans, Kittos and Battos, who owned a workshop in Athens and dedicated several offers in the city and whose family's funerary enclosure has been identified.

It is possible to reconstruct the history of the two artisans, who were expressly invited by the Ephesians to produce ritual vases for the celebration of the local poliadic cult of Artemis and who also ran a workshop there, producing black-figure vases. The decree testifies the will of the Ephesians to keep the two Athenian artisans in the city, by granting them the citizenship.

Some other fragments of Panathenaic amphorae made for ritual competitions taking place during the local festival at Ephesus and at Rhodes for the Halios festivities,[11] indicate that engaging Athenian artisans to produce prestigious vases, used as representative gifts for the winners of the local competitions, was a common practice. That these vases were specifically commissioned and made in loco is also documented, for example, by the epigraph inscribed on a fragment found in Rhodes specifically mentioning the *Halieia*.[12] The attribution of these materials to the workshop of the so-called Marsyas Painter,[13] hypothetically identified as an artisan working in the workshop of Kittos and Battos, further confirms our thesis.

The Athenian artisans, so, commonly emigrated, spreading technologies and skills, at least from the second half of the fifth century B.C. The emergence of red-figure vases in Southern Italy,[14] around 440 B.C., is, for example, connected to the establishment of a workshop where an artisan who had worked in Athens was active, i.e., an Athenian expat or an Italic individual who had worked in Athens acquiring local know-how. This artist, known as Pisticci Painter,[15] clearly trained within the group of Attic artisans belonging to the so-called Group of Polygnotos[16] and was, furthermore, close to the Christie Painter, denoting a strong continuity with the Attic experiences.

The discovery of Metapontum's Kerameikos in the 1970s,[17] with remnants of vases decorated by vase-painters belonging to the generation subsequent to this first ceramographist, documents the introduction of new tools and novel productive techniques, undoubtedly deriving from Attic models. In this case also, a transfer of skills can be proved, starting from the fifth century B.C., when the most attested trend was the export of products and not the mobility of artisans. The latter only gradually increased in time and, a century later, was widespread, as documented by the abovementioned evidence from Ephesus and Rhodes. Moreover, the artisans' mobility

[11] Lippolis (2016).

[12] Angeli Bernardini (1977).

[13] Jaeggi, Petrakova (2007).

[14] Todisco (2012), Denoyelle (2008, 2009), De Juliis (2004), Schmidt (2002), Bonacasa et al. (2002), Trendall (1967, 1974, 1966).

[15] Denoyelle (1997), Denoyelle (1992).

[16] Matheson (1995).

[17] D'Andria (1975,1980).

presupposed commissioning entities that were stable over time, a constant presence of craftsmen in the local production system and the accessibility of resources. Such conditions could not be easily achieved without a continuous demand in the local communities. Artisans' mobility, so, increased during the third century B.C.,[18] in contrast to the sixth and fifth century B.C., when production centres were few and the trade traffic intense.[19]

The situation changed once again in the second century B.C., when new conditions made trading more convenient than the proliferation of productive centres. In this case, it should be pointed out how the reduction of the prestige of fine pottery was partially due to a new taste for metal and glass products, regarded as more prestigious. Hence, the value of fine pottery decreased, giving way to a mass production characterized by a serial character. This is especially true for some classes of products, such as the Campana A, from Naples. The change in the organization of the work, with a strong exploitation of slave labour, obviously influenced the productive process, too.

This briefly defined framework indicates the relevance of the commissioning entities—i.e., demand—and of the spreading of technological know-how through artisanal migrations as factors that changed the production processes, in different directions over time. In some cases, studying demand patterns is necessary to understand the reasons for the commercial success of some products. For example, the exportation of Rhode wine in the Mediterranean,[20] especially in the central area, seems to register a large-scale growth and a widening geographical range, even in those regions that traditionally produced wine, during the first half of the second century B.C.

Was this a consequence of the novel role of the Roman federation in the Mediterranean system after the second Punic war? Was the marketing of the wine of Rhodes[21] connected also to specific requests, for instance from the military bodies? The decrease in the volume of exportation after the year 146 is a sign that Rhodians took advantage of a favourable political juncture to foster exports?[22]

Moreover, the close connexion between the amphorae of Rhodes and Knidos is not random. The presence of the same producers in both centres reveals that the production system and the economic activities—depending on how the figures reproduced in the stamps are interpreted—were in the hands of a homogeneous group that worked in several fields but applied the same commercial methods.

The temple is another public sector connected to the spread of productive activities and of consumption patterns. Notwithstanding the loss of their primary collective role in the economic and social history of the polis during the Hellenistic phase, cult places still maintained some important functions. The sanctuary or the polis is

[18] Lippolis (2015).

[19] Morley (2007).

[20] Lund (2011); Lund (1999).

[21] Rauh (1999).

[22] Lund (under press).

often the commissioning entity of the products and creates relations that, through the interaction of supply and demand, increase the integration of the Mediterranean commercial network. In this respect, Ephesus is an emblematic example but also in other sites, the archaeological remains indicate how several productions, from pottery to figurines, related to sanctuaries that still attracted workshops and promoted manufacturing. This is particularly noticeable in Italy, where it can be elicited by several documents testifying a close relation between diffusion of cult practices and productive activities. The recurrent presence of dies inside votive deposits, for instance, shows that their usage was closely connected to the management of the cult and was restricted to the sanctuary, allowing for their distinguishing features.

## The Mediterranean Network

As seen, magistrates, institutions and cult places acted as commissioning authorities and producers in a multi-level productive and commercial system, which became more and more integrated over time.[23] The geographical spread of manufacturing centres, from the end of the fourth century B.C. and particularly during the third century B.C., corresponds to the most dynamic phase of the demographic growth and of the urbanization process. The latter is indeed a crucial factor, in a context where dominant elites emerge, in some cases lasting for several generations, and where new social urbanized groups promote medium-level consumption, based on the proliferation of workshops and on the search for local specificity in the framework of an over-increasing productive homologation.

The rivalry among the urban centres and the ruling classes' eagerness for political, cultural and economic accomplishments marked this period of general growth. Once again, the third century B.C. appears as one of the most relevant transition phases, during which new social languages are established. Production and consumption suited the new expressive models, thus definitively deleting the Archaic and Classical scheme of management of the society and of the collective life. From this standpoint, the birth of federal organizations and of extended States are maybe independent from the ongoing economic growth.

In this way, the foundations that foster the circulation and the stability of the exchange system are laid down, although under certain circumstances, marked by political disorders, some recessive (but anyway transitory) situations can be detected.

The topic deserves to be furtherly investigated starting from the birth of a complex commercial system in the Archaic Age in the Mediterranean basin and should be addressed together with the Greek colonization process in the East and in the West, which is currently the subject of an intense debate.[24] The tendency to belittle the

[23] Malkin, Constakopoulou, Panagopoulou (2011).

[24] Greco, Lombardo (2012), Tsetskhladze, Hargrave (2011), Yntema (2000), Lepore (1969).

'awareness' of the Greek settlers, in order to reassess the role of the 'native' inhabitants, led to a historical reconstruction with a 'happy end', characterized by an emphasis on coexistences and the disparage of models imposed by the external groups, that ultimately hampers a proper understanding of the process, rather than enriching it with new perspectives.

In the meantime, the present study mainly focuses on a more recent chronological phase, ranging from the fourth until the first century B.C., when the establishment of a network of relations in the Mediterranean area was completed and, during the first two centuries, seems to have been mainly managed by the Greeks.

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# New Institutional Economics and the Rhodian Economy: Some Preliminary Considerations


**Marco Maiuro**

I will deal with the theme of Hellenistic economies in two parts: first I will sketch the way in which Hellenistic economic history seems to differ in the current historiographical production from that of the archaic, classical, and then the Roman period. I will ask what the critical points are in the study of this time compared to earlier and (above all) later developments in the Mediterranean world. Then I will develop some considerations based on the case study of Rhodes, an example in which Hellenistic economic history can be assessed according to the now-prevailing historical-economic categories of the New Institutional Economics (NIE). My paper has no ambition to shed fresh light on a much-studied topic and dossier; I am writing from the point of view of the scholar who deals mainly with later periods and, if any, I would like to emphasize the usefulness for students of the Roman Empire of engaging critically with the sophisticated scholarly landscape of Hellenistic historians.

In the blossoming of historical-social and -economic studies that ensued from Finley's provocative and controversial book on the ancient economy, the Hellenistic world has found its own—I would say almost autonomous—field of debate. In the

The late Prof. Lippolis invited me to join the panel, probably in recognition of the dialogues on Seleucid and Pergamene history in which we used to engage when I was still a PhD student and he a recently appointed full professor at Sapienza. It is a great sorrow to have lost, together with the man and the colleague, a phenomenally knowledgeable and stimulating intellectual discussant on any possible topic of classical antiquity. My thanks also to the organizers of the AISPE Congress and the editors of this volume, for their generosity and patience. This short piece, limited in size and scope as it is, has awakened an interest for too long kept dormant, and I owe Prof. Lippolis a great debt of gratitude. I plan to come back to such matters in a much more thorough way. Here footnotes and the erudite apparatus are kept to the essential. A. Bresson, W.V. Harris, E. Lo Cascio, and J. Thornton read the paper and generously offered their comments, as much as the two anonymous referees; J.B. Johnson gave, with her usual generosity and professionalism, linguistic and editorial assistance. Errors mine only.

M. Maiuro (✉)
Dipartimento di Scienze dell'Antichità, Sapienza Università di Roma, Rome, Italy
e-mail: marco.maiuro@uniroma1.it



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recent general reconstructions of the historical-economic trajectory of the ancient world, in fact, Hellenism does not seem to find the centrality that, for example, Mikhail Rostovtzeff gave it almost one century ago.[1] And the sections devoted to the Hellenistic world are not key chapters in the more recent, epoch-making volume on the ancient economy edited by Scheidel, Morris, and Saller.[2] Historians of the Roman economy, even those few who deal with the republican age, rarely look to the East for the sake of comparison or in search of a pan-Mediterranean narrative.[3] Among those dealing with the history of the empire, those who look back to understand the possible similarities with and differences (and legacies, for that matter) from the Hellenistic monarchies are few.[4] In studies of the history of the Greek economy, on the other hand, the period of the archaic and classical polis seems to remain a favourite.[5] Of course, there are very noticeable exceptions, and this brief and superficial sketch must be taken as an indication of a trend, not as a rule.[6] I will try to analyse briefly some critical points that I think are worth emphasizing, concerning the difficulty of including the Hellenistic world in wider reconstructive and theoretical contexts.

Deploring the excessive fragmentation in the specialisms of historians is too comfortable and easy a refuge; specialization exists—I was about to write unfortunately—and is no accident of historiography, since each historian is increasingly under pressure to dominate even a single field of investigation. There can no longer be a Rostovtzeff, in the sense of a single scholar capable of spanning and dominating the history of vast periods and places; but this does not seem to me to be the essential point.[7] The most cogent point is that the period that follows the death of Alexander the Great cannot be reduced to any linear or teleological narrative or conceptualization—in short, to any attempt at synthesis that gives a univocal reading of the structural elements that shape the economic performance of the ancient world. In Finley's book, and in its more or less anecdotal quotations of ancient evidence, the Hellenistic period is (almost) completely missing—not by chance, as he was

[1] Davies (2001) remains one of the most thought-provoking and inspiring papers devoted to the *status quaestionis* of Hellenistic economies.

[2] Scheidel et al. (2007) and Bang (2009) ranked the papers according to their centrality in the overall architecture of the book and its argument, arguing, to my opinion rightly, that Harris' and Lo Cascio's chapters were the ones from which the hidden or open transcript of the volume could more clearly be gleaned.

[3] Kay (2014) and Tan (2017) but see e.g. Kay (2013).

[4] The many miscellaneous volumes recently produced that bring together scholars from varied specializations in time, space, and culture to write about a proposed theme (finances, taxation, Empire-building, and so on) for the sake of comparative analysis are of course a different matter. A small editorial industry whose scholarly utility, as far as comparing the Hellenistic and Roman economies is concerned, could be disputed if only scholars equipped with a solid background in both time periods were to write about either period.

[5] E.g. Ober (2015), Manning (2018), and van Wees (2013).

[6] See below, n. 17 for a list of bibliographical entries of works encompassing and dealing with Hellenistic economies.

[7] On the way in which specialists of Hellenistic economy can view their relation to Rostovzeff, see Archibald (2001) and Davies (2001).

interested in singling out the structural phenomena that inform the ancient economic performance.

The Romanists, for their part, reason within a general narrative of growth and conquest in the republican age, of stability and economic expansion in the imperial age, and of more or less steep decline in late antiquity.[8] The imperial age has been a privileged ground for methodological innovation, and this is because it is in this age that models and evidence can be tested (according to Finley, and then Hopkins), and quantitative—often very ingenious and innovative—readings of ancient documentation can be attempted.[9] The analysis, I would argue, is made to proceed in a riverbed whose narrative banks—the macro-story in which to bring together different research rivulets—are firm: growth, stability, and decline. Also noteworthy is the fact that it is precisely the reducibility of the historical parabola of the Roman Empire to a clear macro-narrative that has attracted the intellectual attention of a growing number of professional economists and economic historians of better-documented times.[10]

In fact, the greatest and most productive challenge to the Finleyan paradigm has not come from Marxist historiography, as one might have believed when the book was published,[11] or from a return to a merely inductivist and descriptive modernism à la Rostovtzeff, over which I believe Finley has undoubtedly and definitely won the intellectual battle. Instead it has come from the neo-institutionalist approach, which has informed the most innovative studies on the Roman world in the last twenty years—a blend of neoclassical concepts and institutional history that focuses on the key concept of 'transaction costs', and studies institutions as economic actors that determine the framework within which the other actors play socially and economically.[12] It is a formalized approach in economic terms, which nevertheless considers

[8] And indeed, economic histories of late antiquity are comparatively much rarer and more difficult to write than those of previous centuries, and as a result they have had a very limited impact on general reconstructions of the ancient economic trajectory. And in fact late antiquity is treated by Scheidel, Morris, and Saller 2007 in a cursory way, not even mentioned in the general chapters that open the book. I suspect that one of the possible causes of this is exactly the difficulty of tracing a linear narrative, valid for the whole period across the empire. Again, there are exceptions: Banaji (2007, 2016) makes a remarkable attempt to clear the terrain of the rhetoric of decline or, worse, of catastrophism (see Maiuro 2017).

[9] Both the highly innovative work by W. Scheidel (in many essays) and that of the Oxford Roman Economy Project led by A. Wilson and A. Bowman are centred around the core centuries of Roman history, 1st–3rd c. AD.

[10] Temin (2012) and Allen (2009); see, for example, the debate on Roman GDP: Hopkins (1980, 1995/96), Maddison (2007), Scheidel and Friesen (2009), and Lo Cascio and Malanima (2009, 2014).

[11] Though some recent Marxist readings of the ancient economy are highly innovative and have contributed in relevant ways to the refinement of our understanding of some key aspects of ancient economy: Banaji (2007, 2016) and Sarris (2006), etc.

[12] Pioneered by Lo Cascio in 2000, and in subsequent works, it has become the most widely accepted general model of enquiry for ancient historians: see Bang (2009) and Verboven (2015). I see the risks singled out by J. K. Davies in this volume and the perils of saturation and intellectual conformism inherent in a catch-all, valid-everywhere general model. An exercise, useless certainly, in the counterfactual history of historiography would be to imagine how it could have been the scholarly landscape of Hellenistic social and economic history had K. Hopkins been engaged with

institutional evolution and the changing historical picture decisive components in determining development, growth, or decline in both pre-industrial and industrial economies. Its applicability to the Roman Mediterranean has seemed fitting, as the political stability of the empire makes it possible to grasp the impact of structural factors and determinants over a relatively long period.

The Hellenistic world is evidently less conducive to structural analysis, since the actors are many (from cities to leagues, and from medium-sized kingdoms to continent-wide monarchies), and the interactions between them are innumerable and not easily assessable in any linear and clear frame. None of the fundamental components of an economy (from demographics to urbanization rates, from fiscal policies to the volume of production and commerce; only monetary stock, among the structural components, has been assessed with remarkable accuracy)[13] are known with a sufficient degree of certainty. This is, however, something that hampers the study of the Roman Empire as well, for which such factors are almost equally imperfectly known. More importantly, I would argue, one cannot glimpse the general overall direction of the Hellenistic period (growth or decline, less or more urbanization, greater or less monetization, etc.) as relatively straightforwardly as that of other phases of ancient history. I say this because, from the many excellent essays written in recent years on kingdoms, *koinà*, or individual poleis of the Hellenistic world, the contemporaneous phenomena emerge—in obviously distinct areas—of demographic growth and decline, of an increase and a drop in the urbanization rate, and of a growth and a decline of the sector of the marketed economy to the detriment of self-sufficiency. And certainly, this coexistence of opposing tendencies must not be reduced to a zero-sum game, nor should it lead to the suspension of historical judgement. Not by chance, the research group led by J.K. Davies, Z. Archibald, V. Gabrielsen, and G. Oliver speaks of 'Hellenistic *economies'*, and in the plural form of that noun is the gulf that separates that period from previous and later developments.

In fact, it cannot be doubted that, as a whole, barring regional differences, over the entire time span and the three-continent extension of the Hellenistic cultural koinè, the general economic movement was expansive, but it is equally true that tracing an overall picture to catch the rhythm, the speed, and the causal links of that expansion proves complicated. In short, the Hellenistic world—due to its size, its complexity, the coexistence of its many actors, and the coincidence of the manifold periodization of its demise with the entry into the game of the Roman Republic, which was disruptive to the balance—seems to be an equation with too many variables, and therefore impossible to solve. The dialectic between models and evidence mentioned above is more complicated in this temporal segment than in others, due to the difficulty of applying models even in the presence of relatively abundant evidence.

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it more seriously; the Roman economy as we now write about it owes as much to him as to the proponents of the NIE. And it is indeed difficult to ignore the impact that extraordinarily creative scholar had in steering the debate, sparking interest, and posing new historical questions for a whole generation of classicists after him.

[13] See De Callataÿ (2014) and Aperghis (2001, 2004).

Two further elements are very important: first, the loss of written sources—of contemporary reflections on the structural aspects of the life of Hellenistic communities: we have nothing from the third century comparable to the wealth of theoretical reflections or the historiography of the fourth century. This is a loss all the more serious because the best historiographical source we possess, albeit only partially, Polybius, is from an age already deeply changed from the first century of Hellenism.[14] What is lacking for the period in question is economic thought: between the publication of the pseudo-Aristotelian *Oikonomika,* written in the first decades after Alexander's death, and Cato's *de agricultura*, we do not possess any preserved narrative source that enlightens us on aspects concerning the economic or social life of the Hellenistic world. This documentary hiatus of more than a century leaves the most vital and probably most innovative period blank (just think of the way in which the Hellenistic monarchies recover, alter, and reinterpret the economic and social institutions that preceded the conquests of Alexander).

Secondly, we do have archaeology, inscriptions, and papyri, but each presents its own problems: epigraphy casts a revealing light on a large number of institutions and on historical and economic facts, and provides invaluable data in every respect, but information that we draw from it is only rarely valid beyond the production context of the inscription itself. More often than not, inscriptions provide information of local import, and this contributes to the image of the comminuted Hellenistic world just sketched. The same problem arises with papyri—perhaps the richest and most underused source from the Hellenistic period. Here the problem concerns both the peculiarity of Egypt compared to the other monarchies and also the absence of Alexandria's economy from the picture (Alexandria was certainly the Hellenistic metropolis where all the more 'modern' aspects of Hellenism—from technical and scientific innovation to credit practices, up to the enormous demographic development—were for the first time seen in the ancient Mediterranean). Archaeology, on the other hand, is one of the few sources that we possess in abundance and almost everywhere, but here too there are problems related to the representativeness of data, their chronology, and finally, how to read this documentary class in a proper historical-economic key—that is, how to interpret it in the framework of a formalized discourse, outside the shallows of inductive descriptivism mentioned above.[15]

Returning to my initial proposition: in the blossoming of socio-economic studies of the ancient world, the Hellenistic age seems to have created a niche ecology of historians and archaeologists who deal mainly with this time period and related problems. These scholars should be praised for having animated a very rich and innovative debate from which all others can learn.[16]

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[14] Though it is clear that, as far as Rhodes is concerned, his narrative (and that of Diodorus) depends on local third-century historians such as Antisthenes and Zenon: Wiemer (2001). These were, however, political histories, not comparable to the theoretical (and practical) reflections on economic matters of fourth-century literature.

[15] These are, of course, all topics thoroughly investigated by the collective works mentioned above and in the following footnote.

[16] Without pretence of exhaustiveness, J.K. Davies, Z. Archibald, V. Gabrielsen, and more recently E.M. Harris, D.M. Lewis, and M. Woolmer have edited volumes where all the most important

I would now like to briefly discuss how one could frame a *locus classicus*—Rhodes—in the history of the Hellenistic economy. For obvious reasons of space, I can only sketch here a very preliminary outline, which warrants a much more detailed and better-documented narrative. Rhodes' history is a success story, which, in the context of the entire Hellenistic world, represented an exceptional and atypical case in the eyes of the contemporaries themselves. I will try to present some critical points in the study of the island as they emerge from the relatively abundant historiographical reflection dedicated to it. I will do so by trying to imagine a path that brings together models and evidence, as said above.

Rhodes is a small entity, demographically and by territorial extension not comparable to any of the other Hellenistic leagues or kingdoms. The unique source of information from which we can estimate its population comes from Diodorus' description (20.84.3) of Demetrius Poliorcetes' famous siege in 305/4, for which the historian offers the figure of those mobilized as 6,000 citizen infantrymen, plus about 1,000 resident aliens (*paroikoi* and *xenoi*) willing and able to join. This was an exceptional case, so it must be assumed that the mobilization rate was unusually high. In Hansen's analysis, the city of Rhodes that resulted from the synoecism of Ialysos, Camiros, and Lindos stands in the upper segment of the most populous among Greek poleis.[17] The island gained pan-Hellenic fame for resisting Demetrius' siege in the same decade in which the monarchies were established, and this serves to put the number of its inhabitants (perhaps not more than 50,000, including the smaller islands) in perspective.[18] Briefly, Rhodes was by no means comparable in size and manpower to any other major political player on the Hellenistic chessboard. We do not know how densely populated the Peraea was, or that part of the Anatolian territory ceded to Rhodes after the peace of Apamea. Certainly, it was a significant acquisition, not in absolute terms, but in relation to the previous history of the island.[19]

The demographic evolution following the only historical episode for which we have some quantitative data, if we in fact deem the data trustworthy, is not reconstructible: even in the hypothesis that the growth rate was sustained, and that it was as implausibly high as 0.5% per annum, the overall increase of the population

issues about the topic are thoroughly investigated. Bresson (2000, 2016) is another leading figure in the debate, together with Migeotte (2014), Van der Spek (1995) and in many other articles; Aperghis (2004), Reger (1994), Manning (2003), von Reden (2007), de Callataÿ (2014) and in many other essays; and Shipley (2018) have all contributed fundamental books and essays on specific Hellenistic kingdoms or regions, or on specific topics. The reader can retrieve further bibliography there, especially the many dispersed publications on single regions or documents that bear on the topic.

[17] Hansen and Nielsen (2004) and Hansen (2006).

[18] We cannot base our calculation on the assumption of a fully mobilized adult male population; my purely hypothetical figure (actually, a guess) is indeed based on a more generous (and perhaps realistic) count of one adult male mobilized for every three, taking the city, the whole island, and the smaller islands into account. But see Hansen (2011) for a more optimistic count. What matters here, however, is that Rhodian manpower, however optimistic we are prepared to be about it, is no doubt many times smaller than any other conterminous regional power.

[19] For the city, Gabrielsen (2000a; for the Peraea, 2000b). On Rhodian history in general (Wiemer 2002) now fundamental Badoud (2015).

in the century and a half between Demetrius' siege and 167 cannot have been higher than 200% (that is the population doubled in ca. 150 years). We do not have any data for the contribution of migrants or slaves to demographic growth. The number of resident foreigners was certainly high, as we can infer from Diodorus' narrative quoted above, due to the island's relevance as a commercial hub, but the collection of data derived from names in inscriptions[20] has not been particularly helpful—social reality or epigraphic distortion? We are unaware of local occurrences of political practices elsewhere well attested that favour the inclusion of foreigners, or cases of *isopoliteia* (or even more radically of *sympoliteia*), attested for other, possibly even larger centres, such as Miletus.[21]

The subject of slaves is different: it is likely that the role assumed by Rhodes as guardian of the seas against pirates—in short, the fact of its being at the centre of Mediterranean trade, and universally recognized as a safe haven—made its emporium a privileged place for the slave trade, and therefore the supply was more abundant in Rhodes than in many (if not most) places. But we have no actual data; certainly, slaves were not employed in mines as in Attica, because the island had no such resources. I think it is unlikely that Rhodes possessed a number of slaves relative to the rest of the population that was comparable to fourth-century Athens, based on what can be reconstructed (although imperfectly and speculatively) from Ktesicles' controversial fragment (FGrH 245, F.1, in Athen., *Deipn.* 272c) on the results of Demetrius Phalereus' census in 318/7.[22] Proof of this is the quantitative data about the Rhodian fleet: from the most reliable reconstructions, the numbers of *trihemioliai* and commercial cargoes were much smaller than those of the Athenian fleet (probably less than a quarter the size) in the fifth and fourth centuries, despite Rhodes having replaced Athens in controlling the seas.[23] And the consequence of less investment in the fleet must have been a much-reduced state budget if, as amply demonstrated, the largest item of expenditure for the Athenian Republic was the fleet, which cost the republic of the fourth century three to four times as much as politics (that is, the *misthos* paid for citizen participation in assemblies and judicial courts).[24]

The data seem to converge in the representation of Rhodes as a flourishing republic whose fundamentals (population, fleet, total amount of public expenditure) were a fraction of those of Athens during the classical age. Athens acted in an international context as a city-state among others, a peer-polity, yet Rhodes, despite much lower human and financial resources, managed to gain an economic and commercial pre-eminence in a context in which it could not compete for resources with the powers adjoining it. Likewise, the Rhodian coin did not rise to pre-eminence in markets as the Athenian owls had during the classical age, and if the reconstructions by Ashton, Bresson, Aperghis, and de Callataÿ of the monetary stocks of Rhodes and

[20] Bresson (2002) and Maillot (2015). But see now Boyxen (2018) for a reassessment of the evidence.

[21] See most recently Reger (2004) and Schuler (2010).

[22] Also, Hyper. fr. 29 Kenyon on myriads of slaves employed in Attic mines; on Ktesikles see lastly van Wees (2011) with previous literature.

[23] Gabrielsen (1997).

[24] Gabrielsen (2013).

the Hellenistic kingdoms are accurate, it does not seem to have coined money much in excess of its domestic needs, so its output was small compared to that of the monarchies.[25] Above all, the mechanism of issuing money on the market and the revocation of the old currency had to be substantially different from that utilized by all other major political actors, since Rhodes did not have a large army or mercenaries to pay (the prevailing way to enter currency into the market), or a large pool of taxpayers subject to regular taxation from whom to acquire money. Nonetheless, its contribution to the banking and credit supply must have been relevant, compared to the sheer size of its population and resources. In short, its monetary circuit of spending and regular income was possibly much smaller than that of any other power. What must have made the difference between Rhodes (and to a lesser extent, all the other Hellenistic free cities) on the one hand and the great political-military actors on the other is the effect of irregular contributions and indirect taxation on the island's budget.

The complaints of Rhodes' ambassadors to Rome of a fall in revenue after Rome's punitive measures in 167—probably only due to the loss of port taxes (*ellimenion*)—from one million drachmas to one hundred fifty thousand, is the only other quantitative data we possess for the island from literary sources (Polyb. 30.31.1–12). The context of the passage, apart from the textual uncertainties,[26] is rhetorical, and therefore must be read with a certain degree of scepticism: it was patently in the interest of the community and the ambassadors to exaggerate the extent of the damage suffered. But the incontestable historical fact is the Rhodians' awareness of the fiscal importance of its harbour's dues, and its central place in the Mediterranean networks, achieved in little more than a century.[27] The loss of the port tax as presented to us is very substantial: moreover, we know of other privileges enjoyed by Rhodian merchants, such as the customs immunity in the Sicilian and Seleucid ports of Anatolia after 227 (Polyb. 5.89).[28]

We do not know to what extent it is possible to speak of a protectionist policy for their own mercantile activity (as in Athens for grain, and Thasos for wine).[29] It is certain, however, that in 220 Rhodes' intervention as arbitrator was sought against Byzantium (Polyb. 4.47.1–52.5), which had started to charge a heavy toll on ships passing into the strait, damaging international merchants. Their allies' request for intervention seems to reflect the awareness of all the international participants that Rhodes guaranteed the regularity of trade, and that the island had gained prominence in maritime affairs.[30] To use an anachronistic concept, Rhodes therefore does not

[25] Ashton (2001) and Bresson (1993, 119–169); see also Bresson (1996, 75–77) on the importance of exporting goods for Rhodes to retrieve precious metals.

[26] The reading of the manuscript, accepted by Walbank, *ad loc.* and Schmitt (1957, 161–163) against Hultsch's proposal of emendation.

[27] For reading and interpretation of the passage, Gabrielsen (1997, 64–71).

[28] On lines of penetration of Rhodian naval power and commercial pre-eminence (hardly to be disentangled), see Gabrielsen (1997).

[29] Bresson (2016, 306–338).

[30] All other episodes of Rhodian interventions in international diplomacy are listed and discussed by Ager (1991, 10–41).

make use of its competitive advantage as an offshore market, as Delos will: there is no trace in our documentation of specific exemptions or customs immunity for its emporium—in short, it is not a tax haven derogating from international rules. On the contrary, it acts as a regulator of disputes, as a police force of the seas, and as a referee monitoring the game of the other economic actors.[31] In fact, up to the advanced imperial age, the international maritime law regulating the distribution of damage suffered among shareholders of cargos in case of jettison was known as the *lex Rhodia de iactu*.[32]

A second substantial income, rarely appreciated in the literature for its economic relevance (as it should be), was the payment that the republic demanded for performing the tasks of pirate prevention and arbitration.[33] We have abundant anecdotal and unsystematic documentation both of ransom payments by fellow citizens and communities after pirate abductions, and of sums requested for preventing abduction.[34] Rhodes certainly had to charge for the service of policing the sea, and it demanded a payment that can be conceptualized as a clean and negotiated form of extortion, whereas the pirates wielded a violent and probably much more costly form. There can be no better evidence of the Rhodian attitude towards pirates than the treaty imposed on Hierapytna after the so-called First Cretan War (ca. 200: *SIG*$^3$ 581). Among the clauses of the treaty is the requirement that the Cretan city must regularly provide Rhodes with fast ships for the fight against pirates, as well as access to their ports: in practice the treaty forces a community to change sides, enlisting it under Rhodian control in the same battle in which the two communities had fought on opposite sides, and to use the same means—its own fast ships and its ports—once evidently used for piracy. Rhodes guarantees Hierapytna may keep 'legitimate profits coming from the sea', i.e., non-pirate trade.

We arguably find here, as made clear in the aforementioned episodes, what was to be one of the real economic specialties of Rhodes: not their wine or their demographic or natural resources, but the ability of its ruling class to read international politics, to act diplomatically, and to preserve a prestige and a reputation superior to their economic resources. From this aspect, the flowering of Rhodes could be read according to neo-institutionalist models: as an economic actor that takes commercial advantage of the conflicting nature of the relationships of all the other actors, and offers a global service, aimed at lowering the transaction costs for all other actors.

We now come to that particular class of evidence offered by amphorae, stamped with the name of the eponymous priest of Halios: the precise number of *specimina* is unknown, probably in excess of 200,000; the most consistent nucleus thereof—about half of the sample—is preserved in the Museum of Alexandria in Egypt. There are many problems that emerge from this extraordinary documentary class: from the

[31] Neutrality: Polyb. 30.5, 6–8; Diod. 20.46; 20.81; Berthold (1984, 57–58) and Schmitt (1957, 54–55).

[32] Very amply discussed, above all by Romanists: see Aubert (2007).

[33] On Rhodes and the pirates: Strabo, 14.2.5; Diod. 20.81.3; Gabrielsen (2001) and Bresson (2007).

[34] See de Souza (1999) and Pritchett (1991, 203–363); also for Hellenistic history specifically, Gabrielsen (2003, 389–404).

statistical representativeness of the sample to the frequency of the marking, to the periodization.[35] What can certainly be said is that Rhodian wine seems to pervade the entire Mediterranean at the time when Rhodes establishes its hegemony over the seas. It is more problematic to discern the moment of the beginning of the decline: the most recent chronological seriation seems to have abandoned the old theory that made the beginning of the descending curve coincide with the loss of Rome's favour, in 166. There seems to be a certain lag, lasting about twenty-five years, between the end of Rhodian hegemony on the seas and the beginning of a precipitous decline. Probably this is not by chance, in the sense that the commercial network built by Rhodes in the previous century cannot have been suddenly terminated. Moreover, Rome did not shut down the island's productive capacity, it undermined a system of diplomatic activity and international relations built over half a century by means of an intrusive alteration in the rules of the game, through the creation of unfair competition within the system. And as the presence of Romans and Italians at Delos seems to become massive after 145, it probably took a quarter of a century for the new balance of international trade to change direction, from Rhodes to Delos, when the earlier commercial channels that had been built slowly started to rapidly dry up; with the change in direction of international commerce, the commercial flows and demand for wine (and possibly slaves) shifted. More difficult to read is the brilliant recovery of Rhodian trade after 120; it may be surmised that the Rhodian merchants regained momentum in a completely different international landscape and were after all able to adapt to the new conditions.[36]

Specialists of Rhodian epigraphy recently reconsidered the chronology of an inscription that mentions an alliance treaty between the island and Rome (*SEG* 33, 637): it is not from around 200, as the original publisher had thought, but the first half of the third century at the latest.[37] If we accept this new dating, the famous Polybian note (30.5.6–8) of a bond of alliance that united Rome and Rhodes for 140 years at the time of the Third Macedonian War takes on more shape.[38] Rhodes was probably one of the first Greek states east of the Adriatic sea to notice Rome for matters related to foreign politics and diplomacy, and to secure an alliance with it[39]; this bears witness to the polis's farsighted and celebrated diplomatic abilities. Likewise, the proposed dating makes clear that Rhodes' error—proposing to mediate with Perseus—was due to an inability to reassess international politics, not understanding that they could no longer apply the same political and diplomatic toolkit used among the Greek states (and towards Rome) since time immemorial in the new international scenario, now

[35] Wiemer (2002, 27–28), Finkielsztejn (2001a); further, compare Lawall (2002, 295–324), Habicht (2003, 541–578) and Badoud (2003, 579–587).

[36] See above all Finkielsztejn (2001b).

[37] Badoud (2014, 120 n. 40).

[38] But see already, against the majority of scholars, Schmitt (1957, 149), Bresson (2007), and Gabrielsen (2013, 332–348).

[39] See also the famous bilingual Blinckenberg 1941, n. 92 = *ILLRP* 245 = *CIL* I$^2$ 404, according to Cassola (1962) an Oscan merchant; or Rhodian military actions against the Tyrrhenians (*SIG*$^3$ 1225), Bresson (2007); see, for the far-reaching implications of this documentary dossier, Harris, *forthcoming*.

radically changed by the ferociously aggressive nature of Rome's foreign policy. In short, Rhodes builds a Mediterranean mercantile hegemony and then loses it, due to extra-economic abilities and inabilities, related to diplomacy and politics rather than to military or economic power.

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# Debts, Slaves and Finance

# The Edicts of Debt Remission: A Political Tool of Economic Intervention


**Cristina Simonetti**

## Introduction

It is usually thought that ancient civilizations were simpler than our current one because the latter appears too complex to understand and keep under control from social, economic, legal, political and cultural points of view. This happens mainly for two reasons. Firstly, we are so involved and overwhelmed by the present that we have lost sight of available futures. This in turn prevents us from seeing and appreciating the present-day situation as a moment in a time continuum. Secondly, our limited knowledge of the past makes us erroneously conclude that previous generations led simpler lives than we do today. However, when further information is gathered and studied the above assertion is quickly dismissed.

This is the case of the OB period, which is the focus of this paper. It lasted for the first four centuries of the 2nd Millennium B.C., in the part of southern Mesopotamia called Babylonia, starting with the kingdom of Hammurabi (1792–1750 B.C[1]). Then, the country was divided into many kingdoms: Isin, Larsa, Kiš, Babylon and Ešnunna, to mention only some of the most important ones. Each one had different dynasties that we know thanks to royal inscriptions,[2] royal letters,[3] and officials but also private

[1] This is the Middle chronology of Hammurabi's reign, but it isn't an absolute chronology. See: Liverani (2011, 14–23).

[2] Frayne, D., Old Babylonian Period 2003–1595 B.C. RIME 4. Toronto 1990 and also the Lipit-Ishtar and the Hammurabi Codes, edited now by Roth (1995).

[3] See: Kraus (1968); but see also the other volumes of Altbabylonischen Briefe; the volumes of Archives Royales de Mari.

C. Simonetti (✉)
Dipartimento di Giurisprudenza, Università di Roma Tor Vergata, Rome, Italy
e-mail: simonetticristina@libero.it



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documents ones.[4] Moreover, we have also a lot of information from very remarkable mulch implements and wares used in everyday life found by the archaeologists. That's how we get to know about battles, diplomatic relations, inter-dynastical weddings, devastations and reconstructions.[5] Furthermore, we know about myths, legends, lost and reintroduced cults and simple stories about wars and trade.

In these kingdoms many people lived in a very complex society. The king was surrounded by a lot of servants who helped him to manage various sectors of the economy, politics and culture, and they were the *élite*.[6] Moreover, there were two distinct hierarchical levels: the officials who were in close contact with the rulers and who managed bigger or smaller groups of workers and, the workers themselves. All were paid through a redistributive system: barley, oil and wool for the lower levels and small plots of land for the higher levels. All of them together constituted the palatine system, which we at present could compare to the public administration.

The general population didn't belong to this social stratus. They were farmers who worked and lived on their own land. They needed services provided by the public administration, such as irrigation, military and religious protection, and infrastructures. Thus, they had to pay taxes, tithes and *corvées* to the palatine system, to allow the palace to provide such services.

Obviously, the two sectors couldn't exist without one another and the balance between them made the system grow or decay. In the period under study, the balance was never steady but kept fluctuating due to three reasons. The first one was social. When the traditional and extended family was supplanted by the nuclear family, the quantity of land inherited became consequently smaller and smaller with just enough food for one household to live on.[7] The second one, mainly political, concerned the political instability of the first two and a half centuries of the period: the relations among the different kingdoms varied quickly. Sometimes allies became enemies in a very short time and the war often triggered economic crises,[8] with the devastation of crops, the looting of warehouses, etc. The last reason can be defined as force majeure because there were a lot of natural disasters such as flooding, the obstruction of canals, earthquakes,[9] hydrologic devastations,[10] salinization, etc.

During the whole period, the private sector shrank not only quantitatively but also qualitatively. Poorer farmers who couldn't sustain themselves could not become

[4] The Old Babylonian documents are one of the most numerous groups from the Ancient Mesopotamia and the Ancient Near East. There are a lot of publications of tablets residing at Museums worldwilde. In addition, there are also a lot of articles devoted to individual or small branches of tablets. It is possible now to consult online database such as ETANA (by the Oriental Institute of Chicago), ARCHIBAB (College de France) and others.

[5] Liverani (2011, 266–297; 343–360; 831–833); Edzard (1957); Stol (1976); Charpin (2004); Klengel (1976); Pientka (1988).

[6] Klengel (1976); Godderis (2002); Stol (2004); Walters (1970); Leemans (1950).

[7] Liverani (2011, 279–283).

[8] On this subject see Richardson (2005); and Id. (2016).

[9] Babylonia was an alluvial but not seismic. Yet, earthquakes in the nearby regions could affect Babylonia.

[10] Liverani (2011 347).

palace employees but were handed over to creditors as slaves. The majority of farming lands came into the possession of just a few landowners. Besides buying the lands of their debtors, these landed proprietors were also part of the palatine system. So privately owned lands became small independent enclaves within the territory of the kingdom.[11]

To overcome this slow but unstoppable tendency, the Babylonian kings immediately found a tool to fight it back: the so-called *edict of debt remission.*

## What the Edict of Debt Remission Is

The *edict of debt remission* is a political tool of economic and social character to improve the life standard of the lowest classes of society.[12] It was issued by the Babylonian rulers during their first year of the reign. When the reign of a ruler was too long, as it happened, for example, for Rīm-Sîn of Larsa (60 years) or for Hammurabi of Babylon (42 years) the ruler proclaimed many of these edicts during his reign.[13]

The Akkadian[14] word for this edict is *mišarum*, "redress[15]" and "justice". The Sumerian[16] equivalent is nig.si.sá, the abstract word from the adjective si.sá "righteous", so the meaning is "righteousness". But sometimes also *andurārum*[17] "freedom", "remission of (commercial) debts, manumission (of private slaves), cancelling of services (illegally imposed on free persons)" was used. The Sumerian equivalent is ama.ar.gi "to come back to the mother". There is also another expression to say edict *ṣimdat šarrim* "royal decree", "(specific) royal regulation".

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[11] Renger (2002, 144–145).

[12] The reference works are obviously the two volumes written by Kraus (1958); but also Finkelstein (1965, 235–243) ; Renger (2002). In addition there are a lot of other articles cited by Simonetti (2013).

[13] Komoroczy et al. (1982); Kraus, (1958, 203–204); Finkelstein (1965, 243) ; Liverani (2011, 352–354). Rīm-Sîn of Larsa proclaimed an edict in his 26th, 35th and 41st years or reign; Sîn-muballiṭ in his 1st and 8th years; Ḫammurapi of Babylon in his 1st, 22nd and 30th year; Samsuiluna in his 1st and 8th years and so on.

[14] Akkadian is a Semitic language attested since the III Millennium B.C. The Babylonian and the Assyrian are two different dialects of Akkadian.

[15] In CAD M/2 117: redress (as legislative act to remedy certain economic malfunctions, OB only).

[16] Sumerian is the first written language we know so far. It is an isolated language, with peculiar features, so until now it has not been possible to classify it.

[17] This word is used also in other periods, and it could stem from two different roots "*drr*" or "*dār*". The first is present in verb *darārum* "to become free", "to move about freely", "to run off". The second root is present in the word *dūrum* "continuity" "permanent status or property". Charpin (1987) thinks that *andurārum* derived from *dār*, and also that the root *drr* is a derivation from *dār*.

We only have three edicts[18] and they are not intact, but we can obtain useful information: they have retroactive value[19]; they cancelled not only some kinds of debts and taxations[20] but the debt bondage as well. They did not cancel slave-born individuals, though.[21]

Fortunately, references to the edicts can be found in other documents such as trade and trial documents or letters. Thanks to these sources we can understand how they affected the sale of real estate that had been passed over by the debtors to their creditors.[22] The latter could pay a very low price because it was discounted.

[18] One is enacted by Ammiṣaduqa (1646–1626 B.C.) one by Samsuiluna (1749–1712 B.C.) and now a third one has been identified but we don't know who issued it.

[19] E. § 2*: Die Kaufmannschaft Babylon, die Kaufmannschaften des "Landes", der "Ersetzer" die in der Neujahrstafel dem Eintraber zugewiesen sind—ihre zu begleichenden Rückstände vom Jahre "König Ammi-ditana erließ die Schulden, welche sein Volk ständig gemacht hatte" bis zum Monat I des Jahre "König Ammi-ṣaduqa, dessen erlauchtes Herrentum Enlil groß gemacht hatte, ging wahrlich sonnegleich für sein Land auf (und) führte sein zahlreiches Volk auf den rechten Weg"—weil der König Gerechtigkeit für das Land wiederhergestellt hat, ist er erlassen*;…(transletion of Kraus 1984).

[20] E. § 3 *Wer Gerste oder Silber einem Akkader oder Amurräer [als Darlehen, auf] Zins oder zur "Entgegennahme" […]… ausgeliehen hat und (sich darüber) eine Urkunden hat ausstellen lassen—weil der König Gerichtigkeit für das Land wiederhergestellt hat, ist seine Urkunde hinfäallig; Gerste oder Silber kann er nach dem Wortlaute eben der Urkunden nicht eintreiben (lassen*); E. § 8 *Ein Akkader oder Amurräer, welcher Gerste, Silber oder waren als (Pränumerando-) Kaufpreis, für eine (Geschäfts)reise, als Gesellschaft (seinlage) oder als zinlosen Geschäftsreise—Vorschuß entliehen hat, dessen Urkunden wird nicht für hinfällig erklärt, er erstattet gemäß seinen Abmachungen*; E. § 9 *Wer Gerste oder Silber oder waren als (Pränumerando-)Kaufpreis, für eine (Geschäfts)reise, als Gesellschaft (seinlage) oder als zinlosen Geschäftsreise—Vorschuß einem Akkader or Amurräer ausgeliehen und (sich darüber) eine Urkunde hat ausstellen lassen, in (diese) seine Urkunden, welche er (sich) hat ausstellen lassen, (die klausel) "Vertreicht der betreffende Termin, so trägt das Silber Zinsen" hat schreiben lassen oder susätzliche Abmachungen vereinbart hat—gemäß dem abmachungen gibt er nicht zurück… Gerste oder Silber, die er entliehen hat, gibt er […] zurück, aber die (zusätzlichen) abmachungen sind dum Akkader or Amurräer erlassen.*

[21] E. § 20 *Wenn einen freien Mann von Numḫia, einen freien Mann von Emut-balum, einen freien Mann von Ida-Maraz, einen freien Mann von Uruk, einen freien Mann von Isin, einen freien Mann von Kisurra, einen freien Mann von Malgûm eine Schuld verflichtung "gebunden" hatte und er (infolgedessen) sich selbst, seine Ehefrau oder [seine Kinder] für Silber in Dienstbarkeit oder als Pfand [gegeben hatte]—weil der König Gerechtigkeit für das Land wiederhergestellt hat, ist er freigelassen, seine Freiheit wiederhergestellt;* E. § 21 *Wenn jemand aus dem Sklavenstande, der hausgeborene eines freien Mannes von Numḫia, eines freien Mannes von Emut-balum, eines freien Mannes von Ida-maraz, eines freien Mannes von Uruk, eines freien Mannes von Isin, eines freien Mannes von Kisurra, eines freien Mannes von Malgûm… für Silber verkauft oder in Dienstbarkeit gegeben oder als Pfand überlassen worden ist, wird seine Freiheit nicht wiedergestellt.*

[22] For example TCL 7 56, from Larsa, where we can read: "… *you know that the royal* ṣimdatu *(says): the purchased field is to be returned (to the buyer)*" [translation by CAD 16 195 a], or BM 80,318, ll. 6–9: "*The judges of Babylon and the judges of Sippar (re)viewed the cases of the citizens of Sippar 'heard' the tablets of purchase of filed, house, and orchard and ordered broken those (in which the land) was to be released by (the terms of) the* misharum".

## How the Edicts Were Implemented

To understand thoroughly how the "edict" was implemented, it is possible to read the famous text BM 80,318[23] edited by Falkenstein,[24] in his translation:

> *When my lord raised high the Golden Torch for Sippar, instituting the* mišarum *for Šamaš who loves him, (and) convened in Sippar Taribatum the 'Secretary of Infantry,' the judges of Babylon and the judges of Sippar, they (re)viewed the cases of the citizens of Sippar, 'heard' the tablets of purchase of field, house, and orchard (and) ordered broken those (in which the land was) to be released by (the terms of) the* mišarum*. Three sar's of improved real estate inside Sippar-yaḫrurum which, according to their original contracts,[25] were purchased […] in the year […] That house […] I and the owner of […] and the judges […] the tablets of purchase […] according to […] they broke. The tablets […] and […] they replied.*
>
> *[…] Gimillum, the high incantatory-priest (??) […] of Šalim-ṭeḫušu […] Šalim-ṭeḫušu, the 'Captain of Barbers' that […] demanded of me. I took my tablets to the assembly, Riš-Šamaš, the 'Resident' of Sippar, Kudiya the 'sedan-bearer', and Sin-nadin-šumi, the cadastral secretary, reviewed my tablets and sealed them.*
>
> *They then sent them to the house of Šalim-ṭeḫušu the 'Captain of Barbers'. Šalim-ṭeḫušu the 'Captain of Barbers,' without giving me a hearing, broke my tablets in Sippar, in his* bit napṭarim.[26]
>
> *Upon being informed, and in consternation, I collected the pieces of my tablets from his house and showed them to Riš-Šamaš, Kudiya, and Sin-nadin-šumi, but they said: 'What can we say to the 'Captain of Barbers'?'*
>
> *To you, o Divine one, I have (therefore) come. Let my lord offer me the ruling in the case of the breaking of tablets in the absence of judges and of the principal party to the case. Just as my lord would not countenance the surrender of the weak to (the power of) the mighty, may all Sippar see that … the mighty to injure the weak.*

The implementation took place in a tribunal, so anyone who possessed the requisites to cancel the debts or a related act of sale could resort to the judges.[27] Usually, there was a college of judges specifically appointed and they were often external members of the local forum, sent by the ruler.[28] Pursuers were the people who had a debt and couldn't manage to pay it off. This case is not thoroughly documented because usually debts expired in a year[29] (the loan consisted of silver or barley and so it was similar to the Roman *mutuum*). Even though the edict was retroactive starting from the previous edict, it could cancel only the debts of the current year. On the other hand, it had stronger consequences on enslavement and forced sales of real estate.

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[23] The text comes from Sippar and it is dated at the 28th year of Samsuiluna (Charpin 2000, 91–92).

[24] See: Finkelstein (1965, 235–243).

[25] Ll. 11: a-*na pí-i tup-pí um-ma-ti-šu[-nu*…]: the *tuppi ummatim* is a special kind of tablet, where the scribe wrote all the cadastral history of a single plot. See: Charpin (1986, 121–140.) He translates "statut antérieur" (138).

[26] The *bit napṭarim* is a type of residence for foreigners and other persons of napṭaru status, and the people living there (CAD N/1, 325).

[27] This happened also in other legal proceedings.

[28] This is the case of BM 80,319.

[29] On this subject see Skaist et al. (1994); but also Van de Mieroop (1995).

Anyone who had become a slave because of debt could address the judges to be freed. The effect of this edict is probably what the edict itself was named after: ama.ar.gi$_4$ literally means "go back to the mother[30]". Actually, very few cases are documented of edicts invoked to be freed from slavery. On the other hand, we know, thanks to article 117 of Hammurabi's Code, that debt slaves were freed after three years.[31]

Finally, the pursuers were also those who had to sell their real estate to the creditors. So the sellers were the main beneficiaries of the edict, considering that the real estate sale caused generally the definitive transfer of ownership of the land. This was shown by the clauses of no claim of ownership.[32] The latter avoided a future claim for the sale against the buyer,[33] whereas the defendants were the creditors who had to show their documents and procure witnesses of the trade.

The judges in the court analysed the documents or questioned the witnesses on the matter. In the first case, they broke the envelope that protected the tablet and read what was written on it. If it was possible to apply the edict, they broke the tablet.[34] If the creditors did not show evidence, but only witnesses, they were questioned to verify the nature of the sale. So, the judge had to write a new tablet for the claimers to use it in a future case.

A very interesting source for this issue is TS 58, a trial document that shows a very complex case.[35] After the last edict of Rīm-Sîn of Larsa, a seller claimed his orchard back, and he managed to have it back. Then, when Hammurabi conquered Larsa,

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[30] Literally is the translation of the akkadian *andurarum*, that is a synonimus of *mišarum.*

[31] CH § 117: "*If an obligation is outstanding against a man and he sells or gives into debt service his wife, his son, or his dauther, they shall perform service in the house of their buyer or of the one who holds them in debt service for three years; they release shall be secured in the fourth year*", in the translation of Roth (1995). Of course this is just a mere possibility, as we don't know what happened before the Ḫammurapi's Code or in other foreign kingdoms.

[32] It is a clause in a swearing that obliges the sellers and their possible heirs not to claim back any sold good in the future. There are four different typologies, ("no claim", "no came back", "no change" and "will not say: 'it's mine'") very standard and some documents have two of them. See: Simonetti (2006, 152–161).

[33] Some scholars believe that the edicts were applied only to the employees of the palace. This is the case of Foster (1995, 165–178).

[34] This is what we find in the cited text BM 80,318 (published by Finkelstein and presented above in his translation), where a creditor writes to the king to reconsider his case already judged: he explains how the judges obliged him to smash the tablet which he subsequently collected and sent to the king, to have justice restored; but this also happend in BM 82,274 (CT 48 15), translated by Charpin (2000, 90) : "*La tablette de 1/3 de mine d'argent, que Huššutum, fille de Nanna-maba, et Ipqatum, fils d'Asiratum, ont reçu de Nuṭuptum, fille de warad-ilišu, - elle n'a pas donné la tablette à détruire (comme elle l'aurait dû) conformément à l'èdit du roi. 'La tablette est perdu',a-t-elle dit, 'a la place de ma tablette, brises une motte de terre'. À l'avenir, si une tablette … sous enveloppe portant sur 1/3 de mine d'argent (prête) par Nuṭuptum fille de Warad-ilišu, apparaît, elle est nulle et doit être détruit. Ils ont jurè par Šamaš, Aja, Marduk et Hammurabi. Par devant* (3 temoins). Hammurabi 13".

[35] It is the case of TS 58 where there is a complex trial case and where witnesses are mentioned. See Jean (1931), later elaborated by Charpin (1980, 142). That is his translation in Charpin (2000, 79–89) : "*Au sujet du jardin de Sîn-magir, que Mâr-murrim avait acheté, Ilum-bâni le lui a contesté en raison de l'édit royal (*ṣimdat šarrim*). Ils sont allés trouver les juges. Les juges leur ont rendu*

he proclaimed a new edict[36] and the heir of the person who had bought the orchard claimed it. But the judges didn't approve the claim because he had no requisites.[37] This case is interesting for two reasons: on the one hand, it shows the validity of the edict and on the other hand, the disappointment of the creditors who felt damaged.

## What Effects the Edict Could Cause

These edicts were applied but they didn't cancel the original act, only its effects. Consequently, the debtors didn't have to pay back the amount of the debts, or any interest. On the other hand, the ones who became a slave couldn't ask for a refund for the time spent in slavery.

Actually, it is clear that in the case of real estate sales, the seller was not obliged to pay back the price of the land and could keep the land as well.

The written tablets certified the validity of the transfer: if it was broken, the buyer couldn't have any right to the real estate. This happened because in that period the ownership belonged mainly to the family so it was easy to bestow the real estate on the legitimate heirs of previous owners. The buyer was obliged to show written documents and witnesses of the purchase. For this reason, it was essential for the buyer to keep the written tablet of the legitimate purchase.[38] The enforcement of the edict didn't cancel the purchase but only the main effect of it, that's to say, the transfer of the ownership of the real estate.[39]

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*un jugement et les ont envoyés à la porte de la déesse Ninmar. Les juges de la porte de Ninmar ont livre Ilum-bâni au serment par le dieux et voici ce qu'Ilum-bâni a déclaré sous serment à la porte de Ninmar: 'Je suis bien le fils de Sîn-magir, car il m'a adopté. Mon document scellé n'a pas été brisé'. Voilà ce qu'il a déclaré sous serment. Depuis (le règne de) Rîm-Sîn, on a établi en faveur d'Ilum-bâni la possession légale du jardin et de la maison. Sîn-muballiṭ est revenu (sur l'affaire) et a contesté le jardin à Ilum-bâni. Ils sont allès trouver les juges. Les juges leur ont procure une sentence et les ont envoyés a la Ville et aux Anciens. À la porte du dieu Sîn, l'embléme-šurinnum de Sîn, l'oiseau divin de Ninmar, la houe divine de Marduk et l'arme divine d'Abnum se sont tenus. Après quel es tèmoins antèrieurs de Mâr-Amurrim euren dit qu'Ilum-bâni avait déclaré sous serment à la port de Ninmar:'Je suis bien le fils', on a établi la possession légale du jardin et de la maison en faveur d'Ilum-bâni. Sîn-muballiṭ a juré par les dieux Sîn, Šamaš et Marduk et le roi Hammurabi de ne pas revenir là-dessue et de ne plus contester. Par devant … 12 témoins.; sceau des teémoins. Le 4/vii/Hammurabi 41*".

[36] On this topic see Charpin (1991); Simonetti (2014, 735–741).

[37] The defendant had only to demonstrate to be the heir of his adoptive father to have confirmed his rights on the orchard.

[38] Charpin (1986, 121–140) .

[39] On this point, it is usefully to read an interesting text from Nippur, quoted by Charpin (2000, 90–91), where a field sold is claimed by the sellers after the edict. It could not give back because the buyer edified it, so the seller asked to have back the price or another field. Here the translation by Charpin: "*Au sujet de 4 SAR terrain en friche (bordès d'un côté par la maison d'Ea-nâṣir, de l'autre parla rue de Sîn-gâmil, sur le davant par la maison d'Amurru-šêmi a achetéspour 5 sicles d'argent à Watar-pîša) qu'Amurru-šêmi a achetés pour 5 sicles d'argent à Watar-pîša sous le règne de Hammurabi. Il a construit (sur ce terrain). Ensuit, sous le règne de Samsu-iluna, Watar-pîša,*

Once this was confirmed, it was necessary to verify the impact it had on the population and, especially, if it had any advantage the rulers hoped for.

First of all, we must only use the sources that we know currently and they are partial. Moreover, it seems that annulled documents were broken and smashed, so we cannot know the real effect of those edicts.

Our research must go in other directions: on the one hand, general observations, and on the other, the possible reactions of the creditors who were damaged by the edict.

Regarding the general observations, the opinion of the researchers is unanimous: the edicts were completely ineffective, and it is proved by their repeated enforcement, especially since the second half of the period under study.[40] In fact, the impoverishment of a great part of the population who farmed their own land was highlighted by the three abovementioned factors, that couldn't be reversed just by issuing the edicts. It seems that the edicts were simply a palliative: they gave a short relief to those who had debts but couldn't solve the problem completely.

The second direction seems to give us some things to reflect on, because the creditors started reacting to these edicts by trying to find loopholes which could neutralize their negative effects.

The first attempt was to insert in the purchasing document a clause saying that the purchase had happened after the edict. Even though this could protect the purchase from the effect of the edict just enacted, it couldn't protect it from future edicts which could have a retroactive effect. This clause is documented only twelve times[41] out of more than a thousand analysed documents.[42] Probably, it must have had a higher validity on the loan documents dated after the edict whose duration was limited to a year, but unfortunately, these are not documented.

The second attempt, in my opinion, was to use fake adoptions to purchase real estate.[43] The edict couldn't deny the possibility to inherit all the goods and even real estate from adoptive parents. For this reason, creditors made debtors adopt them, and

*conformément à l'èdit du roi, a rivendiqué le terrain construit en disant: 'conformément à l'èdit* (ṣimdatum) *du roi, donne-moi un terrain construit en friche pour remplacer le terrain en friche que nous t'avons vendu et que tu as construit! Ou bien, donne-nous de l'argent pour remplacer le terrain en friche!' À l'amiable, [il a payé x sicles] d'argent [… que] auparavant […]: derechef, Amurru-šêmi a payé a Watar-pîša. À l'avenir, Watar-pîša et ses héritiers, autant qu'il en aurra, ne contesteront paas. Ils ont juré par le nom du roi. Par devant … (9 témoins). 16/vii/ Hammurabi 43"*.

[40] Bottèro (1961, 160–162) ; Finkelstein (1965, 242 and nt 38) .

[41] AOAT 267 p.610; BE 6/1 8; JCS 30 E; MAOG 4 1; OECT 8 3; RA 52 3; Riftin 14; TCL 10 40; VS 13 81; YOS 8 110 and 139; YOS 14 146.

[42] See: Simonetti (2006, 59–65).

[43] Some adoption documents, better known in literature as fake or false adoptions, are different from the real ones because they don't have sanctions for the adoptive children who denied their adoptive parents. Usually, these sanctions consisted in slavery and loss of inheritance. In the meanwhile, the sanctions against the adoptive parents who denied the children consisted in the loss of the agreed part of inheritance. Simonetti (2015, 318–319).

they specified very well the real estate they would inherit. Even if these documents are not numerous, they are certainly available.[44]

Anyway, this solution was effective: the edicts could keep annulling the forced sales but not the fake adoptions. It is not a case that in northern Mesopotamia,[45] in the subsequent period, the sale documents were replaced by fake adoptions, so that some people were adopted by tens of different parents.[46]

## Conclusions

In conclusion, we can say that the edicts of debt remission were juridically complex and aimed to obtain beneficial financial and social effects. In fact, the edicts wanted to aid the poor landowners who were obliged to get in debt while punishing those who already enjoyed a good financial situation and could give out loans, especially during famines or economic crises. In reality, though, such edicts failed their target and they slowly lost efficiency, especially in the case of forced estate sales to creditors.

Thus, we can't state that at the beginning of the Second Millennium B.C. the royal legislation wasn't refined, having to cope with a quite complex society living in a relatively small kingdom. But issuing intricate edicts was not the same as implementing their efficiently—which sometimes also implied resorting to the superior court. Research shows that these edicts weren't efficacious for a long time and private owners got poorer while only a small portion of them managed to play a more independent role, modifying drastically the social system of Mesopotamia at the end of the analysed period.

Also in more modern times, the result of the political interventions in the financial sector often didn't and still doesn't live up to the expectations of those who have developed and implemented them. Sometimes, such tools miss their target completely and can also exacerbate the current situation and become counterproductive.

[44] BE 6/2 28 and 57; BIN 2 75; CT 2 40b; CT 6 30; CT 8 28; Meißner 97; and TS 97 where the adoptive parents had natural sons and daughters; BE 6/2 28; BIN 2 75;OECT 8 20; PBS 8 153; TIM 4 14; and perhaps ARN 45 where the adoptive sons had to give food, oil and wood to their adoptive parents for all their life; VS 7 5–6 where the adoptive son had to pay a quantity of silver to his parents and CT 2 35 and 40a; CT 6 30 and 33; CT 8 5 where there aren't the penalty for the adoptive sons or daughters. In PBS 8 153 the adoptive parents will give their field to their adoptive son if they recused the agreement.

[45] Of course I am referring to Nuzi (Steele 1943).

[46] For example the case of Teḫip-tilla, see: Liverani (2011, 418–421). For the edicts in Nuzi see: Zaccagnini (2002).

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# Some Observations on the Development of a Sacred Economy from the Archaic Age up to Hellenism


**Rita Sassu**

## Introduction

The research hitherto carried out on ancient economy did not always pay the proper attention to the connection between the *polis*' public financial assets and the role played in their management by sacred areas, especially as far as the pre-Hellenistic phase is concerned. Although the economic relevance of sanctuaries is generally accepted, it is still not fully clear how and to which extent "the economics of the gods" interacted and intermingled with the "economics of humans".[1]

The scientific literature mainly focused on the study of the coinage and of the currency units, on the production processes, on the markets and the trade routes, on the properties and the possible sources of wealth, without exhaustively investigating the complex topic of the administration of the public funds, and of the different forms that such management took over time, in the light of the multifaceted relation between sanctuary and *polis* during the most ancient stages, from the seventh until the fifth century B.C.

Furthermore, only in few cases, the places, the methodologies and the material aspects of the public administration have been enquired, being considered unsubstantial elements for the overall reconstruction of ancient economics. On the contrary, the study of the social expressions of cult practices and their archaeological traces reveals the deep interconnections existing between sacred areas and wealth hoarding processes, suggesting an extensive overlap, at least before the fourth century B.C., between sacred and civic economy.

[1] Maucourant (2005, p. 118).

R. Sassu (✉)
Dipartimento di Scienze dell'Antichità, "Sapienza" Università di Roma, Rome, Italy
e-mail: rita.sassu@uniroma1.it



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Concerning the economic and financial administration of the *polis*,[2] even the fundamental works of Alain Bresson (2015, part. § 11), Henri Francotte (1909), Andreas Andreades (1933) and Léopold Migeotte (2010) predominantly deal with the most advanced phases of the system.[3]

Coherently, the majority of the researches offer an overview of the ancient economic administration mainly centred on the Late Classical/Hellenistic phase and subsequent developments, when new financial and behavioural models spread, in the context of an overall redefinition of the socio-political patterns in the Mediterranean area.[4] This later epoch—although relying on models established in the previous periods, noticeable during the Archaic and above all the early Classical Age, whose structures are further developed—is marked by more organized methods for administrating the common wealth.[5]

The precondition to properly understand the changes that occurred in the period of Hellenism is the analysis of the development of a system to manage the communal assets starting from the cult areas, that began to accumulate, at least from the seventh century B.C. onwards, items that could be hoarded and used, if the case, as collective available funds.

The exam of the literary sources, of archaeological evidence and, above all, of epigraphic records, allows to identify the crucial part played by sanctuaries in the establishment and in the administration of collective resources.[6] The in-depth study of the documentation coming from consecrated spaces reveals an extremely complex image of the *temenos* in the background of the ancient Greek economy. The deities of

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[2] In general, on ancient Greek economy: Bresson (2015), with previous bibliography; Bresson (2007) and Bresson (2000). See also Pekáry (1979), with bibliography. Consider also: Zofia (2011), Migeotte (2010), Migeotte (1995, pp. 7–32), Migeotte (1984), Leveau (1985), Ehrenberg et al. (1976), Austin and Vidal-Naquet (1972), Cracco Ruggini (1969), Ciccotti (1960), Stefani (1960), Andreades (1933), Swoboda (1888), Swoboda (1889), and Lewis (1828).

[3] Among the pioneering works in this field, it is worth mentioning Böckh (1817), which is mainly focused on Athens. See also Busolt ($1920^3$), Guiraud (1893) and Jones (1987). Several information about the management of public finances derive from epigraphic studies, such as Pleket (1976), Pleket et al. (1964) and Bogaert (1976). See also: Cavaignac (1908), Latte (1948), Laum (1952), Michell ($1957^2$), Moretti (1977), Lewis (1990), Price and Nixon (1990, pp. 137–170), Maffi (1997), and De Renzo (1955).

[4] On the Hellenistic economies: Mazza (2002), Bilde et al. (1993), Shipley (1993), and Archibald et al. (2001).

[5] Zofia (2011).

[6] On the economic functions of sanctuaries: Suk Fong Jim (2014), Papazarkadas Oxford (2011), Pafford (2006), Blok (2010, pp. 61–93), Chankowski (2005, pp. 9–11), Picard (2005, pp. 69–93), Maucourant (2005, pp. 117–132), Mooro (2004, pp. 61–72), Dignas (2003), Shaya (2002), Chankowski (2001, pp. 357–369), Davies (2001, pp. 117–128), Hamilton (2000), Samons (2000), Sickinger (1999), Dignas (1998, pp. 235–244), Sinn (1996, pp. 67–74), Harris (1994, pp. 213–225; 1995), Linders and Alroth (1992), Linders (1992a, b, pp. 69–73), Isager (1992, pp. 119–122), Harris (1990–1991), Ampolo (1991), Giovannini (1990, pp. 129–148), Vickers (1990, pp. 613–625), Koepfler et al. (1988), Linders (1972, 1975, 1987, pp. 115–122), Linerds and Nodrquist (1987), Costabile (1987, pp. 103–114), Lewis (1985, pp. 71–81), Clinton (1984, pp. 51–60), Jameson (1982, pp. 66–74), Debord (1982), Musti (1979, pp. 209–228), Tréheux (1965, pp. 1–85), Meritt et al. (1939–1953), Oliver (1941), Oikonomos (1924), Ferguson (1932), and Homolle (1882, pp. 1–167).

the Hellenic pantheon appear as hoarders of huge "golden heaps" and their houses, namely the temples, physically immobilized massive amounts of collective funds that, subtracted from circulation, ultimately acted as State treasures.[7]

Therefore, before the Late Classical and Hellenistic period, the sanctuary emerged as a primary element for the Greek economics functioning, preserving consistent capitals that flew into temples and overlapped with the State financial circuit, which seems to be, in this remote phase, limited in size and complementary to the sacred one.

The economic activities taking place in cult areas were not restricted to the religious sphere, but, conversely, were deeply interconnected with the city economy, and often influenced the whole surrounding region, until the point they could, occasionally, affect even larger geographical areas.

The gods, as V. Chanowski underlines, were not just "consommateurs de sacrifices", but above all "manieurs d'argent".[8]

In most of the cases, the main poliadic sanctuary acted as the State treasure, within a system that did lack an equivalent secular institution having the same prominence. Hence, the designation of a cult representing the whole community, besides having a crucial social relevance, was also distinguished by an economic function connected to its acknowledged position in the definition of the collective identity.

## The Establishment of Divine Funds: Seventh and Sixth Century B.C.

The citizenship's awareness of the possibility to have access to divine funds, kept inside the temples, goes back a long way. In this respect, two sanctuaries of Athena are exemplary, i.e. the ones in Athens and Argos, as their pertaining documentation allows to reconstruct the birth of this phenomenon.

The existence of colleges in charge of the management of valuable objects belonging to the deities is first attested, although at the beginning in a sporadic way, since the seventh century B.C.

As for Athens, Herodotus (Hdt. 5, 71)[9] and Thucydides (Thuc. 1, 126, 3) mention, with reference to Kylon's failed attempt to impose the tyranny around 635 B.C., the existence of *naukraroi*[10] as the first administrators with economic tasks, suggesting that the Acropolis was their workplace, given that consistent resources were kept

[7] Sassu (2014, part. § 5).

[8] Chanowski (2005).

[9] Jordan (1970, 1979), Borimir (1992), Stroud (1968, p. 71, n. 28), Jones and Wilson (1969, pp. 114–115), and Rhodes (1981, p. 82).

[10] Hignett (1952, 68), Billigmeier and Dusing (1981, pp. 11–16), Borimir (1992). See also: Gabrielsen (1985, pp. 21–51), Lambert (1986), Figueira (1986), Velissaropoulos (1980, part. pp. 12–21), Kahrstedt (1969) (according to whom they were private citizens, owners of ships, who were liable to levies by the *polis* in periods of crisis); Wüst (1957) and Hildebrecht (1935) (for previous bibliography).

there.[11] The *prytaneis ton naukraron* supposedly removed the Kylonian conspirators from the sanctuary over the Acropolis, because, as collectors and protectors of revenues, they were also sacred administrators, in charge of safeguarding the *temenos* from illegal acts. Furthermore, a scholiast[12] on the passage of Thucydides accuses the *naukraroi* of not having properly protected the temple of Athena, probably preserving valuables in the form of precious metallic items.[13] In fact, the sacred precinct of the goddess was the most protected space in the town, provided with sturdy structures and further sheltered by heavy fortifications. Otherwise, the existence of a purely secular treasure in the seventh century was not conceivable. In this regard, the possible connection of the term *naukraros* with the prefix *nau*—deriving from *naos*, temple (already pointed out by J.C. Billigmeier and A. S. Dusing,[14] as well as by B. Jordan[15]) should not be ruled out, as it would stress once again the strict interrelation between fiscal and religious actions since an early stage. Hence, the *naukraros* would stand as the "head of the temple", thus depicting an officer with a close connection with the shrine.[16] The alternative reading (*naukraros* as "captain/head of a ship") is less probable, given that the figure of the *naukraros* is found only on land, with specific financial tasks in the naukratic districts and in the Acropolis.[17]

After a while, over the course of the same seventh century B.C., their functions as treasurers[18] were inherited by the *tamiai*, explicitly mentioned by Aristotle (Ath. *Pol*. 4, 2), with reference to the Draconian laws (621/620 B.C.), as those entrusted with the task of collecting fines and dedications for Athena.

So, literary sources document the existence of sacred funds and of sacred officers in the sanctuary of the Acropolis since the seventh century B.C.

About seventy years later, the *tamiai* entitled to manage the *chremata* of Athena are likewise attested at epigraphic level, as the inscription registering their responsibility in collecting the funds and dedicating them to the *temenos* testifies (IG $I^3$ 510, circa 550 B.C.).

Their concrete assignments pertain the control and the periodical check of the internal rooms of the *hekatompedon*—possibly to be identified with the pre-Parthenon, conceived from the beginning as a wealth-storage building, consisting

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[11] Harpokration, *s.v. naukrarika*; Suda, *s.v. naukrarika*; Aristot. *Ath. Pol.* 8,3 (who makes it clear they were concerned with expenses and revenues); Pollux 8,108; Androtion, *FGrH* 324,36; Hesychios, s.v. *Naúklaloi* (says they collected the revenues from each district).

[12] Schol. Ar. *Nub.*, 37.

[13] Rodhes (1985, p. 152).

[14] Billigmeier, Dusing 1981. *Contra*: Lambert (1986), who rejects the derivation of *nau-* from *naos*, temple.

[15] Jordan (1992, pp. 66–67).

[16] Billigmeir and Dusing also explain *naukleros* as "owner of a house" as deriving from *naos* that originally meant both house and temple/house of a god (Billigmeier and Dusing 1981).

[17] Jordan (1992, p. 66). The scholar also states that the *naukraroi* "are a magistracy […] and there is not a shred of reliable evidence placing them on board of a ship or anywhere near it" (ibid., p. 66).

[18] "There surely cannot be any dispute that the naukraroi were treasurers of some sort […] It would be also seem indisputable that whatever treasure existed, probably in the form of silver ingots, was safeguarded in the Acropolis" (Jordan 1992, p. 62, with related bibliography).

of *oikemata* containing precious metals, i.e. *ta chalkia.*[19] Its site was later occupied by the Parthenon, which continued to function as an instrument of collective goods hoarding.

The *tamiai*, as collectors and protectors of the possessions kept inside the sacred area, stayed inside the Acropolis even during the Persian invasion, as documented by Herodotus (8, 53, 2: "The Persians entered the abandoned city, but, after having gone inside the sanctuary, they found out […] the *tamiai tou hierou* inside it") and by the Themistocles Decree (*EM* 13,330; see particularly line 111: "the treasurers […] remained inside the Acropolis to defend the deities' properties").[20]

The tasks of the *tamiai* are furtherly specified, some decades later, in the so-called *hekatompedon* inscription (*IG* $I^3$ 4, 485–484 B.C.)[21] and, subsequently, in the fifth century inscriptions, starting from Kallias Decrees[22] (*IG* $I^2$ 52) defining their tasks in inventorying and measuring the sacred wealth, particularly by weighting and counting the sacred treasures.

The Athenian situation exemplifies a model that can be observed also in other sanctuaries of Greece. For instance, the periodical check and the inventorying of the sacred resources, consisting of both money and objects made of precious metals, fall upon the tasks of the *epignoma*, the analogous Argive board.

The progressive development of an apparatus managing the *hiera chremata* goes along with the identification, since the Archaic Age, of the cult area as the place where the urban community's assets are kept, to be used in case of necessity, as available evidence correspondingly testifies. In the sixth century, in fact, ritual practices are codified, and sacred edifices acquire specific and differentiated functions. Particularly, the community invests the collective resources in their construction in monumental forms, given that the edifices represented the *polis*' economic, political and artistic capacities. Sanctuaries were also regularly provided with protective systems (*propyla*, encircling walls, locked gates, guardians and administrative stuff) aimed, *inter alia*, to ensure the safety of the treasures deposited inside them and to control those who accessed the structures preserving the assets.

An emblematic document is an epigraph (SEG XI 314)[23] from the sanctuary of Athena at Argos, dating back to the year 575 B.C. Although the inscription has not

[19] Sassu (2010), with previous bibliography.

[20] Jameson (1960).

[21] Tölle-Kastenbein (1993), Butz (1995), Németh (1994), Lipka (1997), Németh (1994), and Sassu (2010, pp. 247–263).

[22] On the Kallias Decrees (*IG* $I^2$ 52 = IG $I^2$ 91–92), see: Blamire (2001), Bradeen (1971), Fornara (1970), Fröhner (1865, No. 47, pp. 98–105), Kallet-Marx (1989), Kolbe (1993), Lewis (1981), Mattingly (1964, 1975), Meritt (1982), Pritchett (1969), Samons (1996), Samons (1997), Sassu (2014, pp. 127–141), Thompson (1973), and Wade-Gery (1931).

[23] Vollgraff (1929, p. 206), Boissev (1930, p. 13), Jeffery (1961, p. 168, no. 8), Buck (1955, No. 83), and Lupu (2009). See also: Schwyzer (1930, pp. 321–325), Sokolowski (1962, no. 27), Fornara et al. (1983, no. 36), Koerner (1993, no. 25), Van Effenterre and Ruzé (1994, no. 88), Colvin (2007, no. 37), and Probert and Dickey (2015). The epigraph is also discussed by Boissev (1930), Bourguet (1930), Roussel (1930, p. 193), Levi (1945, p. 301), Guarducci (1951, pp. 339–341), Murakawa (1957, p. 392), Kelly (1977, pp. 131–133), and Beaufils (2000).

up to now been used to study the economy of the Greek world, but has been studied mainly from a philological standpoint, it is indeed a fundamental source, as well as one of the oldest, to throw some light on the relationship between the *polis* and the pertaining main sacred area in the management of public assets. The inscribed sacred law states that the *chremata* belong to the goddess Athena and that these funds cannot be used by private citizens, but can instead be used by public magistrates, who are allowed to spend them on behalf of the community.[24]

The *pendant* of this text is the so-called "Small Palace" epigraph (IG IV 554, second half of the sixth century B.C.),[25] concerning the same sanctuary and integrating the rules provided by the previous decree. The inscription grants the magistrates of the Council (*Bola*) with immunity from any prosecution connected to the expenditure of sacred funds, i.e. forbidding anyone to sue them for having spent the *hiera chremata.* The city magistrates in fact are permitted to make use of the consecrated *chremata* if needed, by taking them from the *tamiai* in charge of their management. Those who would try to contest the public magistrates for the expenditure of the sacred funds would be banned from the city, their properties would be confiscated and the relative revenues devolved to Athena. The magistrates themselves ensured the application of the law and, should they fail to comply with this obligation, they would be guilty in front of the goddess. The law cancelled the possibility to sanction the magistrates who employed the divine funds, concretely laying down the judicial basis for the "profane" use of the sacred treasure, eliminating any division between religious and secular use of the sanctuary's capital.

[24] 1
ˀΕπι τονδεονὲν δαμιοργόντον τὰ ἐ
[ν] Ἀθαναίιας ἐπ[ο]ι*F*έθε ταδέν. Τὰ ποι*F*έ
ματα καὶ τὰ χρέματα τε καὶ τὸν […]
ἀ[νέθεν] ταῖ Ἀθαναίιαι ταῖ Πολιιάδι.
5
Συλεύς τε τοῖσι χρέμασι τοῖσι χρεστερ
καὶ ˀΕράτυιος ιίοσι τοῖσι τᾶς θιιο μὲ χρέ
και Πολύτορ [σ]θο *F*ηεδιέστας [ἐ]χθὸς
και ˀΕξάκεστο[ς] το τεμένος το τᾶς Ἀ[θαν]
και Ηαγι[…] [αίιας] τᾶς Πολιιάδος. δαμόσ
10
και ˀΕρύο[ιρος] ιον δὲ χ[ρ]όνσθο προ[…]
αὶ δὲ σίναιτο, ἀφ[α]κεσ
άσθο, οῖζ δὲ δαμιο[γός ἐπ]α[να]νκασσάτο
ο δ'ἀμφίπολος μελεταινέτο τούτον.

[25] Jeffery (1961, p. 168, No. 9).

## The Impact of Monetization Over the Sacred Economy: Sixth Century B.C.

The discussion on the relationship between temples and money coinage mainly focuses on two, partially interconnected, aspects.[26] The first debate concerns the origins of mintage[27] and its possible derivation from the sacred field, along with the related topic of the passage from sacred objects marked by financial value, such as *obeloi*, lebetes or tripods, to coins.[28] Particularly, according to this position, such objects would circulate as means of exchange and trade; due to their universally recognized value, they would be offered in sanctuaries as precious gifts. The second aspect considers the role of the sanctuary in mint processes.[29] Regarding the latter, the primary role of the *temenos* in coinage has been in some cases stressed, while other times the involvement of sanctuaries in this process has been denied.[30]

Nevertheless, the debate hitherto carried out, with some significant exceptions,[31] did not always focus on the practical effects of the introduction of money on sanctuaries and on their economic role in the polis. Despite this, recent studies underlined the complex nature of the relations among cult, rituals, economic activities and administrative practices, specifically highlighting the capacity of sacred areas to pursue financial strategies aimed at increasing the existing hoarded wealth, also by means of credit.[32] The adoption of coined money by most of the Greek city-states around the sixth century B.C. largely influenced the organization of cult and of its spaces and transformed the sanctuaries' way of monitoring their finances, first of all entailing the necessity of specifying the financial value of the *chremata* preserved inside them.[33]

Not only did sanctuaries start to accumulate coins, but they also began to measure, through monetary reference values, the items they kept.[34]

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[26] On money in Classical Age, see von Reden (2012).

[27] Concerning the origin of coinage: Martin (1996), Kagan (1982), Maffi (1979), Lombardo (1979), Holle (1978), Hackens (1977), Grierson (1977), Parise (1973), Parise (1970), Price (1968), Kraay (1964), Cook (1958), Will (1954, 1955), and Robinson (1951, 1956). See also Metcalf (2016), Liard (2009), and Seaford and Seaford (2004).

[28] Strøm (1992), Curtius (1869), Lenormant (1878), Seltman (1921), and Will (1955). See also: Meadows and Shipton (2001), Kurke and Kurke (1999), and Carradice and Price (1988).

[29] Laum (1924).

[30] Regling (1930, p. 486).

[31] Davies (2001).

[32] See particularly Finley (1952), Ampolo (1991), Osborne (1988), Bogaert (1964), Bogaert and Heichelheim (1966), and Bogaert (1968).

[33] Davies (2001, pp. 117–128).

[34] General works on temple inventory lists: Tréheux (1965), Lewis (1986), Costabile (1987), Koepfler et al. (1988), Linders (1988), Vickers (1990), Hamilton (2000), and Dignas (1998, b). On the inventories of the Athenian Acropolis: Harris and Cline (1995). See also: Ferguson (1932), Thompson (1964a, 1964b, 1965a, 1965d), Harris (1990–1991), Samons (1996, 1997), Sickinger (1999), Moroo (2003–2004; 2004), Kallet (2009) and Papazarkadas (2009).

Therefore, at this stage, the quantity of temple inventories[35] augmented, as they did not simply list the objects composing the treasures, but specified their value in monetary terms, too. Currency standards were used to express the value of growing amounts of assets that could be converted into coins when needed and also to better control and manage these assets.

So, while the above-mentioned first epigraph recording the resources dedicated by *tamiai* on the Athenian Acropolis (IG $I^3$ 510),[36] refers to *ta chalkia* (a term that, at this stage, does not specifically indicate bronze, but generically "funds"), without denoting their precise value, all the Parthenon inventories of the Classical age detail the weight and the monetary value of each preserved object.[37] Moreover, the financial transactions taking place in the *temene* began to be expressed in monetary terms, as it can be elicited from several inscriptions registering sacred expenditures and earnings.[38] In other words, the introduction of money first acted as a stimulus and then entailed the necessity to measure items composing the sacred treasures. This led to the creation of a technical language aimed to quantify the *chremata* preserved inside sanctuaries, thus changing their administration and control practices, as clearly reflected in temple inventories and other sacred accounting documents (an exemplary case in this regard is provided by the accounts of Delos, Fig. 1).[39]

Although one of the first effects of coins mintage was, of course, the increasing presence of cash holdings inside sanctuaries, the main components of divine treasures continued to be golden, silver and copper objects that could be easily melted and transformed into coins.

In this respect, the spread of chryselephantine divine images during the Classical Age can be regarded as a successful attempt to preserve consistent amasses of gold. For example, the giant acrolith of Athena Parthenos (Fig. 2) placed inside the Parthenon, far from being a true cult statue, was conceived as a tool to hoard a great

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[35] The most ancient inventory list comes from the *Artemision* at Ephesus and date back to 550 B.C. Found next to the foundations of the so-called Kroisos temple, the epigraph was drawn up by the treasurers on a silver tablet and recorded the golden and silver objects preserved in the temple (Jeffrey 1961, p. 362, no. 53). Subsequently, inventory lists are attested in a wide series of sanctuaries, such as Athens, the sanctuary of Hera at Samos, of Nemesis at Rhamnous, of Cabiri at Thebes, of Apollo and Athena at Halicarnassus, of Demeter and Kore at Eleusis, of Apollo at Miletus, at Ilion, Perge, Lindos, in Perean region, at Rhodes, etc.

[36] hοι ταμίαι ⁝ τὰ δὲ χαλκία ⁝ [—c.12-14— ἀνέθεσαν]

συνλέχσαντες ⁝ Διὸς κρατερ[όφρονι παιδί. ⁝ —c.8-10—]

Ἀναχσίον ⁝ καὶ Εὔδκιος καὶ Σ[—c.9-10— καὶ —c.9-10—]

καὶ Ἀνδοκίδες ⁝ καὶ Λυσίμαχ[ος καὶ —c.8— καὶ —c.8—]

See Cavaignac (1908, p. 30), Ferguson (1932, p. 6, no. 1), Kirchner and Klaffenbach (1935, p. 9, no. 6), Jeffery (1961), and Threatte (1980, p. 2).

[37] See Harris and Cline (1995) and Sassu (2014, part. pp. 27–177), with bibliography.

[38] The first example of sacred expenses expressed in monetary terms is provided by the second temple of Apollo at Delphi, whose cost, according to Herodotus (Hdt. 2, 180) was about 300 talents (Aegina currency, since Delphi adopted the money circa 20 years later).

[39] Tréheux (1992).

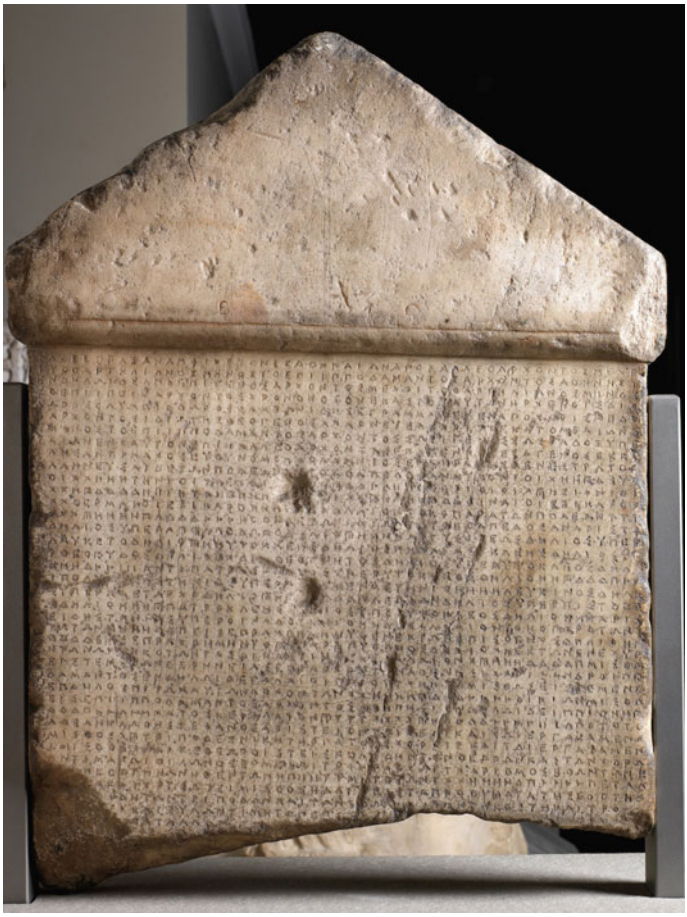

**Fig. 1** Stele inscribed with the accounts of the Amphiktyons of Delos (IG II$^2$ 1635). Photograph copyright © The Fitzwilliam Museum, Cambridge

portion of the economic funds of the community, till the point that, when facing critical situations, the Athenians did not hesitate to melt the statue's golden parts, substituting them with pieces made of lesser precious materials.[40] Pericles himself claimed that, in case of public necessity, the gold of the statue could be removed (see Thuc. 2, 13, 5).[41] In fact, Lachares, also known as "the one who stripped Athena naked" (Plut. *Isis et Osiris*, 71), used the simulacrum's gold to pay his soldiers (Paus. 1, 25, 7)—exactly because he did not perceive it as a truly sacred, inviolable, cult statue (comparable to the *xoanon* of the deity kept in the Athena *Polias* temple instead).

[40] On Athenian coinage: Thompson (1964c, 1965b, 1965c, 1970a, 1970b) and Samons (1993, 2000).
[41] Harris (1990–1991).

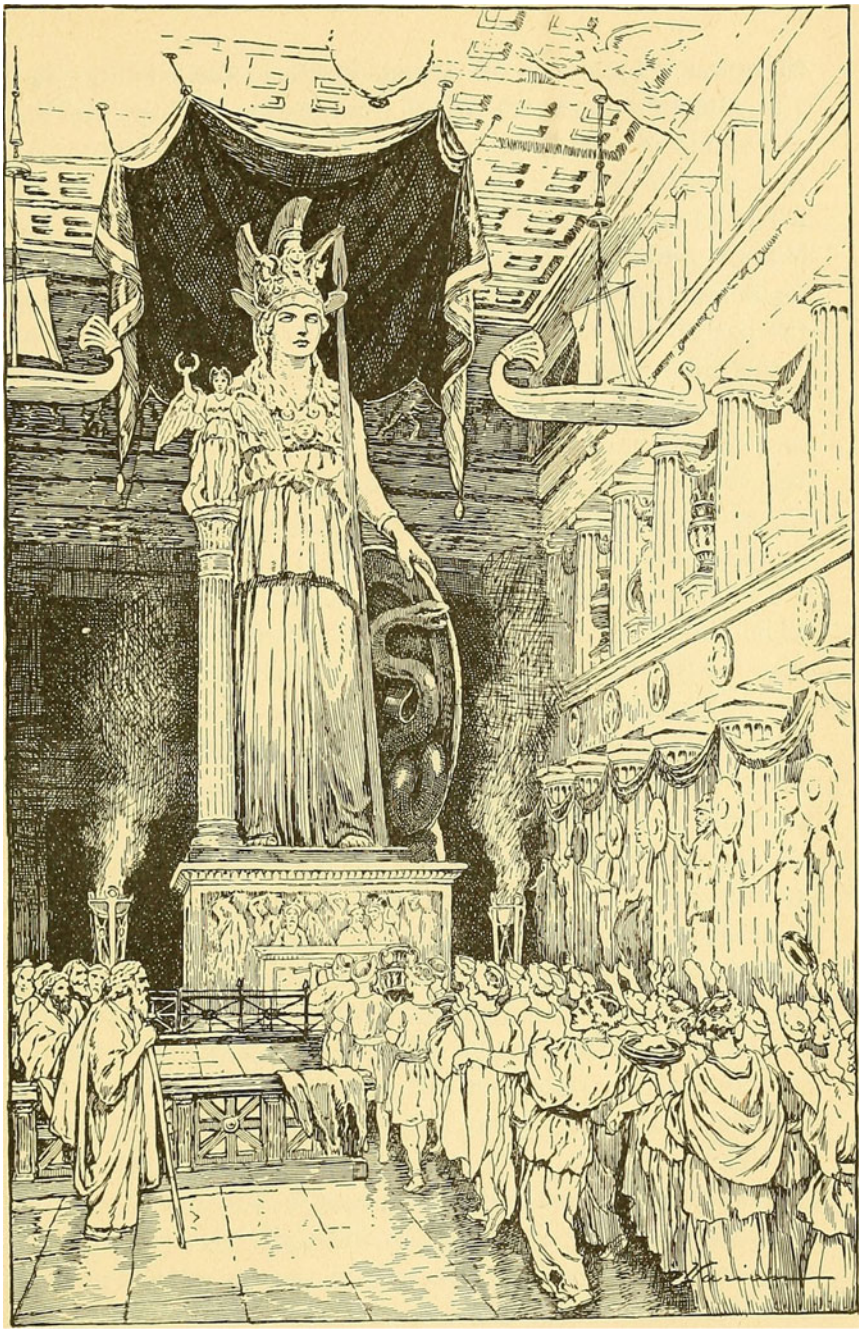

**Fig. 2** Greek Festival: A procession in the Parthenon (Mayer Wolfson 1916, p. 62) with a depiction of the giant acrolith of Athena Parthenos

The significance of the statue was hence consistent with that of the Parthenon, which, lacking a pertaining altar, did not serve just as a cult building, but primarily played a relevant economic role as a place where collective funds were kept and that was consequently labelled as "temple-trésor" by G. Roux.[42]

Quickly, temples started to institute dedicated boards of treasurers in charge of managing and monitoring their wealth. Additionally, given the preference for golden and silver objects (instead of cash money, that continued to represent only a limited portion of the whole divine treasure), some *temene* even established a board of administrators, whose task was to transform the collected coins into precious objects to be stored in the temples. For example, the college of the *artunai ton poterion* documented in relation to the sanctuary of Athena at Argos was in charge of collecting divine revenues and placing them inside the sanctuary, in the form of vessels made out of costly materials (mostly gold and silver).

Besides, it was a common practice for citizens to dedicate a percentage of their acquired income to the gods, in the form of precious objects, too. An example is the passage of Herodotus (Hdt. 4, 152, 4), stating that the inhabitants of Samos used the *dekate* of their income to create a colossal bronze vessel, supported by bronze figures, to be placed inside the *Heraion.* Furthermore, an Archaic inscription (SEG XII 391), again for the same Samian Hera, dated to the sixth century B.C., proves that the citizens of Perinthos, colony of Samos, had similarly devoted the *dekate* of their income to the goddess, by offering to her "a golden gorgon, a silver siren, a silver *phiale*, a bronze candelabrum, having spent for the whole dedication two-hundred-twelve staters, including the *stele*".[43]

Therefore, the introduction of money in the economy resulted in an increase of coins inside sacred treasures (even if the main financial reserve continued to be golden, silver and bronze items) and in the need to quantify the financial value of such items in monetary terms.

## Monitoring the Hoarded Assets, Tracking Incomes and Expenses: Fifth Century B.C.

The impact of money on the overall administration of the sanctuary entailed the spread of epigraphic texts, usually incised over stone *stelai* or bronze tablets, known as inventories. These inscriptions are aimed at monitoring the hoarded assets as well as accounting revenues and expenditures in monetary terms.

Once again, Athens offers the most exhaustive documentation in this regard, showing an extended and almost continuous series of inventories concerning the items preserved in the edifices of the sanctuary over the Acropolis from 434/433 B.C. until 300/299 B.C. (Fig. 3).

[42] Roux (1984, pp. 153–171).

[43] Sassu (2014, pp. 228–231), with translation, commentary and bibliography.

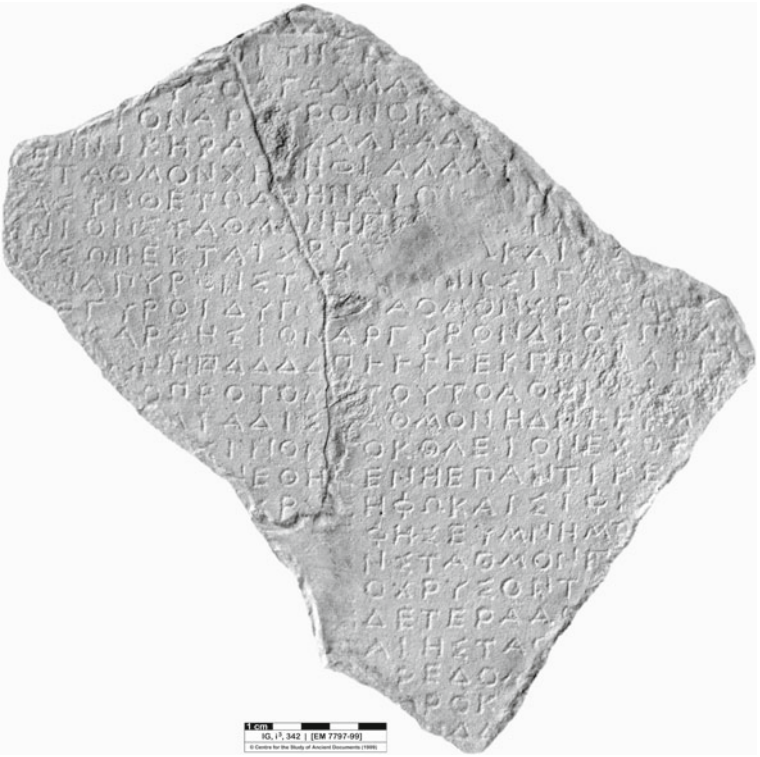

**Fig. 3** Inventory list from Athens (IG I3 342), EM 7797 + 7798 + 7799: Epigraphic Museum, Athens. © Hellenic Ministry of Culture and Sports/ Hellenic Organization of Cultural Resources Development (H.O.C.R.E.D)

The accuracy and the regularity of the records are also connected to the transformations the city underwent after the defeat of the Persians, marking the passage towards a more complex and structured level of management of the public resources.

The Acropolis treasure significantly increased in 454/453 B.C., when the treasure of the Attic-Delian League was moved from Delos to Athens, as testified by the inscription IG $1^3$ 259, which contains the first list of the *aparchai* paid by the allies and recorded by the *logistai*.[44] Such tributes amounted to circa 500/600 talents per year and several epigraphs suggest that the surplus which was not spent for the Athenian Empire's needs was indeed kept inside the Acropolis.[45]

Twenty years later, with the completion of the Parthenon, also the main economic assets of some of the most relevant shrines of Athens and of Attica were transferred

[44] Allen (1971).

[45] The possibility that the allies' tribute could be hoarded inside the Parthenon is suggested also by the Kallias Decrees (*IG* $I^2$ 52), as the documents state that the amount to pay back the debt of the Acropolis' gods is composed, *inter alia*, by the *hellenotamiai* funds (on the tribute of the allies see French (1972, pp. 1–20; Giovannini 1990; Meritt 1972; Meritt et al. 1939–1953).

**Fig. 4** Athens, treasure box from the sanctuary of Aphrodite *Ourania* over the Acropolis slopes. ©Acropolis Museum Athens, 2018, photo by Yiannis Koulelis

inside the new edifice, which so became the hub of a comprehensive network of economic flows. In fact, the inventories of the Parthenon mention the presence, inside the edifice, of the properties of Athena, but also of a wide range of gods and goddesses, starting from Artemis (sometimes explicitly referred to as *Brauroneia*),[46] Hephaestus, Demeter and Kore, Zeus, Apollo, the Dioskouroi, Asclepius, Aphrodite, etc.

Although the identification of the Athenian and Attic sanctuaries from which the treasures were taken is not certain, some hypotheses can be proposed. Taxes on the *metekoi* and freed slaves, as well as on trade, were partially acquired by the *temene* of the Dioskouroi and by that of Zeus *Eleutherios* in Athens; the Zeus sanctuary in Myrrinous deme acquired constant revenues, too. Moreover, dues that maritime merchants had to pay for every ship docking in the Pireus were levied from the sanctuary of Zeus Soter, as an inscription dating back to 428/427 B.C. correspondingly indicates (*IG* $I^2$ 128). The sanctuary of Eleusis collected alimentary supplies and the *Aiakeion* was also involved in the taxation over harbour usage, as documented by an epigraph (IG $I^3$ 133) concerning the money due to the Dioskouroi from ship-owners, collected by the *hieropoioi*. The sanctuary of Aphrodite over the Acropolis slopes gathered, in its "treasure box", the offerings from those who were going to marry (Fig. 4). Finally, the Dionysus sanctuary at Ikarios had an annual recorded expenditure equal to four talents and half (IG $I^3$ 253) and the one located over the slopes of Acropolis certainly kept relevant funds, to judge from the presence

[46] Linders (1972).

of a chryselephantine statue attributed to Alkamenes inside the second temple of the sacred area (Paus. 1, 20, 3).

An indirect proof of such a transfer can be identified in the above-mentioned Kallias Decrees, in the well-known statement establishing the "Treasure of the Other Gods" ("Others" with respect to Athena),[47] by removing their funds from the *hieropoioi* of the Attic sanctuaries that up to then had managed them.[48] Congruently, the Parthenon inscriptions register the presence of valuable items pertaining to several gods, whose shrines are well attested in Athens and in Attica.

The operation is clearly connected to the distinction between regional sanctuaries with consistent revenues—i.e. sanctuaries that implemented forms of continuous economic levy and consequent deposit in the *temenos* and whose treasures were thus transferred to the Acropolis of Athens—and other sacred areas with minor revenues, whose treasures were not hence removed, but were left instead, in order to ensure the ritual performances associated to the local cults.

Therefore, between 454 and 434 B.C., an overall reorganization of the system of collection, management and monitoring of the sacred resources took place in Athens, pursuing a strong centralization of the funds available for collective use.[49]

The decision to place the hoard of public assets in the Acropolis was a step in a structured and premeditated plan, whose goal was to create a public treasure, to be used for the huge expenses that, for the first time, a metropolis like Athens had to cover, with its complex political system and the increasing military requirements.

The same process took place, on a minor scale, also in other regions of Greece. A relevant case study in this regard is provided by Argos, whose Acropolis was dominated by the poliadic sanctuary of Athena mentioned by Pausanias (Paus. 2, 24, 3) and whose *chora* hosted the renowned extra-urban sanctuary of Hera. The latter's treasure was, at a certain point of the fifth century B.C., merged with that of Athena, in order to establish a centralized, more secure, economic system similar to that created in Athens. In fact, some of the bronze tablets pertaining to Argive *hiera chremata* give evidence of the transfer of Hera's funds into Athena's treasure,[50] thus helping to reconstruct the relationship among the different regional sacred areas' resources and depicting a situation which is comparable to the Athenian one. The presence of the deposit of the *chremata* of Hera inside the treasure of Athena is documented, *inter alia*, by the epigraph of the *Aliaia* that decrees the removal, from the temple of Athena, of the money belonging to Hera, to finance the Corinthian war.[51]

So, inventory lists, required by the need to monitor the accumulated assets, sketch out a scenario where the temples of the gods house huge amounts of golden and silver items and, to a lesser degree, of coins, inside boxes, pits excavated inside the

[47] Linders (1975).

[48] "The tamiai of the Other Gods have to take the chremata from the *epistatai* and from the *hieropoioi* of the sanctuaries who administrated them up to now" (IG $I^3$ 52, ll. 18–19). On the Attic demes see Whitehead (2014).

[49] Lippolis and Sassu (2016).

[50] Probert and Dickey (2015, 110, fn. 4) and Charalambos Kritzas (2006).

[51] Charalambos Kritzas (2006, p. 424).

floors, shelves,[52] furniture, stone or metallic containers, sometimes perishable sacks or baskets.

As for the location of the hoarded assets, the inscription concerning the Archaic *hekatompedon* (IG $I^4$) over the Athenian Acropolis indicates that the edifice was composed by rooms whose doors could be closed with keys. The rooms preserved valuable items, whose control was supervised by the *tamiai*, who had to periodically check them. Inventory lists regarding the Parthenon suggest once again the presence of different rooms, equipped with shelves, distinguished by alphabetic letters and baskets.[53] An articulated system of shelves is attested in the Samian *Heraion* as well. Inside some temples, further specific spaces for the treasures have been identified: For instance, the temple could be provided with a closable pit, constructed inside the floor, as in the case of the *Asklepieion* of Kos, that had an internal hole measuring 2,50 per 1,50 m (1 m depth), located in the southern-western sector of the cella, covered by a marble slab with four locks, whose keys were kept by the priest, by the *hierophylaques* and by the *tamiai*.[54] The same type of closable pits is observable also in the Pythion of Gortys, the *Asklepieion* at Lebena and at Epidauros. The *Artemision* and the *Apollonion* of Delos hosted 88 containers that could hold up to 12.00 drachmas each or 50 kg of precious metals. Epigraphs concerning the temple of Athena at Argos refer to stone structures from which funds were taken and then deposited into.

Therefore, it may be assumed that the sacred treasure was organized into two main sectors. The first one, composed by coins, could be used for the routine expenses of the cult area, to grant loans[55] to private citizens or to cover necessary expenses. The second sector instead, hoarded great amounts of illiquid wealth in the form of objects, actual treasure of the *temenos*, that could be turned into coins through melting and coinage. All financial operations had to be recorded by inscriptions (sometimes

[52] The inventory list IG XII 6, 1, 261 (fifth or fourth century B.C.) from the *Heraion* of Samos is particularly representative, as it describes a structure provided with multiple shelves, each of them containing a fixed amount of *phialai*, whose correspondent financial value is systematically weighted and expressed in drachmas—usually 900 drachmas for each rack. The recorded shelves are twenty-three, but the inscription is incomplete and probably further shelves were inventoried.

[53] Harris and Cline (1995).

[54] See the inscription over a fragmentary stele dating back to the first half of the third century B.C.: *LSG*, no. 155. Translation and commentary in Le Guen-Pollet (1991, no. 34).

[55] In Myrrinous, the priests were appointed by the deme to run the rental of lands, buildings and other real estates, and to fix the *horoi* delimiting the concerned properties, specifying which god owned the money granted in credit (IG $II^2$ 1183, ll. 27–32). The accounts of financial resources of the Nemesis sanctuary at Rhamnous, administrated by the *hieropoioi*, are an exemplary case study for the management of sacred loans in a fifth-century deme. Each year, the lists of the resources that were invested and used to generate a higher incomes, almost entirely invested in loans granted mostly to private citizens, were recorded (IG $I^3$ 248; the five years which the accounts refer to are probably not consecutive, but may date between 450 and 440 BC; see Finley 1952, 285, no. 43); it is generally assumed that the management of the cult and also of the finances of the Nemesis sanctuary at Rhamnous was carried out by the *polis* (Meiggs and Lewis 1969, no. 53; *contra* Boersma 1970, 78; Linders 1975, 13, no. 38).

taking the form of actual budgetary accounts) declaring the sources of the income and/or stating the nature and purposes of the expenses.

Such documents testify that Greek sanctuaries hoarded huge amounts of money and especially of valuable objects, preserved inside the temples, to limit the actual circulation of gold, silver and copper, and to establish a permanent deposit for the sacred area and, in some measure, for the whole urban community.

Budgetary accounts indicate that funds continuously flowed to temples from both religious and lay sources,[56] via donations and dedications by individuals (worshippers, athletes, artisans, tyrants, kings, etc.),[57] by the whole city-state or its social sub-unities (such as priests' or magistrates' colleges, military groups, *gene,* etc.); reserves offered in the occasion of the accomplishments of passage rites; fees from participants in rituals; they could also come from rents in kind[58] or in coin deriving from land ownership[59]; from sacred real estate lease; from owned animal flocks[60]; from the sale of sacrifices' remains such as animals' skin; tithes on products; levies[61]

[56] The heterogeneity of the funds collected by sacred areas is observable in several documented contexts, such as the sanctuary of Demeter and Kore at Eleusis, that forfeited fees from initiates, donations from worshippers, payments deriving from the ownership of agricultural lands, taxes over fishing. Such incomes made the treasure of the goddesses so consistent that it could lend money to Athens during economic hardships. Similarly, a decree of the Acarnian League (*IG* IX 1/2, 583. For the *editio princeps* see Habicht 1957, pp. 86–122) mentions, among the funds available for the functioning of Apollo sanctuary, the taxes collected at the harbor during the festivals in honor of the god. Moreover, taxes over the fishing of the *murex* or on ship traffic between Rheneia and Mykonos were levied by the temple of Apollo at Delos (Linders 1992b, p. 10).

[57] Offerings made to sanctuaries could include objects or money sums, but could also consist of huge donations, such as when Polykrates of Samos gifted the island of Rheneia to Delian *Apollonion* or when Nikias of Athens gifted the hippodrome area to the same sanctuary.

[58] For example, in the sanctuary of Demeter and Kore at Eleusis, resources that had been previously collected in kind were sold out so to be monetized and the income thus generated could be used to create offerings to be kept in the sanctuary, as the First Fruits Decree of 420 B.C. indicates ([…] The *hieropoioi* […] will sell the barley and the wheat and are to dedicate dedications to the Two Goddesses […] (*IG* $I^3$ 78).

[59] Revenues from the possession of sacred land (*hiera chora*) and incomes deriving from its rental or from the sale of the agricultural products are widely attested in Asia Minor (Chankowski 2005, p. 83); among the most documented case studies it is worth mentioning the sanctuary of Zeus at Labraunda (Crampa 1969). Income deriving from tenure is also attested in other Hellenic regions, as indicated, for instance, by the decree dating back to the mid-fifth century B.C. from the Attic deme of Plotheia, reporting the revenues obtained through the rental of the sacred land, corresponding to 134 drachmas and 2 obols (IG $I^3$ 258. Analysis in Whitehead 1986). In the demes of Piraeus and Rhamnous, some decrees lay down general rules for the leasing of lands pertaining to a *temenos* (cf. IG $II^2$ 2498, a Piraeus decree dated to 321/320 [eponymous archon]; IG $II^2$ 2493, about the leasing of a *temenos* in Rhamnous, dating to 339/338, ll. 12–13; see also Jamenson 1982) and in the deme of Aixone a tax over the right of pasture, the *ennomia*, was levied (IG $II^2$ 1196, a large fragment of the assembly decree of Aixon, dating to 326/325 BC).

However, the management of sacred land is not homogenous and varies from place to place: certain lands could be exploited for economic purposes, such as in Athens (Arist. *Politeia*, 47) and some lands could not be cultivated in order not to incur into sacrilege (this is the case of the *hiera land* of Delphi).

[60] Isager (1992), Wells (1992).

[61] Pafford (2006) and Sokolowski (1954).

and taxes on trade, on harbours, on freed slaves; percentages calculated over income, the *aparche*, the *dekate*; fines; confiscations,[62] war booties, banking activities such as loans with interest or currency exchanges[63] and so on.

So, while the *polis* did not introduce regular and periodical relevant forms of taxations for a long period, conversely sanctuaries, in accordance with typology and dimension, were structures that constantly siphoned funds, transferring them from the financial availability of individuals to sacred property.[64] The latter was managed by the community, so that the public magistrates or the *demos* could decree the disbursement of reserves belonging to the deity,[65] although formally as loans, for the *polis* and could also establish the modalities of restitution of the debts (in some cases, the borrowed money was not even returned to the treasure). The god was the official owner of the wealth deposited in the temple, but, at the same time, the heap of *chremata*, visible sign of the economic growth of the State, was at the *polis*' disposal.

Only by acknowledging this framework, it is possible to understand why amounts collected by sanctuaries—such as percentages over salaries, over harvests, over sales, confiscations of properties, conquered lands, war booties and so on—would not be categorized as religious in the modern sense: "secular" wealth could be possessed by the gods, who, in turn, made it available for humans during critical periods. So, the treasure of the major *temenos* of the *polis*, besides being spent for the cult performances and for the construction and restoration of sacred edifices, constituted the financial buffer of the urban community. The capital preserved in the temple, during a historical period lacking an autonomous State treasure, ensured financial stability not only to the sanctuary, but also to the *polis*, guaranteeing the possibility to access funds when the necessity to afford unexpected and consistent expenses arose.

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[62] As far as confiscations are concerned, the sanctuary at Halicarnassus confiscated the properties of the insolvent debtors, that were sold and whose revenues were deposited as cash money inside the temple, as documented by an inscription, dated back to the end of the fifth century B.C., with the list of the buildings and other possessions that were sold, for a total of seven talents (*Syll*$^3$ 46, partic. ll. 1–65). Confiscations of properties belonging to those who did not pay fines are attested in relation to the sanctuary of Athena at Argos, too.

[63] Bogaert (1964, 1968) and Bogaert and Heichelheim (1966). See also Dauphin-Meunier (1959) and Linders (1992a, 11).

[64] On the relationship between sanctuaries and taxation systems see: Sokolowski (1954, pp. 153–164), Littman (1988), Van Van Effenterre (1979a, b, pp. 19–30), Chastagnol (1977), and Leveau (1985).

[65] With reference to the sanctuary of Athena over the Athenian Acropolis, the Kallias Decrees (IG I$^3$ 52), more than one century later, significantly declare that no amount exceeding 10.000 drachmas can be taken from the treasure of Athena without the authorization of the *demos* (side B, lines 14–16). The document makes it clear that public assets were, at a certain extent, not separated from divine ones, that could be managed by public officers in the interest of the city. The authorization to use divine properties had to be granted by public assemblies also in the cities of Myrrhinus, Delos, Amorgos, Ios, Kos, Lindos, Ephesus, Priene, Olymos. Moreover, the recording and measurement of the *hiera chremata* had to be carried out under the supervision of the *polis'* authorities: the Kallias Decrees clearly indicates that the process involved the prytans, the *logistai* and the *Boule*; particularly, the weighting and inventorying had to be done in front of the latter. Similarly, the divine treasure at Delos, could be accessed only with the presence of the archon and of the prytans and, in some cases, of the Council. In addition, at Kos, the treasurers were controlled by the *prostates*.

In fact, even as far as expenses are concerned, sacred money was spent both for religious activities and for the necessities of the *polis*, such as public edifices and infrastructures, the payment of magistrates, the support for the widows and orphans of the wars, military conflicts and so on. Conversely, in Athens, there is no exhaustive documentation attesting to the existence of a public reserve to be used for the military expenditure, all the while the accounts of the *tamiai* of the Acropolis indicate how the treasures of the sanctuary acted as the main source to finance wars. In fact, when civic incomes were found insufficient to cover the expenses deriving from military conflicts, Athens is known to have melted the treasures of the Acropolis, held inside the Parthenon, in order to issue coins.[66] For instance, the suppression of the Samos uprising during the Archidamian war, the army sent to Corcyra, the war against Potidaea and the naval campaign in the Peloponnese in 431 B.C. were paid through withdrawals from Athena's funds. Further debts with the goddess were taken on for the battle of Melos, the Sicilian expedition and additional military operations in Thrace and in Argolis, while Philochoros (Philoch., *FGrH* 328 F 141) openly claims that the 407/406 B.C. coinage, aimed to finance the creation of a fleet consisting of 110 ships, was made possible thanks to the merging of eight gold *nikai* coming from the Parthenon (cf. Hellanic., *FGrHist* 323a F 26). Moreover, the Parthenon *pronaos* was deprived of its silver pottery, and in the following year the electrum and silver reserves of the *opisthodomos* were also used up.[67] Therefore, the main source to finance military operations during the Peloponnesian wars was the treasure of the Acropolis.

The observations made up to this point on the sacred economy do not intend to totally exclude the existence of a possible civic, not-divine, treasure to finance current expenses, but suggest that such a treasure was limited and complementary to the one preserved inside the main sanctuary of the *polis*. Besides, the existence and the modality of management of city-revenues are not clearly and totally trackable; there is still uncertainty concerning the administration of state-owned resources, such as mines, quarries,[68] public lands and their related products, while the flow of money deriving from confiscations, fines, duties, war booties inside sacred *chremata* is well attested. Taxes over metics and free slaves, custom duties and percentages over sales might have been absorbed by a limited civic treasure, although part of them was anyway levied by shrines (such as the Dioskouroi and Zeus Eleutherios) but regular non-sacred levies are attested only starting from the second half of the fifth century B.C.

[66] On Athenian finance in the Peloponnesian see Mattingly (1968, pp. 450–485).

[67] Thompson (1965c).

[68] In some cases, the management of revenues from quarries fell upon the sanctuary as well. For example, the *hieròs* of Herakles in Akris, together with the demarch, was in charge of the erection of inscribed *stelai* with the decrees concerning the leasing out of marble quarries whose proceeds were offered to the deity (*SEG* XXVIII 103, ll. 47–49).

Occasional expenses introduced some forms of exceptional taxes, such as the *eisphora*[69] and the *eikoste*[70] (Thuc. 7, 28, 4), or the levy on trade transits through the Bosphorus (Xen. *Hell.* 1, 1, 22), but these still remained not-systematic and not-permanent forms of revenues. These relatively limited secular revenues (not in all the *poleis*) composed a "rolling fund", consumed for current expenses immediately after the collection of the funds, without a systematic process of accumulation and deposit—a process that, instead, was taking place inside of sanctuaries. The public purse actually corresponded to the sacred fund and coherently there is no indication, for the Archaic and early Classical Age, of any civic space in the city designed for this task—besides the sanctuary.

## The Transformations Occurred in the Great Sanctuaries During the Late Classical and Hellenistic Age: Fourth Century B.C.

It is hence possible to trace an evolutionary trajectory which, through the development of a model of management that becomes more and more complex and comprehensive over time, identifies, in the first phase, the sacred space as the seat where public funds were hoarded. This phase is followed by a later stage marked by a definite financial policy, characterized by an over increasing distinction between public finances and sacred reserves.

For instance, towards the end of the fourth century B.C., specific funds dedicated to lay services are attested, such as the Athenian treasures for the armed forces, for various forms of welfare and public performances,[71] given that the progressive structuring of the urban expenditure was entailing the gradual emancipation of the city from the poliadic sanctuary.

If on one hand this transformation was the necessary consequence of the increase in the urban expenses, becoming more and more consistent and diversified starting from the fourth century B.C., on the other hand, it also resulted from non-economic reasons. With the establishment of the Macedonian power and then of the Hellenistic kingdoms, many sanctuaries lost their function as aggregative clusters of the members of urban communities and as places where collective identity was shaped and strengthened, in a general decline of the *polis* ideology and in a context where the *polites* were no more the core of the socio-political scene. Exactly these functions had been the basis for the accumulation of the funds belonging to the deity and of the *polis* conceived as a socio-political unit: the sacred area was the core of the urban society, the element promoting its identity and, as such, the place where its wealth was preserved.

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[69] Christ (2007), Thomsen (1964), and Meiggs (1972, pp. 256–257, 519–520).

[70] Meiggs (1972, part. pp. 438–439).

[71] Böckh (1817), Buchanan (1962), and Ruschenbusch (1979).

The need of a temple as the expression of the collective cultural identity of the *polis*, of its artistic capacity and its economic capacity was no more felt. The public magistrates and the *demos* as administrators of the *hiera chremata* were substituted by kings who did not perceive the cult area as the essence of the city-unity, but rather used them as a stage for their own personal celebration. The chryselephantine statues of the Argeads placed by Philip II in the sanctuary of Olympia, after the Chaeronea battle (338 B.C.), had nothing in common with the giant gold and ivory acrolith dedicated in the Parthenon after the Persian wars, that somehow symbolized the new leading role of Athens. If the latter answered the self-representation need of the whole Athenian community, providing it with a consistent reserve of gold, the images of the relatives of Philip II aimed principally at promoting the dynastic power. In the same direction went the erection of the *stoai* of Antigonus Gonatas in the sanctuary of Delos or of Attalus I at Athens, the *propylon* by Idreus, brother of Mausolus, in the sanctuary of Labraunda, the *propylon* by Ptolemy II, the *Arsinoeion*, the edifice by Philip II at Samothrace and the other many buildings erected by *basileis* in the Greek sanctuaries, meant to spread the dynastic propaganda.

The signals of these changes are many, although they did not show up homogenously everywhere and at the same moment. In addition to the establishment of amasses of funds outside the temples, banks that were independent from sanctuaries started to spread, offering loans, currency exchanges and deposits (nevertheless, a moderate persistence of cult areas carrying out economic activities is detectable in Asia Minor, especially at Ephesus and at Priene). For example, in Athens, during the fourth century B.C., several private banks were active[72] and often managed by ex-slaves or metics.[73] Among them, the private bank run by Pasion, the slave-born father of the Athenian politician Apollodorus, was particularly renowned.[74] Before, private banking had been hampered by the risky nature of the business itself (temples, with their extended properties and golden reserves, could hardly become insolvent) and by the difficulty to ensure an adequate and safe storage of the funds (temples, with their location, their *peribolos* walls, their sacred aura, locking tools, guards and administrative staff, were reliable places where to deposit money). Nevertheless, the decrease of the relevance of sanctuaries in the public economy fostered the spread of these autonomous private banks.

The inventory lists and the budget accounts that, during the Classical Age, were the primary instruments to monitor the sacred finances—within a democratic context aimed at ensuring the transparency of financial transactions—gradually lost their relevance. In Athens they almost disappear around 300 B.C. Certain sanctuaries show their de-functionalization: inventories are no more intended to check and to quantify the divine properties, but just register objects, in some cases marked by a mythological significance, whose economic value is no longer specified. The focus

[72] Shipton (1997, pp. 396–422).

[73] Although a considerable number of bankers were ex-slaves, there were also citizen bankers such as the landed Aristolochus (Dem. 36, 49).

[74] Trevett (1992). The principal sources are Dem. 36, 45 and Isoc. 17.

is now on the cultural meaning of objects, in a backward perspective (consider, for instance, the stele from the sanctuary of Athena at Lindos).[75]

Public authorities, in many cases, took over the divine resources, initiating a practice that would continue also in the Imperial epoch (see for example the confiscations at Delphi under Vespasian's rule); in some circumstances, the funds were distributed by the city to private individuals, against payment of amounts forfeited by the central power, as attested, for example, in the *Apollonion* of Akraiphia at the end of the third century B.C.

## Conclusions

In the light of this research, the sanctuary, far from being a marginal or secondary economic agent, turned out to be, during the Archaic and early Classical Age, one of the main actors in the administration of the *polis*' funds, since it collected and housed a large portion of the collective wealth, safeguarding it in its solid, secured and controlled sacred temples. Its involvement in the running of the public economy served as the basis for the early establishment of boards of treasurers and officers in charge of controlling and measuring the preserved resources as well as managing the expenditures and the revenues. Furthermore, the absence of a relevant civic space outside the *temenos* where communitarian assets could be stored, justified the sanctuaries' capacity to constantly siphon, besides votive offerings and spontaneous donations, sources of income that apparently were not religious in nature (such as taxes, war booties, confiscations, etc.). Similarly, the sacred precinct hosted funds that represented the only consistent hoard the city could access in extremely critical situations when unexpected, important expenses had to be faced.

Ultimately, the Greek sanctuaries acted as State treasures and driving forces for economic growth, in a context deprived of an analogous totally secular institution for the management of public finances.

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[75] Shaya (2002, 2005).

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# Debt and Usury: Economic and Financial Questions in the Roman Republic (Fifth–First Century B.C.)


**Chantal Gabrielli**

## Ancient Sources and Modern Historiography

The phenomenon of credit among *cives Romani* and the practice of money-lending consistently characterize, albeit to differing degrees, Republican history as a whole from the fifth through the first century B.C. The dearth of documentary evidence and the nature of information constitute a major issue. Our sources are mostly literary, belonging to a late period, predominantly the Augustan era (in particular Dionysius of Halicarnassus and Livy). They are thus distant with regard to the time they discuss and also fraught with anachronisms, as well as often containing polemical jabs drawn from Gracchan and Sullan annalistic writing. This is the current state of our sources, except for the last century of the Roman Republic, for which we have at our disposal contemporary sources such as Cicero,[1] a primary witness of that time, which provide first-hand information on the use of financial instruments comparable to our promissory notes, namely, the transfer of credit rights as a form of payment.[2]

[1] In this regard, it is illuminating Marina Ioannatou's (2006) study on credit among the senatorial aristocracy, which she reconstructed through Cicero's correspondence.

[2] Harris (2006: 1–24).

C. Gabrielli (✉)
Scuola di Specializzazione in Beni Archeologici, Università degli Studi di Firenze, Florence, Italy
e-mail: chantal.gabrielli@unifi.it



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Besides, the fragmentation of our archaeological and numismatic data, which are fraught with interpretive issues, prevents us from conducting the sort of quantitative analysis of the economic and social phenomena of the Republican period that Duncan-Jones has done for the Roman Empire.[3] It is not by chance that Goldsmith,[4] in his study of premodern financial systems, focused his analysis on the Augustan period, which is richer in terms of the quantitative information it can offer. Besides, the Romans never treated economics as the subject of specialized manuals. The Roman theoretical interest mainly focused on issues concerning the growth in personal wealth and the identification of the best types of investment of family assets. Little attention was paid, however, to areas such as government finances, economic policy, or collective well-being.

The only type of "economic" literature that regularly emerges in ancient Rome is that of the agronomists, whose texts primarily deal with the cultivation of agricultural land. In Cato, Varro, and Columella one can find practical information on the use of land and useful farming techniques, but can also find criticisms of enrichment through trade, sumptuary spending, and interest loans. It should be noted that this information, rather than having a specific economic purpose, was given for the sake of moral and political ideals.[5] Modern economists like James[6] and Schumpeter,[7] who have produced seminal volumes on the history of economic thought and analysis, agree that the Roman world, as opposed to the Greek one, did not display any interest in developing economic theory and doctrines. This is all the more surprising when we consider that Roman history is not devoid of economic changes which could have generated, at least in the ruling class, an interest in the field. One would expect that the persistence of city indebtedness and the spread of usury, as destabilizing factors of the fragile stability of Roman society, would have led to a reflection on the economic mechanisms involved. However, these two elements were never considered critically but only described as they happened, simply being chronicled in the historical process by the ancients. Confronted with the lack of Roman analytical thought on economics, we are left only with the option of critically interpreting the sources at our disposal through the lens of modern economic historiography. As a result, we must be aware of the risk of imposing on ancient societies terms, mechanisms, and principles specific to the modern economy.

The methodological approach of the recent volumes of the *Cambridge Economic History of the Greco-Roman World*, which pays special attention to issues of demography and the mathematical models implemented by Walter Scheidel, confirms growing interest in ancient economy, "an academic battleground" in which

[3] Duncan-Jones (1974). On the impact of archaeology for the study of the history of the Roman economy in the archaic period and the first centuries of the Roman republic, see Gabrielli (2003: 14–19, 26–32). On the evolution and complexity of the Roman economy between the fifth and fourth centuries B.C., see Cifani's recent contribution (2016: 151–182).

[4] Goldsmith et al. (1990: 43–71).

[5] Bianchini (1985).

[6] James (1963: 28–29).

[7] Schumpeter (1959, I vol., 83–90).

modernists and primitivists continue to engage.[8] Our sources suggest that a class of speculators steadily grew in terms of its size and financial viability in conjunction with the penetration of Roman business networks and contacts in the Italic world. The spread of commercial activities may have contributed to the creation of a new economic reality in Rome (Weber's theory of a parasitic and passive "consumer city", recipient of products and services, is now definitively outdated), likely resulting in the indebtedness of farmers, but also of traders and craftsmen. In this perspective, the city was the backdrop of a series of economic processes connected with consumption and trade and, in practical terms, with the spread of the use of coins and the corresponding development of banking and financial activities. In light of this economic-social context, the study of credit should address a series of intertwined questions, which include when and how debt dependency develops, the nature of obligations, the social condition of the debtors, and lastly, the procedures to settle debts. Equally important is to understand the use of usurious transactions which the literary tradition attests was already an object of interest as shown by the standardization of the law code of the decemvirs and its spread in the fourth century B.C. in connection with the proliferation of bronze coins.

## Debts and Debtors in the Early Republic

The understanding of economic factors must go hand in hand with an understanding of social evolution. As Finley demonstrated, following Polany, the ancient economy was embedded in social structures; [9] indeed, the evolution of Roman society from the archaic to the Republican period affected the very nature of the debt, resulting in new methods of collection and payment. If we look at the original meaning of the word "economy", namely the administration, the government of the *Oikos*, of the house understood as an extended family (slaves included), it appears that this sense of the term was restricted to the private sphere, which represented an original productive nucleus. It follows that every family aspired to be economically independent. Archaic Rome had an agrarian economy: Romulus himself assigned to each Roman citizen a plot of land of two *iugera* (*heredium*), which provided subsistence for a family unit. Such a primitive form of private property coexisted with access to public land.

The *pater familias* was responsible for making the land allotted to his family more productive. Subsistence farming was commonly practised but the system was precarious as a good harvest season was subject to shifting climate trends. As the *Annals* attest, famine was a common occurrence. As a result, natural disasters were one of the main causes of family impoverishment, and to get by families often had to borrow essential goods. Such early forms of credit were very common, but debtors never left a written record of their economic strife. This must have been a

[8] Hopkins (1983, p. 1) and Scheidel (2007: 38–86). On the long-standing issue of the interpretation of the economy of ancient Rome, see Buonopane (2019).

[9] Finley 1977[2]

harsh reality of life for Roman citizens, especially for small landowners. In an agro-pastoral society, the taking on of debt plausibly resulted from the sharing of farming equipment, foodstuffs (i.e. cereals), seeds, beasts of burden, and perhaps even plots of land. As time went by, credit also resulted in pecuniary debts.

The finding of bronze/copper ingots and disks spread all over Italy (i.e. Po Valley, Etruria, Lazio, parts of Campania and Sicily), already in the sixth century B.C. attests to a form of "pre-coinage" economy (essentially a closed economy) based on bronze bars as reference units (*aes*). At some point, we do not know exactly when, debts were honoured through a conventional abstract measuring, a kind of standard reference unit, namely the *aes*, although it was not yet considered currency in the modern sense. Not surprisingly, in Latin, the word "debt" was connected with the term *aes alienum*, which literally means "another man's bronze", precisely to refer to the frequency of the *aes* in its "pre-coinage" function. At the time, it was important to show that an indebted Roman citizen had the option of appealing to the metal reserves of another person and his family so that in "another man's bronze" he could resolve his difficult situation through a legally recognized way out. The restitution of debt could, therefore, occur through forms of payment linked to units of account that changed over time or in kind.

Initially, essential goods such as sheep or cattle functioned as currency, and therefore goods and services were measurable and commutable into livestock (*pecus*). The Latin term *pecunia* indicating money comes from this kind of transaction. It soon became clear that such a form of payment did not keep the same value over time. Animals could die and also required care. The use of metal by weight first supplemented and then replaced the use of livestock. As opposed to livestock, metal had no maintenance costs and was non-perishable and divisible. Two legislative provisions issued a few years apart in the mid-fifth century B.C., the *lex Aternia Tarpeia* (454 B.C.) and the *lex Menenia Sextia de multa et sacramento* (452 B.C.), established that fines could also be paid in pounds of copper and set the corresponding metal value of a sheep or an ox.[10] Shortly after, the decemviral code (451–450 B.C.) confirmed what was established by the two laws,[11] testifying to the existence of an official weigher, or holder of the balance (*libripens*). This official presided over every sale-purchase operation and attested that the transfer of ownership of an asset took place *per aes et libram*, namely, "with the bronze and the balance". The Twelve Tables reveal the existence of a further form of debt payment that was increasingly adopted. Through the *nexum* contract (i.e. a debt bondage contract), a debt could be repaid through a practice of payment-in-kind in which a debtor pledged his services (*operae*) to a creditor.[12]

The judicial process of a debtor's default was a complex one. In cases of repeated defaults by the debtor, a creditor would bring him to the Comitium before a *praetor*. If proven guilty, the magistrate would formulate a sentence unfavourable to the debtor who from then on would have been judged officially defaulting (*iudicatus*). There

[10] Gell. 11.1.2; Fest. s.v. *Peculatus* P 268, 270 L.

[11] Tav. I, 14; Tav. VIII, 11.

[12] Tav. I, 5; VI, 1.

followed thirty days within which the debt had to be paid off, but if it was not, the debtor had to undergo an official judicial process (*manus iniectio*).[13] A guarantor (*vindex*), who might have been the debtor's friend or family member, could settle the debt for him.[14] If no restitution was made, the *praetor* would proceed to hand over the debtor to the creditor's disposal (*addictio*).[15] The debtor-*addictus* would spend time in detention confined in the creditor's house, where he would need to sustain himself at his own expense. Sometimes, the creditor would supply the debtor with an allocation of a pound of emmer wheat per day.[16] The detention period would continue for sixty days under these unfortunate conditions, after which, in case of no restitution, the debtor would be sold as a slave outside Rome's borders in foreign territory (*venditio trans Tiberim*).[17]

In addition, the occurrence of the clause *partis secanto* (literally "subdivision of the parts") in the Twelve Tables allows us to formulate other hypotheses of debt resolution: the creditor might have appropriated the debtor's assets, dividing them up with other possible creditors; or he might dissect the debtor's corpse into pieces, the sizes of which corresponded to the debt contracted with the respective creditors (bodily *iniuria*).[18] Given that literary sources do not mention the carrying out of such inhumane sanctions, it appears more likely that the threat of bodily *iniuria* acted as a preventive measure to push the parties involved to agree. Interestingly enough, in Shakespeare's *The Merchant of Venice*, the moneylender Shylock demands a "pound of flesh" from his debtor as forfeited collateral should he be unable to repay his debt. The most frequent way of debt repayment was the legal institution of the *nexum*.[19] In this bilateral transaction, the debtor could decide whether to bind himself to work for the creditor until the debt was paid or bind those who were subject to his authority to work for the creditor on his behalf until the debt was settled. A provision of the decemviral text confirms such a practice as it allowed the nullification of the *patria potestas* in cases where a son was sold by his father three times consecutively.[20]

We owe much of our knowledge on debt slavery to Finley,[21] who studied this phenomenon with particular attention in his analyses of slave labour in Roman society. Alongside slavery, he identified other institutional forms of complete dependence as, for example, the archaic *clientes* who were tied to the land and the *nexum.* Finley believed that the basic distinction between "free" and "slave" did not fully capture the complexity of Roman society. Debt bondage was a form of "legalized"

[13] Tav. III, 5; Gell. 20.1.46–47.

[14] Tav. I, 4.

[15] Quint. *Inst.* 7.3.26–27; Cic. *de Orat.* 2.255.

[16] Tav. III, 3–4; Gell. 20.1.45.

[17] Tav. III, 1–7.

[18] Tav. III, 6*;* Gell. 20.1.19; 20.1.49; Quint. *Inst.* 3.6.83–84; Tert. *Apolog.* 4.9; DC 4 fr. 17.8.

[19] Gabrielli (2001).

[20] Tav. IV, 2.

[21] Finley (1981). On the question, see Storchi Marino's 1997 analysis.

slavery, a kind of "forced" labour.[22] Sometimes, the heavy burden of debt was oppressive to the point of reducing free men to a condition analogous to that of slaves. In his typological distinction of free workers in the Roman world, Garnsey[23] included "debt slaves", whose social condition did not differ much from that of the servile workforce. The main technical difference between a "debt slave" and a slave consisted in the inherent possibility for the first to limit the time in which he found himself in a quasi-servile status. The debtor who settled his condition as *nexus* retained his *status libertatis* and consequently, as a *civis Romanus*, preserved his status over both his *familia* and the state. He was not subject to any *capitis deminutio*, maintaining his citizenship along with the rights and duties of every citizen. By maintaining his freedom, the debtor-*nexus* was eligible to enter the army, if the necessity required him to do so, could vote in elections, and was subject to the payment of the *tributum.*

A Roman citizen could be sold as a slave only in foreign territory (*venditio trans Tiberim*), and only after his defaulting was established. The *nexi*, slaves "by contract", could continue to live in Rome and maintain their Roman citizenship. For a debtor, therefore, the *nexus*-status, which guaranteed, at least in theory, the reacquisition of freedom once a debt was paid, was better than the *addictus* or *iudicatus* status, if judged officially defaulting. In such a condition, in fact, he would lose all legal rights and would be at the disposal of the creditor. Based on documentary evidence, it is impossible to determine the effective duration of the *nexum* and make an estimation of the number of debtors-*nexi*[24] who regained their freedom, after having paid their debts through their work. The dissolution of the assets of the defaulting debtor was subject to the creditor's discretion who could decide to make the terms of the contract last throughout the life of the debtor, extending the condition of debt bondage also to the debtor's descendants (children and grandchildren). This situation highlights the most insidious aspect of debt slavery when compared to other forms of slavery. While initially, the *nexum* institution appeared, on a legal level, an effective solution to the problem of defaulting on a debt, with time this bilateral transaction proved to be a destabilizing factor in a rapidly changing society.

The image of the defaulting centurion complaining about his fate and demanding the repeal of *nexum* to keep his freedom and political equality appears already in the Livian narrative concerning the fifth and fourth century B.C., despite the anachronisms and the dubious reliability of the passages.[25] Suffice it to recall that the matter of a defaulting soldier was the underlying cause of the Plebeian Secession in 495–494 B.C.[26] Every Roman citizen would be conscripted in case of need and the Roman army was largely identified with the citizen body (*civis-miles*). Not all citizens were able to fully profit from military campaigns as the distribution of the war booty was subject to the commander's discretionary power. In the long run, the permanence in the ranks of the army for military campaigns that were increasingly protracted

[22] Finley (1964, 1965).

[23] Garnsey (1980).

[24] Varro *ling. lat.* 7.105; Dion. Hal. 5.53.2.

[25] As I have highlighted in Gabrielli (2008).

[26] Liv. 2.23.3–7.

over time engendered latent social dissatisfaction. Also at risk was the livelihood of a soldier and his family upon his return from the war. It was not always possible to recover the fortunes of long-abandoned farms, which often were also sacked and raided. In such circumstances, one might have transitioned rapidly from destitution to default. The historiographic tradition identifies the citizen-soldiers' debt as one of the key factors behind the social discontent that triggered the patrician–plebeian conflict.

Between the fifth and the fourth century B.C., a series of incidents reveal a mounting opposition to the military draft (*dilectus*). In Rome, social strain worsened and took the unusual form of a "military strike". All this took place in a context of growing tension towards the neighbouring Italic populations where the outcome of military clashes would determine the downsizing or expansion of the territory controlled by Rome. Heavily indebted plebeians refused to fight against new enemies due to protracted military campaigns. To contain social discontent, various types of social reliefs were promoted. Among these was the extension of debt maturities, which postponed the repayment of outstanding debt, the discontinuance of default proceedings, and the prohibition to keep debtors or their family members, and to sell their assets. To address the state of poverty that weighed on a large number of soldiers, in 406 B.C., the *res publica* decided to provide the military body with a salary. The so-called *stipendium militare* was a compulsory tax levied on citizens (*tributum*), at the beginning sporadically but then regularly.[27]

These proceeds flowed into the coffers of the *res publica* and constituted the *aerarium*. Undoubtedly, through the imposition of taxes and the consequent administration of the proceeds, the central authority was able to carve out a new economic-financial role for itself, generating a compulsory transactional relationship with the individual citizen similar to the one existing in private law between a debtor and his creditor. Unfortunately, we are not able to tell what procedures were adopted in Rome in this period concerning citizens who failed to meet their financial obligation towards the treasury. According to Livy, not all *cives* were able to pay their taxes to the *res publica* regularly. To obviate the problem, sometimes the state would adopt extraordinary measures such as granting the plebeians a temporary suspension of the payment of the *tributum*, in 378 B.C., during the war against the Volscians.[28]

Livy reports another interesting intervention in favour of the indebted population by the state in 352 B.C. However, we should take the historical reliability of this Livian account with caution, as the adopted procedures discussed entail the presence of a sophisticated economic system, banking structures, and monetary circulation, the existence of which cannot be substantiated for this period. The two consuls of 352 B.C., Publius Valerius Publicola, and Gaius Marcius Rutilus, instituted a commission consisting of five magistrates, two patricians and three plebeians (*lex de quinqueviris mensariis creandis*). The goal of such commission was to settle debts by allowing

[27] Liv. 4.59–60; cfr. 5.7.12; Diod. 14.16.5.

[28] Liv. 6.31.

the state to grant creditworthiness to the population. In the Livian source, the private or public nature of such debts is not clarified.[29]

Two different arrangements were made: some debts were settled by the state treasury, namely by the public purse, thanks to the creation of banks in the Forum, which would grant creditworthiness only to the debtors who were able to provide sufficient financial guarantees; alternatively, after evaluating the fair price of the debtor's immovable property or real estate and movable property, the creditor would have been forced to accept the debtor's goods as a form of debt repayment. As shown below, during the first century B.C., selling through compulsory auctioning would be one of the most common procedures adopted by creditors towards defaulting citizens and would give rise to a new type of professionalism among financial players.[30]

In 326 B.C., the *lex Poetelia Papiria* legally sanctioned the abolition of *nexum.* It should be noted, however, that the importance of this legal institution had been steadily declining already during the fourth century B.C. Such an event must be put in connection with the arrival of captive slaves to Rome after the victorious military campaigns conducted against many Italic populations. The increase of captive slaves led to a corresponding intensification of slavery. As a consequence, the availability of cheap labour force scaled down other types of more economically burdensome relationships of dependence such as *nexum.*

## Usury in the Early Republic

In the first centuries of the Republic, sources talk about the practice of usury along with debt: the need to cap interest rates is already regulated in the Twelve Tables.[31] Nowadays, the practice of usury is condemned as a form of slavery because the exorbitant interest rates attached to it de facto prevent the debtor from paying off his debt. As a phenomenon, usury is not only deregulated but also, obviously, outlawed. In the Roman world, on the contrary, this phenomenon was differently understood. The etymology of the Latin term *fenus* ("interest") refers to the natural growth of plants, which bloom and mature with time. Romans saw interest in a similar way, as loaned money that generated an increase of capital.[32] Thus, *fenus* indicated both interest loan, tolerated as long as legal rates were applied, and usury. While morally objectionable, the practice of *feneratio* was not illegal, as some members of the aristocracy often lamented, despite their practising it from time to time. A case in point is that of Cato the Censor at the beginning of the second century B.C. The first two centuries of the Republic remained a phase of non-monetary economy, and therefore the practice of usury implied that the payment of interests was in kind and

[29] Liv. 7.21.5–8; 7.22.

[30] Gabrielli (2012: 97–102).

[31] Tac. *Ann.* 6.16.2.

[32] Varro fr. in Non. s.v. *Faenus* P 76 L; Gell. 16.12.7–8; Paul. *Fest.* s.v. *Fenus* P 83 L; s.v. *Fenus* et *feneratores* P 76 L.

not in the amount due (a practice proper of the monetary economy, which comes later). For this period, the word usury indicates the determination of an application and calculation of an increase in the amount due. This amount could be quantified either on the basis of weighed metal, which was used as a measure of value (*aes*) or on the number of working days, as in the *nexum* bilateral transaction, which, as was shown above, never allowed the debtor-*nexus* to repay his debt. The period in which the debtor was bound to work for the creditor could be extended indefinitely. Only later, we do not know when, with the spread of the monetary system, the calculation of interest would take on a specific monetary value.

It was a long process from the use of an unfinished nugget of bronze/copper (*aes rude*) of various sizes (between 500 g and 3 kg) in the sixth century B.C., to cast ingots of bronze with a bodyweight of about 1.6 kg (equal to five Roman pounds), whose designs featured animals such as bulls (*aes signatum*) between the sixth and fifth century B.C. Last in order but not of importance, it should be mentioned the introduction in the fourth century B.C. of the *aes grave*, a bronze cast disk coin—the most widespread series was that bearing the two-faced image of a bearded Janus on the obverse of the *aes* and the prow of a galley on the reverse—whose nominal base value was the *as* of about 327 g (equal to a Roman pound), which was in turn divisible into twelve ounces and divided into multiples and sub.

After 326 B.C., Greek craftsmen minted the first Roman bronze coins bearing the Rome name. About 310 B.C., on the other hand, the first silver coins according to Greek metrology, the didrachma coins, were issued in connection with the construction of the via *Appia*, which was built in 312 B.C. by the Roman censor Appius Claudius Caecus to connect Rome to Brindisi, a major port for trade with Greece and the Middle East.[33] Starting from 269/268 B.C., the standard Roman silver coin *denarius* took over the market, quickly replacing the didrachma coins, thus becoming the backbone of Roman currency throughout the Mediterranean area.[34] During the fourth century B.C., the *res publica* often resorted to legislative regulations (*leges fenebres*) to stem the pervasive issue of moneylenders (*feneratores*) and limit the rate of interest. Comprehensive anti-usury laws tried to put a cap or even abolish interest rates. The so-called Licinian rogations provided for a limit on the interest rate of loans (*lex Licinia Sextia de aere alieno*, 377–367)[35]; subsequently, in 357 B.C., the *lex Dulia Menenia de unciario fenore* attempted to reduce the interest rates.[36] Ten years later, in 347 B.C., the *plebiscitum de fenore semunciario* sanctioned a reduction of debt and the halving of the interest rate.[37] Finally, in 342 B.C., the *lex Genucia de feneratione* banned the lending of money at interest.[38] It is likely that this piece of legislation rather than prohibiting loans at interest, only succeeded in imposing a

[33] Mitchell (1969) and Crawford (1982: 87).

[34] Plin. *HN* 33.44; Liv. *Perioch.* 15.

[35] Liv. 6.35.4.

[36] Liv. 7.16.1.

[37] Liv. 7.27.3; Tac. *Ann.* 6.16.

[38] App. *Sam.* 1.1–2; Liv. 7.38.4–7-7.42; Dion. Hal. 15.3.2–15; Fron. *Str.* 1.9.1; Zonar. 7.25; Auct. *vir. ill.* 29.3.

legal interest rate lower than the previous one, perhaps moving from a calculation of monthly accrued interests to an annual one. A subsequent law, the *lex Marcia* (311 B.C.) tightened the penalty against the *feneratores* who granted unfairly expensive loans.[39]

Concurrently with such unsatisfactory provisions, Livy records a series of prosecutions against moneylenders sued by the curule aediles and ordered to relinquish their assets between the fourth and the third century B.C.[40] In 304 B.C., it seems that Appius Claudius Caecus's scribe, Gnaeus Flavius, as a curule aedile, built the shrine of Concord (*aedicula aerea*), in Graecostasi above the Comitium, with funds drawn from the fines imposed on convicted moneylenders, who had defied the law (*lex Genucia*).[41] Also, the statuary complex of the she-wolf suckling the mythical twin founders of Rome in the Comitium, erected by the Ogulnii brothers in 296 B.C., whose law (*lex Ogulnia*) opened various priesthoods to the plebeians (see the roles of *pontifex* and *augur*) in 300 B.C., was built with funds taken from convicted moneylenders.[42] Emblematically, the monuments and the statues erected in the area of the Comitium carried with them deep social meaning in relation to the phenomenon of city indebtedness and usury: there was the courthouse (*tribunal*) of the praetor's judiciary, where defendants accused of default charges stood trial, and next to it, after the victory over the Latins in 338 B.C., was erected the *Columna Maenia*, known for being the place where creditors and moneylenders bound debtors to publicly punish them.[43] Finally, probably in 294 B.C., the first plebeian censor and himself a three-times censor, Gaius Marcius Rutilus Censorinus placed a statue of Marsyas, a kind of demon similar to an old Silenus with his arm raised and stumps at the ankles.[44]

The decemviral code indicated in the *nervi* and *compedes* the distinctive elements of the state of subjugation of the defaulting debtor to his creditor.[45] As a free-standing sculpture, the statue was thus the tangible image of the debt-free debtor-*nexus*, who raised his hand as a sign of freedom. According to ancient authors, Marsyas' statues were erected in the cities' fora of the Roman Empire as a symbol of *libertas*.[46] The discovery of a bronze Marsyas, impeccable copy of a Roman original dated to the first half of the third century B.C., suggests that such imagery was already in use in the Republican period in the Latin colonies of Italy. This, in turn, suggests that many *cives* were able to find a way out of debt-slavery thanks to the foundation of colonies. We know that the Roman conquest of swaths of Latin indigenous territory in central

[39] Gaio, *Istituzioni* 4.23; App. *BC* 1.54; cfr. Cato *Agr. praef.* 1

[40] The first sentences date back to 344 B.C., followed by other litigations in 304 B.C. and then finally in 296 B.C.: Liv. 7.28.9; 9. 46.1–6; 10.23.11–12.

[41] Liv. 9.46.1–6; Plin. *HN* 33.19. Cfr. Humm (2005: 611ss).

[42] Liv. 10.23.11–12.

[43] Schol. Bob. (ad Cic. *Sest.* 18) 128 St.; Schol. Bob. (ad Cic. *Sest.* 124) 137 St.).

[44] Torelli (1982: 102–104, Figure IV.14).

[45] Tav. III, 1–7.

[46] Serv. *A.* 3.20; 4.58; Mitogr. Vat. 3.12.1.37–40; Charax *Italikà* (*FGrHist* 103 F 31). For a recent examination of the figure of Marsyas and new hypotheses on its symbolic and polysemic value, see Buonopane and Basso (2008: 139–160).

Italy, after successful military campaigns against Rome's neighbours, kicked off a new way of exploiting public land (*ager publicus*) through colonial foundations. Colonial deductions were particularly intense after 338 B.C. as a consequence of the dissolution of the Latin league and in the context of the Samnite Wars. Indebted people could likely improve their economic fortunes through working on arable new lands and thus pay off their debts.

At the end of the fourth century B.C., the economic liberalization towards new markets, following the Roman territorial expansion in Italy, led the Roman Forum to establish itself as a financial transactional hub. At the same time, lending practices were refined for businessman and those engaged in commercial activities. A bank-like financial institution, modelled on Greek and southern Italian Greek prototypes, was established to respond to market needs. It should be noted that this system had never been planned out by Rome's central authority in response to a carefully designed financial strategy. As mentioned above, the creditworthiness granted by the *res publica* to private individuals in 352 B.C., through the provisional agency of the *quinqueviri mensarii*, represented a *unicum* in Rome's economic history. From the very beginning, private individuals in Rome were in charge of banking and financial operations (currency exchange and rate, deposit and cash services, lending of money at interest). They formed a class of freelancers that progressively specialized in money changers (cf. *argentarii, nummularii*) and moneylenders.

It is likely that also wealthy citizens who had capital to lend joined this class of people through figureheads. As far as we know, the Roman state never provided a valid alternative to these kinds of privately run banks and there is no indication that the Roman state ever created "state banks" run by civil servants employed by the *res publica* who could use public and not private capital. Roman topography reflects this change. Particularly, the Forum area, where literary sources record a change in purpose of the *tabernae*,[47] which was more suited to the *forensis dignitas* and to the role of powerful and prestigious metropolis that Rome was acquiring. Money changing shops slowly replaced slaughterhouses (*lanienae*) and food stores. The construction of two-stories porticoes (*maeniana*) in 318 B.C. marked this change.

## Indebtedness and Usury between the Third and Second Century B.C.

The lacunose and fragmentary nature of the documentary evidence limits our understanding of the phenomena of indebtedness and usury in Rome. The loss of Livy's volumes concerning the years between 293 and 218 B.C. does not allow to shed light on the abolition of the *nexum* institute and its aftermath during the third century B.C. However, an incident in 216 B.C. shows that other archaic forms of dependency/slavery to a creditor continued to exist, negatively impacting the lives of those

[47] Varro fr. in Non. s.v. *Tabernas* P 853 L.

who were called for military service.[48] Livy and Valerius Maximus detail how the *res publica* took exceptional measures to ward off Hannibal's invasion, even resorting to issuing an edict that allowed convicted debtors to join the army. A case in point is that of dictator Marcus Junius Pera who voided the debt of convicted debtors in exchange for their availability to join the army, and thus becoming his soldiers.[49] Those who benefited from this edict were not only defaulting debtors but also felons convicted of capital offences. The individuals involved were in total six thousand, an imprecise figure which, nonetheless, testifies to the magnitude of the phenomenon.

Literary sources attest that during the second half of the third century B.C., at a delicate juncture of the conflict between Rome and Carthage, not only private citizens, but also the *res publica* were found defaulting. In such poor financial circumstances, the *res publica* sought economic contributions from private wealthy citizens with sufficient liquidity to overcome the emergency. The first case probably dates back to 243 B.C. In Polybius's *Histories*, we read that the Treasury did not have enough financial resources at its disposal to provide for Quintus Lutatius Catulus's army. Lutatius Catulus would be the winner of the naval battle of the Aegates, fought off the Aegadian Islands (241 B.C.), which ultimately ended the first Punic War. In this circumstance, prominent citizens, drawing from their wealth, were able to fund the construction of a fleet of 200 ships, on the promise that their donations would be paid back, as was the case, upon victory.[50] The second episode of "state default" occurred during the military campaigns against Hannibal in 210 B.C. The war's financial burden started to take its toll, involving parts of the citizenry. To give back private donations, the *res publica* paid back its debt in three installments, each paid every two years with great effort.[51] The documentary gaps in our literary evidence are only partially filled by our legal sources: between the third and the second century B.C., the so-called *leges de sponsu (lex Appuleia, Publilia, Furia, Cicereia)* were issued.

The normative need for civil law and more specifically for regulating credit and debt cannot be explained if not by assuming that debt continued to be an issue impacting the political-social stability of Rome. At the end of the third century B.C. and the beginning of the second, the *lex Silia de legis actione*, presumably a plebiscite in 204 B.C., followed by the *lex Calpurnia de legis actione*, among other things, aimed at extending loan regulations also to non-citizens, to the *peregrini*, with whom Roman law had to come to terms. In the first decades of the third century B.C., prosecutions against moneylenders provide evidence of the persistence of this issue, despite the fourth-century B.C. legislative efforts to stem the phenomenon; unfortunately, the fragmentary evidence for the third century B.C., as mentioned above, does not allow us to know more about this period. In the second century, Roman playwright Plautus records the persistence of the interest loans and even the involvement of *Latini* and *socii Italici* operating as the figurehead of unscrupulous moneylenders.

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[48] Crifò (1964) and Peppe (1981: 195–196).

[49] Liv. 23.14.2–3; Val. Max. 7.6.1b.

[50] Polyb. I.59.6–7.

[51] Liv. 26.35–36; cfr. 24.11.7; 29.16; 31.13; 33.42.2.

Practically, the *feneratores* transferred the debt liabilities of Roman citizens to the *Latini* and *socii Italici* to circumvent anti-usury legislations. As non-citizens, *Latini* and *socii Italici* were not subjected to any limitation on the interest rate taxation.[52] In 193 B.C., the *lex Sempronia de pecunia credita*, an anti-fraud legislative action, subjected *Italici* and *Latini* to the same anti-usury stipulations which Roman citizens were under. The allies who had opened credits with Romans citizens were required to declare it so that Roman law could apply to them as well.[53] Senatorial aristocracy displayed shifting contradictory attitudes towards usury. Cato the Censor's life is emblematic in this regard. In his *De Agri Cultura*, Cato judged the practice of lending of money at excessive interest *(fenerari)* profoundly unbecoming and morally objectionable,[54] comparing it even to murder.[55] While serving as a praetor in Sardinia, Cato suppressed this practice so harshly that in 198 B.C. he forced moneylenders out of the island.[56] The Censor wrote an oration, *Dissuasio legis Iuniae de feneratione*, against the *lex Iunia de feneratione*, which had been issued in 191–190 B.C., probably to regulate interest loan. Unfortunately, the fragmentary status of this oration prevents us from understanding its content.[57] According to an unfavourable account in Plutarch, later in his life, Cato attempted to increase his capital by securing for himself reliable sources of income and practising various types of interest loans, including the sea loan given to merchants involved in overseas trade (*fenus nauticum*). This type of interest loan spread at the end of the third century B.C. and was taken out mostly by merchants, generally against mortgages, as the liability to a loss in property was often shared among a large number of associates.[58] To secure his sharing of a maritime loan, Cato hired to act as his figurehead a certain Quintio, a freedman (*libertus*) whom he sent on a ship to monitor the progress of the operations and economic exchanges carried out by the other members. This elaborate scheme allowed him to bypass the *plebiscitum Claudium* of 219/218 B.C., which forbade senate members and their sons to invest their money in the risky maritime trade.[59]

This provision did not allow for large-scale distribution, in fact, according to the law, a senator could only have a ship with a load capacity of maximum three hundred amphorae. Such an insignificant number implied that one could only dispose of small cabotage ships only good for coastal routes and the marketing of products of his landholdings. The *fenus nauticum* was served by a series of regulations. Moneylenders who lent money for investments in maritime trade were given the right to demand a much higher interest, up to 33%, for the assumption of risks connected to the maritime hazards of the creditor (*pretium periculi)*. Furthermore, the sea loan, also known as *pecunia traiecticia*, literally "traveling money", entitled the debtor to spend

[52] Pl. *Rud. prol.,* 13–15; *Per.* 478; *Cur.* 490 ss.

[53] Liv. 35.7.2–5; cfr. Pl. *Cur.* 508 ss.

[54] Cato *Agr. praef.* 1.

[55] Cic. *Off.* 2.25.89.

[56] Liv. 32.27.3–4.

[57] frr. 6.1–2 (Jordan 39).

[58] Plut. *Cato* 21.5–8. Vd. de Ste. Croix (1974) and Rougé (1966: 351–360, 426–428, 460–465).

[59] Liv. 21.63.3–4.

the money overseas to purchase goods or purchase goods to be transported by sea. At the end of the journey, the money would be returned, often directly in the city of destination, to an affiliated bank, with interests. Due to maritime risk (e.g. shipwreck), the debtor would be free of the obligation, and the creditor could not retaliate in any way and request compensation; therefore, the transportation risk was entirely borne by the creditor.[60] Around the second century B.C., as attested in Cato, the figure of the collector (*coactor*) appears in the financial world. This official was responsible for collecting credits on behalf of a wide and varied number of clients, withholding a certain percentage as his compensation. This was a fixed fee to be paid by the debtor equal to 1% (*merces centesima*). For the most part, it was freedmen who practised this profession; they also intervened in auction sales, though they never granted loans, but limited their activities to collecting credits due by the buyer to either the seller or banker.[61]

## The Last Century of the Republic

The first century B.C. was characterized by counterfeiting, credit crunch, and poor money circulation. A series of legislative measures and appropriate monetary policies (*lex Papiria de assis pondere*—between 93–92, 91 or 89 B.C.; *lex Livia nummaria*—91 B.C.; the edict of praetor Marcus Marius Gratidianus—85 B.C.; *lex Cornelia de falsis*—81 B.C.) by the *res publica* tried to remedy these issues. In this context, the problem of city debt continued and was worsened by the Social War (91–89 B.C.). At the end of the conflict, in 89 B.C., urban praetor Sempronius Asellio tried to alleviate the debt load by imposing a fine on individuals who lent money at very high rates of interest. In reaction, creditors belonging to the financial class (i.e. knights, public contractors, bankers) stirred up an uprising. The magistrate who was accused of favouring defaulting debtors was lynched.[62] Soon afterwards, in 88 B.C., a legislative measure (*Lex Sulpicia de aere alieno senatorum*) prohibited senators to accrue debts above 2,000 drachmas (corresponding in this case to 2,000 denarii). The law would be subsequently repealed by Sulla.[63] It is dated to the same year a law on interest rate whose purpose is poorly understood, perhaps a *lex fenebris*, credited to Sulla and his colleague Quintus Pompeius Rufus during their consulate (*Lex Cornelia Pompeia unciaria*).[64]

Due to the shortage of money flow following the Social War and the loss of Asia Minor conquered by Mithridates, the consul of year 86 B.C., Lucius Valerius Flaccus, issued a law (*Lex Valeria de aere alieno*)[65] cutting the debts of both private

[60] Carlà and Marcone (2011: 116–118).

[61] Cato *Agr.* 150.2; Cic. *Rab. Post.* 30–31.

[62] Liv. *Perioch.* 74; Val. Max. 9.7.4; App. *BC* I.54.232–239.

[63] Plut. *Sill.* 8.2; App. *BC* I.59.268.

[64] Fest. s.v. *unciaria lex* p. 516 L.

[65] Sal. *Cat.* 33; Cic. *Font.* fr. 1.

individuals and *res publica* by three quarters. This debt remission applied for a short period: calculated only on debts incurred before 88 B.C. In 81 B.C. in fact, it was no longer in force. Thanks to a loophole, it was possible to give back only a quarter of what was owed. The debt, incurred in *sestertii*, that is in silver coins, was repaid in an equal number of *assēs*, that is in bronze coins. Thus, a triple effect was obtained. The amount of debts calculated in bronze was reduced drastically, at the same time, the *as* returned to be a money of account, while the credit value of the coins put into circulation was kept at the value it had before the outbreak of the war in 91 B.C.

Cicero's orations[66] relating to the administration of the provinces are our main source for understanding the economic-financial changes of first-century B.C. Roman society. They witness an "extra-Italic" form of indebtedness that involved also the provincials. An illustration of this is provided by the trial of propraetor Gaius Verres in 70 B.C. charged with embezzlement and robbery perpetrated against Sicilians. Cicero describes a system of loaning funds at usurious rates to provincials.[67] This practice implicated some publicans. Verres too benefited from such economic dealings. The granting of loans to provincials was eventually prohibited in 67 B.C. by tribune Gabinus (*lex Gabinia de versura provincialibus non facienda*).

The spread of debt among the *nobilitas* is another distinctive characteristic, since the time of Sulla's dictatorship, of the first century B.C. Among the reasons that led the Senatorial elite to take on debts, there should be included the munificence deriving from their social standing (e.g. the organization of the ludi, banquets, the distribution of food and money, and the financing of public works), the demands of political life (e.g. electoral maneuvers and corruption), organized violence (armed gangs) and the private expenses to live beyond their means. Catiline's matter and the composition of his army, as well as Caesar's political activity and private life are a clear example of how easy it was in the late republic for a wealthy citizen to be crushed by debts and be in the clutches of creditors in the pursuit of power.

The motion for the abolition of debts (*tabulae novae*) became a political slogan in the last decades of the republic. In 49 B.C., Caesar's *lex Iulia de pecuniis mutuis* established the cancellation of interest in arrears for two years in place of the unrealistic remission of debts; furthermore, cash-strapped debtors were able to satisfy their creditors through the auctioning of their goods, movable and immovable property.[68] After Caesar, there followed two other attempts to alter and reframe the debt regime: the first *rogatio* in 48 B.C. by Marcus Caelius Rufus and the second *rogatio* in 47 B.C. by Publius Cornelius Dolabella. They were both unsuccessful. The *aes alienum* ceased to have political significance at the beginning of the Principate. Yet, together with usury, it continued to represent a social problem and was subject to regulation.

Finally, I would like to conclude by recalling a fundamental aspect of historical research. The uncertainty generated by noncontemporary and frequently fragmentary literary sources, and the presence of unreliable archaeological, epigraphic, or numismatic data often characterizes historical research, especially that on economic

[66] Bianchini (1974) and Frederiksen (1966).

[67] Cic. *Ver.* 2.2.169–170.

[68] Caes. *Civ.* 3.1; Svet. *Caes.* 42.2; Plut. *Caes.* 37.1–2; App. *BC* 2.48; DC 42.51; 41.37.

aspects of the ancient world.[69] Such a situation inevitably produces partial and faulty reconstructions of the ancient economy. Yet, it is not impossible for us, especially through a comparative approach, to produce plausible and likely interpretations of phenomena of the past.

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[69] *No history of the ancient economy can claim to recover much of what has sunk into oblivion,* so Aubert (2004: 176).

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# The Two-Way Relationship Between Freedman and Business in the Roman World


**Egidio Incelli**

The analysis of the relationship between freed slaves and entrepreneurship—namely the management of a commercial or financial activity, usually located inside one or more buildings (*taberna instructa*)[1]—in the Roman world, has been widely discussed in different fora. The examination of this topic has been often conducted in the wider context of comparative studies on general economic issues and the level of development in the Roman society. Notwithstanding this multiple approach, many scholars have pointed out that philology must remain the leading discipline, in order to avoid an improper superimposition of our perception and culture over the ancient world.

Our knowledge of the link between freedmen and those occupations—first defined as "entrepreneurial"[2] in the fourteenth century, and later, in the eighteenth century—mostly relies on literary and epigraphical sources, widely considered in analysing the complex aspects of the relationship between Romans and economic and financial activities.[3] The most investigated historical period, as well as the richest in terms of sources, has certainly been the "entrepreneurial age"—chronological period starting

[1] Dig. 50, 16, 185. For more information concerning this definition see Cerami and Petrucci (2010, pp. 51–56).

[2] Among the first to connect the term "entrepreneur" with a citizen engaged in economic, financial and commercial activities there was R. Cantillon in his *Essai sur la nature du commerce en général*, printed in 1730. The author categorizes the citizens on the basis of the economic activities thanks to which they are able to survive, using these words: "Tous les ordres et tous les hommes d'un État subsistent ou s'enrichissent aux dépens des propriétaires des terres Il n'y a que le prince et les propriétaires des terres, qui vivent dans l'indépendance; tous les autres ordres et tous les habitants sont à gages ou sont entrepreneurs".

[3] About this subject some works, although not recent and surpassed by later scholars, remain fundamental: Weber (1891) and Rostovcev (1926); very useful the analysis conducted by

E. Incelli (✉)
Dipartimento di Scienze dell'Antichità, Sapienza Università di Roma, Rome, Italy
e-mail: egizio86@gmail.com



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from the first century BC to the third century AD—, as defined by Pietro Cerami and Aldo Petrucci.[4]

A deep look into several ancient authors, particularly Cato, Cicero, Pliny the Elder and Seneca, appears to show that Romans considered deplorable any occupation which involved a direct contact with money, or any activity not directly related to agriculture. In a passage from the *De officiis*, Cicero, following Cato, clearly states this concept by identifying agriculture as the only occupation worthy of a Roman citizen.[5] These words from a senator rightly refer to a hypothetical and somewhat hypocritical "manifesto" of the landed aristocracy; yet a manifesto presenting multiple facets as shown in the work of John D'Arms.[6] In fact, from the third century BC the same members of the senatorial aristocracy didn't disdain carrying out the same occupations they openly condemned in public, as highlighted by Plutarch in a passage of Cato's biography.[7]

Roman *nobilitas*, during Cicero's times, had long since understood the need to find a reasonable compromise to preserve the delicate balance between managing the growing wealth resulting from the conquest of new lands, especially in the East, and defending the tradition (*mos maiorum*), based on the principles of peasant-soldier and household leader (*pater familias*). As recently argued, the faction of Senators who tried to limit the freedom of action of the aristocracy—especially influencing the appointments for the command of the provinces in the late third century BC—acted in order to implement important and decisive laws. Among these was the famous *plebiscitum Claudianum*, voted in 218 BC[8] and aimed at inhibiting any senator from building commercial vessels by imposing a load restriction of 300 amphorae.[9] However, this law, alongside with other sumptuary acts, was not enough to stop the change occurring in Roman society. In fact, the third century BC marked the beginning of a new era with the development of the so called *actiones adiecticiae qualitatis*[10]; these new legal procedures helped Roman aristocracy overcoming any obstacle preventing them from the management of a business, without fear of falling in open contradiction. The first key "tool" upon which this revolution was centred, was the slave, or rather his appointment (*praepositio*) to the management of profitable activities. The immediate advantage of employing an agent, for the senators,

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Romani (1941); more recent is Hopkins (1978); about the transformations undergone by Roman economy during Late antiquity see Mazza (1991); more recently, about general economic phenomena, it is useful to read Whittaker (1993) and Temin (2012); about credit-related jobs see Andreau (2015); a good insight in roman accounting procedures is offered by Minaud (2005); about the overall relationship between Roman Law, agricultural production and financial transactions see Kehoe (2007) and (2015).

[4] Cerami and Petrucci (2010, pp. 20–35).

[5] Cic. *off*. 1, 150–151.

[6] D'Arms (1981, chap. 1 and chap. 2).

[7] Plut. *Cato* 21, 5–8.

[8] Liv. 21, 63, 3–4.

[9] For a deep and recent analysis of the content and historical context of the law see Prag (2016) with rich bibliography.

[10] Ample bibliography about the subject can be found in Miceli (2001).

was keeping themselves at a safe distance from the direct management of financial activities, with a positive effect on their family reputation. This kind of management became more and more effective along with the development of the second tool, this time a legal one, which limited the master's liability towards his creditors. It was the *peculium* (literally "small amount of money"), originally intended to allow those subject to the power (*potestas*) of the *pater familias*, especially his sons (*filii familias*), to make transactions without endangering their father's assets.[11] With the expansion of the slave market and the subsequent rise of chattel slaves, along with an increase in the presence of Italics and Romans on the Mediterranean trade routes, the possibilities available to aristocracy grew. These changes had a strong impact on Roman laws and on the structure of judiciaries. Since the *peculium* was independent from the assets of the *pater*, Romans soon understood that, when assigned to a slave, it could be a sort of secure investment, useful to conduct financial activities without damaging the substances and prestige (*dignitas*) of the Roman citizen.

A short digression is now required. The independence of the *peculium* was far from being perfect, furthermore the institute aimed at meeting different financial needs compared to those we find in the modern era of financial investments.[12] For these and other reasons scholars are still divided between those who see in the *peculium* a suitable managing tool for the assets, and others who consider this as a distorted and misleading idea. Therefore, the point of view from which the institute has been studied so far, has a significant influence on the conclusions and outcomes of different works and essays. Analysis focused on strict legal aspects greatly differ from those based on archaeological, literary and epigraphical data. While scholars of Roman law do not agree on defining as "entrepreneurial" the mentality of the masters who let their slaves manage independent shares of the assets, social history experts, on the contrary, have openly spoken about "manager slaves", albeit pointing out the specific aspects of the ancient context.[13] In addition to this, economical historians have added their own debate revolving around whether Romans were able or not to carry on complex accounting procedures—especially referring to the fact that double book-keeping was still unknown at that time. Although some may think that this was not a relevant factor affecting the way Romans used to manage their businesses and assets, others identify in this lack the main weakness of their economic system.[14]

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[11] The *peculium* and its function have been investigated in different studies, also focusing on the differences between *peculium castrense* and *profecticium*, when managed by *filii familias*. See specifically Albertario (1929, 1931), Archi (1939), Guarino (1941), Nicosia (1960), Burdese (1982), Amirante (1983), Reduzzi Merola (1990, pp. 67–80), Stolfi (2002, pp. 426–435), Hansmann et al. (2005, pp. 1358–1364).

[12] The present study agrees with Brutti (2011, pp. 252–254), who points out the limits of *peculium,* in terms of autonomy and protection of the *dominus*, against whom a third party could resort to an *actio de dolo* when the tool was fraudulently used.

[13] See Jones (2006).

[14] For further details, refer to LaGroue (2014). A different insight is presented by Minaud (2005). It is also worth noting that Romans had already adopted several financial and economic assessment strategies. The increase or decrease of property value in time, as pointed out by King (2011, p. 17),

Due to the impossibility to further analyse these different positions in the current paper, there will be references in the footnotes to the major works on the topic; the paper will, then, focus on a moderately modernist position, through references to past works and some additional considerations on methodology. First, a legal consideration should be made that is reflected in a famous passage of the *Rhetorica ad Herennium*, concerning the ambiguities arising from the drafting and implementation of Law in Rome.[15] The debate surrounding the *peculium* among jurists of middle and late imperial age, as documented in the Digest of Justinian,[16] sheds a light on the different cultural concepts underlying the original formulation and development of this institute. Many scholars, following ancient jurists, have conducted this examination mainly focusing on the beneficiaries of the *peculium* (*filii familias* and *servi*), as defined in Roman legal sources. These studies have remarked the strong subjection of the sons and slaves to the *pater*'s *potestas*, which is thoroughly described by experts of Roman Law, especially in the Digest. However, a parallel investigation on the social context is fundamental when analysing the *peculium* and those managing it. The debates of ancient Law experts (*iurisperiti*) about single aspects of the Roman society and the vast and heterogeneous corpus of their legal opinions (*responsa*), are not enough to get an exhaustive view of that era, if not supplied with further data. As Claude Meillassoux has pointed out, actually, legal aspects concerning slavery in ancient Rome should always be regarded separately from the many different contexts and situations involving masters and slaves.[17] The empirical demonstration of the fact that analysing a society from a legal point of view doesn't provide us with a picture of its everyday life, can be proved by comparing it to current legislation and the condition of women in the western world. Despite a huge juridical production, theoretically suitable to produce concrete effects but whose very copiousness betrays the lack of its effectiveness, many differences between Italian men and women still exist, especially in terms of working conditions. Although employed in the same positions, women still suffer from lower salaries and worse conditions, as showed by official data.[18] However, by looking at this issue under a legal point of view, we easily see a satisfactory balance between men and women, lest a little bit disadvantaging for men.

Given this, although correct under a legal point of view,[19] postulating an identity between the *filii familias* and the *servi* in order to define the role of the *peculium*

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can be found in Vitr. 2, 8, although this accounting system would only spread from the nineteenth century.

[15] *Rhet. Her.* 2, 19–20.

[16] Most of the sources come from Chap. 14 and Chap. 15 of the Digest.

[17] Meillassoux (1986, pp. 10–11).

[18] The recent report published by the Italian Institute for Statistics (ISTAT) about the gap registered in the Country for 2017, shows, for example, that sensible differences regarding salaries and number of individuals in apical positions hasn't changed since 2008. Average women's salary is 24% lower than men's salary. For further data and details see the complete report at: https://www.istat.it/it/files/2017/10/A-Audizione-parit%C3%A0-di-genere-25-ottobre_definitivo.pdf.

[19] For further insights on the contracted obligations when managing the *peculium* see also Longo (2003) and di Cintio (2006).

appears risky. In the Roman society a freeborn son was not a slave, even though, for both categories, a slow evolution of the Law had only started in the Late Republic. Due to his status, the *filius* was more protected compared to those enslaved, notwithstanding the power of life and death of the *pater familias* was still fully recognized during the second century AD.[20]

Vice-versa, a slave was not a *filius familias* and the independence he was given by his *dominus* always originated from practical motivations or advantages, both directly and indirectly perceivable. In addition to this, it must be noted that the legal definition of "thing" (*res*) applied to slaves, meant harsh conditions and, eventually and necessarily, a complete sharing of the masters' mentality, as testified by Petronius' or Martial's work.[21] Furthermore, Romans of the imperial age were conscious tormenters, free of the need to find alibis. They knew that slavery was an unnatural condition,[22] differently from the Greek conception spread during the Hellenistic Period, according to which slavery depended on genetic factors.[23] For the same reason, even though not all Roman citizens were free of misconceptions and biases concerning slaves (rather the contrary), the chance to create effective, or empathic, relationships between freeborn (*ingenui*) and slaves was not impossible.[24] In Rome, the origin of the subordination of individuals to others can be found in the "Law of nations" (*ius gentium*), where, regardless of their abilities or merits, slaves were victims of a tricky fate. The long-lasting contact between the servile, then libertine, staff and the members of the household (*domus*), often begun in the moment of the birth,[25] originated strong bonds, to the extent that many masters used the word "*alumni*" to define their slaves and freedmen, comparing them to adopted children.

[20] Brutti (2011, pp. 147–148) and Pugliese (1991, pp. 377–378). It is worth noting that the slave needed the *administratio* or the *libera administratio* to carry out contractual obligations with his *peculium*, unlike the *filius*.

[21] Trimalchio's sentence in Petron. 75 is paradigmatic from this point of view: "*Nec turpe est, quod dominus iubet*". (There is no shame in doing what the master commands.) These words show, crudely and effectively, how much freely masters could dispose of their slaves, a fact further exemplified by the character's behaviour during the feast. Martial, in several epigrams, refers to sexual intercourse with underage slaves, often victims of a lucrative trade. See Mart. *Ep.* 1, 58. About sexual abuse in the episode of the *Cena Trimalchionis* see Roth (2019), in press.

[22] At this regard, the jurist Florentinus is very clear in Dig. 1, 5, 4, to whom we could add Seneca's impressions, expressed during the first century AD. About the stoical vision of slavery in the Early Empire see Gonzales (2018). During the last two centuries of the *res publica*, by the contrary, the public opinion about slaves often assimilated them to animals, as we understand from the wording of the *lex Aquilia* (Gai. *Inst*. 3, 21 e 3, 214; Dig. 9, 2, 2, *pr*.-1; 9, 2, 11, 6; 9, 2, 21, *pr*.; *Inst. Iust*. 4, 3, 9) and above all from Varro *rust*. 1, 17.

[23] Arist. Pol. 1, 4–5.

[24] See Incelli (2017).

[25] Children born in slavery were called *vernae.*

In this framework, the strict parameters which regulated the relationships between the members of the *familia*[26] tended to fade and blend in a variety of declinations and situations impossible to reduce to discrete categories.

These social ambiguities are the key factors that made it possible, for the institute of *peculium*, to effectively take the shape of an entrepreneurial solution. Once the slave's managing abilities were acknowledged and a strong relationship between him and his master[27] was established, the latter could rely upon his subject, ensure him more freedom and provide him with all the necessary means to operate for the well-being of the *familia*.[28] In this perspective, masters often organized their servile personnel in a hierarchical way to facilitate the management of their financial and economic activities. In case of particularly complex or vast operations, a coordinator slave (*servus ordinaries*), was chosen to oversee the work of other slaves (*vicarii*), often included in his *peculium.*

So, basically, at the end of the first century BC there were different scenarios whose main actors were those who Jean Jacques Aubert, consciously forcing the terminology, defined "manager slaves", bond to one or more masters acting as investors. Economy historians—accustomed to modern definitions—would be more cautious in detecting traces of an entrepreneurial logic in the entrusting of assets to slaves. They would also struggle to identify a true entrepreneur, at least if we consider the current definition under art. 2082 of the Italian Civil Code, that states the following:

> An entrepreneur professionally carries out an organised economic activity aimed at producing or exchanging goods and services.[29]

Masters certainly provided the assets for the creation of organized activities, but they only financed the business, leaving the management to slaves. On their side, slaves worked as entrepreneurs, at least according to Richard Cantillon's thought, but they were also considered as means of production, given their lack of legal capacity. It is worth noting, as Alfons Bürge correctly did, that slaves were hardly appointed for the management of large asset shares. If we look at senators and knights, the highest echelons of the Roman society, we cannot but acknowledge that activities other than the agricultural ones had an absolute marginal impact on the asset, firmly anchored to land revenues, which always remained a necessary and vital base. Masters saw the entrusting of *peculia* to highly qualified slaves as a good integration of the revenues of their servile *familiae*, the risk of which, despite the volatility of economic and commercial activities, could be controlled and contained

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[26] A term used for both "assets" and "family", despite originally only used to indicate the assets. About this subject see the detailed analysis of the word, in comparison with "*domus*", in Saller (1994, pp. 74–101), and more recently Corbino (2010).

[27] Some masters trusted their slaves at the point of leaving them enough freedom to handle delicate assignments. This grant was not always repaid with loyalty, as we can read from Cic. *Att*. 7, 2, 8.

[28] Very interesting, at this regard, is the hypothesis formulated by Roth (2010), concerning the importance of informal manumission for masters aiming at the exploitation of their freedmen with the status of Junian Latins.

[29] Original text: *È imprenditore chi esercita professionalmente una attività economica organizzata al fine della produzione o dello scambio di beni o di servizi.*

thanks to the *actiones adiecticiae qualitatis.* A further element that distinguishes the *servus cum peculio* from the modern entrepreneur, then, can be seen in the constant will of the slave to get the complete satisfaction of his master, true owner of the *peculium*, the business and his very life. In other words, although the success of his *taberna instructa* could become the main goal of the slave's work in the long term, this was usually not the case in the first place. Usually the slave only aimed at living a serene life, gaining more rewards from his master. His commitment to the *taberna instructa* was the price he had to pay for that.

The real premises for the definition of a role similar to the entrepreneurial one arose after the slave's manumission (*manumissio*), which in Rome had the positive effect of ensuring him freedom and citizenship. In the following pages, the conclusions reached by Henrik Mouritsen in his work on the freedmen in the Roman world will be used as a necessary background. As he correctly pointed out, fear of his masters was not the only reason the slave had to give his best in managing a *taberna instructa.* The opportunity of being manumitted, acquiring full Roman citizenship, played a major role in defining his choices. Furthermore, despite their legal status, masters and slaves were often tied by relationships which went far beyond those of dependence, especially when the slave was a specialized worker, could read and write or simply spent more time with his master. The pillar of this kind of relation, where boundaries between those involved could lose effectiveness, was the trust (*fides*) between master and slave, which could also involve sincere affection as already said. The nature of the relationship between slave and master could also affect the way slaves were manumitted.[30] Once become a freedman (*libertus*), the slave acquired his own individuality and several rights, certainly limited if compared to those of the freeborn—suffice to say the lack of passive voting right or the consequences of the bonds deriving from the patronage—, but enough to ensure him the legal control of his assets, an element of particular importance with regard to the scope of this paper. Freedmen, unlike slaves, were fully entitled to make transactions and sign contracts for themselves.[31]

Since Paul Veyne's studies[32] until the most recent discussions on the subject proposed by Henrik Mouritsen,[33] the analysis of the freedman, and specifically the (more or less) independent freedman engaged in productive and commercial activities, found its necessary starting point in the surviving passages of Petronius' *Satyricon.* The episode of the *cena Trimalchionis* stimulated a strong interest for the dynamics it describes. The main character of the passage is *Caius Pompeius*

[30] Mouritsen (2011, pp. 36–51) and Incelli (2017).

[31] As Marcian clearly states in Dig. 15, 1, 40, in slave-conducted business the *peculium* was to be considered an independent entity, not the slave managing it. As Ulpian further specifies in the following Dig. 15, 1, 41, slaves couldn't possess anything, nor being anyone's creditors or debtors. In this regard, however, the conclusions reached by Longo (2015) about the legal protection granted to the slaves' negotiation exercise between the second and the third century AD are very interesting. About the "imperfect reification" of the slave as a legal person see Stolfi (2002, pp. 394–405) with bibliography.

[32] Veyne (1961).

[33] Mouritsen (2011, Chap. 6).

*Trimalchio Maecenatianus*, a notorious member of the association (*collegium*) of the *Augustales*,[34] which Petronius describes as a sort of stereotype of the enriched freedman. This character, although literary, is very interesting for the study of Roman society. Born a slave and entrusted by his master for the management of assets and financial investments, once freed, *Trimalchio* decides to invest in sea trading and later to act like a local aristocrat, converting his revenues to lands. A behaviour which empirically reflects Jung's thought about the fundamental role of imitation in any social structure.[35] Despite the parodic style of narration, Petronius' depiction of an entire social category, or at least of some of its most exuberant members, certainly rested upon real elements. For the scope of the present analysis, some of *Trimalchio*'s words offer interesting reflections:

> When I discovered I had as large an income as the whole revenue of my native land amounted to, off hands; I withdrew from commerce, and started lending money among freedmen.[36]

The freed slave ceases to exercise his trade and starts financing other freedmen. The text does not provide us with indications on the identity of these freedmen's patrons. It has been generally accepted that the text refers to *Trimalchio*'s freed slaves, but this information is not clearly expressed in the text, nor elsewhere. The nature of the activities *Trimalchio* decides to sponsor has been deemed unworthy of attention as well, although it can be implicitly linked to the freedman's previous business. Who received *Trimalchio*'s financing then? What kind of business did these beneficiaries conduct? Were they bonded to him by direct patronage? The answers to these questions could appear obvious, in the light of the abovementioned sources and studies. Due to the infamous reputation arising from direct management of economic and financial activities, the only possible entrepreneurship in Roman society was a "necessity entrepreneurship", ephemeral in nature and not open to further developments. In other words, no one dreamt of becoming a manager in Rome. However, once manumitted, after his 30th birthday[37] if the master was alive and wanted to grant him full citizenship under the dispositions of the *Lex Aelia Sentia*, or more luckily for him by will, the slave appointed for the *taberna instructa* still faced several obstacles. Even if he was lucky enough to become owner of his old *peculium*, it was very difficult for him to find a new job qualification. Therefore, in many cases freed slaves were forced to remain in the same business and since they totally shared their masters' mentality, freedmen tried to ensure their successors a

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[34] *Collegia* had an important role in Roman towns. The *Augustales* were born during Octavian's rule, and they originally administered the imperial cult activities. Later on, the membership of the *Augustales* became a status symbol for citizens who weren't allowed to get involved in politics because of their status, namely freedmen, whose sons often became decurions. About *Augustales*, other than Duthoy (1978), see the recent observations in Mouritsen (2011, pp. 249–260) with bibliography.

[35] CW 7, 463.

[36] Petron. 76, 9–10: *Postquam coepi plus habere quam tota patria mea habet, manum de tabula: sustuli me de negotiatione et coepi libertos fenerare.*

[37] About the slaves' average age at the time of manumission see Mouritsen (2011, p. 133) with bibliography.

better destiny than their own, namely a respectable social reputation, a wealth based on land property, a clear and safe distance from salaried work and trading.

This was usually the last stage of the emancipation from the master. The freedman, while a slave, had no chance to choose the job his master appointed him for, since this choice was based on the skills showed by the slave. Furthermore, even despite the slaves lacked a clear attitude for math or accounting, the master could decide to pay for their education, to subsequently appoint them to specific activities. This is a relevant element, so far underestimated by those who see the *peculium* as another expression of the traditional Roman values. Providing slaves with a specific education, and thus a specific job or role,[38] was clearly part of a business plan designed by the *pater familias*. In such cases, the appointment of the slave started when he was young, bonding his destiny and identity to the future activity. In other words, that moment marked a turning point for many slaves, who were given a defined social dimension. This is clearly reflected in onomastics. Epigraphical sources offer a set of names like *Philargyrus* (silver/money lover), *Faber* (artisan/carpenter/blacksmith), that truly identify tools (*instrumenta*), that only later had become men, women and citizens.

Clearly, for these freed slaves, the idea of quitting their life job or activity was not easy nor automatic, even though, as freedmen, they could improve their social condition. Furthermore, in most of the cases, the patron was the first to persuade the manumitted slave to continue his previous activities, even though, sometimes, by granting him full property of the old *peculium*, the old master was the one offering (or better conceding) his freedman the necessary funds to launch his own business.[39]

The psychological aspects of a life spent managing a semi-independent activity resulted in the continuity of some *tabernae instructae* for more than one generation. At the end of their lives, some freedmen tended to consider their management experience as a good, a legacy to be left to future generations while also granting a future to a business which had become more than a simple occupation (*quaestus*). In these rare but significant cases, in fact, the freedman's intention was to leave the *taberna instructa* in the hands of one or more of his freedmen.

The vision a freed *pater familias* had of his sons, slaves and freedmen must be somewhat different from the one of freeborn Roman citizens. The tendency to create a quasi-filial relationship with some slaves must have been stronger in those cases, because the freedman's natural children, if born after his manumission, had better perspectives and a higher social status than their father's. For his *filius familias*, the freedman wished a wealthy, socially respectable life, in some cases even a political career, hoping the son could hide the origins of his fortune. In other words, the *pater familias* censured himself for the sake of his descendant. It must not be infrequent, then, that once his son was in the hands of institutors and pedagogues, the freedman tried to avoid talking to him about his forgettable past. However, the industriousness

[38] A phenomenon already discussed by Mohler (1940), and later analysed by many other scholars.

[39] Even in the case of very lucky freedmen, naturally, the duties connected to patronage and the tight relationship with the liberators created a situation we could define of "qualified clientship". However, epigraphic data show that this circumstance was rare and manifested itself only in particular conditions. For a specific discussion on the subject, with the presentation of several case studies, see Incelli (2018).

(*industria*) which had provided the freedman with a social advancement was a source of pride for him, as Roman rhetors well knew, although they didn't share the freed slave's mentality.[40] Behind that busy life, dedicated to work, some freed slaves had a true vision, which had generated a wealth only imaginable otherwise. Inhibited from sharing his past with his *filii familias*, the freedman could have been eager to share it with those who had worked with him in the *taberna instructa*, his slaves. This staff, maybe once part of his servile *peculium*, had become very skilled under his direction and was surely able to guarantee a positive continuity to the business, both as a legacy for the freedman's descendant, and as a fruitful source of social advancement for the slaves.

This choice was not automatic for the freedman. Basically, it had to rely on a sincere affection for the *taberna instructa* and the wish of keeping it active. The most socially accepted option, in line with the social parameters of Roman society, would be to shut it down, to subsequently reinvest the resulting sum in assets and lands. The staff could be easily reemployed in household or agricultural activities. Furthermore, since the premises were often located in manorial estates or rented out by the patron, whose relationship with his freedman usually remained very strong, this situation would have been quite an exception. It is not a surprise, then, that only a few epigraphical sources clearly testify this handover within the servile and libertine *familia*. These texts refer both to small business, and to major financial and market investments.

A small funerary table of the first century AD commemorating two men freed by a *Marcus Sergius*, *Philocalus* and *Eutychus*,[41] proves to be quite interesting from this point of view. *Philocalus* was a carpenter specialized in the creation of wooden planks for building activities (*axearius*). As an apprentice, the freedman had picked up the slave *Eutychus* ("good luck"), manumitted after some time and become the heir of his former master's shop. It is no coincidence that the names of the two men are placed in the same central position on the table; the freedmen had worked together during their lifetime and had shared the same social condition, notwithstanding the patron-freedman relationship.

Same applies to a coeval funerary inscription found at *Aquileia*,[42] which records the death of two freedmen: *Castus* and *Fuscus*. Along with their fellow freedwoman *Prima*, they were members of the libertine *familia* of a *Marcus Pullius*, who had appointed *Fuscus* to the job of dyer. Upon *Fuscus*' death, the *taberna instructa* he was managing kept functioning thanks to a new manager. His apprentice, though, was not one of his slaves, but *Hormus*, a slave manumitted by *Prima*. The inscription, as argued by those who studied it, doesn't shed enough light on the nature of the

[40] Quint. *inst*. 11, 88.

[41] CIL, VI 9215 = ILS 7626b.

[42] CIL, V 1044.

relationship existing between the recorded freedmen,[43] but it is suggestive to hypothesize an overlap between household and business. The dyer could have decided to pass his knowledge to the slave with whom he and *Prima* worked every day, even though he was not directly bond to him by patronage. Thankful for the trust accorded to him, *Hormus* would also give his share to build the monument. Another interesting element of this inscription is the presence of a fifth man who paid for the inscription: *Marcus Flavius Ianuarius*, whose name suggests servile origins but whose family name is different from the others.

A further case, this time concerning the transfer of a different kind of knowledge, is one of a doctor (*medicus*) from *Aeclanum*, *Fulvius Soterichus*, a freed slave who—in the first century AD—learned and inherited his job from his patron, the rich freedman *Lucius Fulvius Herophilus*.[44] Thanks to his wealth, *Herophilus* had entered the prestigious association of the *Augustales*[45] but the wealth accumulated for his natural heirs hadn't inhibited him from transferring his professional knowledge to his freed slave. Beside the personal relationship between *Soterichus* and his two patrons, the other one being the freedwoman *Fulvia Prota*, *Herophilus'* wife, the apprentice had a strong bond with many other people of the same household, as shown by his long dedication. Among the dedicatees there are other three *Fulvii*—probably freedmen of *Herophilus'* judging from their surnames and the three names formula without filiation—, the mothers of two of them and a *Babbia Vitalis*. Only at the end of the list we find two freeborn *Fulvii*, probably *Soterichus*' children. The order given to the names listed on the inscription shows how much *Soterichus* cared for his patrons and for their legacy, even at the expense of his own heirs. If the other *Fulvii* mentioned in the text were indeed *Herophilus*' freedmen, that would mean *Soterichus* had been chosen by his patron because he was a better apprentice than the others. Even the freedman's name, which means "saviour", could have been given to him by *Herophilus* after his final choice. The knowledge the patron had passed to *Soterichus* had become the source of his fortune, but from his former master he had also inherited a vision and the pride of being a professional. Probably those who knew him weren't surprised when the doctor, following *Trimalchio*'s example, commissioned his funerary monument while still alive, honouring his patrons' memory and putting his name on top of the inscription.

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[43] Buonopane and Cresci Marrone (2017), the text interpretation is fully shared by here, although the authors focus too much on the *operae fabriles* due by Hormus to his mistress. About the institute of the *operae*, the difficulties faced by the *domini* in requiring their slaves to perform the same work they did during slavery, and the difference between *operae officiales* and *fabriles*, of which we are informed by sources coming from a later period, see Masi Doria (1993, pp. 58–73). A similar opinion about the irrelevant economic value of *operae* is shared by Barja De Quiroga (2010, p. 328).

[44] AE 1997, 394 = AE 1998, 378; *SupplIt* 27 (2017, pp. 186–188, nr. 30).

[45] See above note 34.

These cases are clearly referred to small entrepreneurial realities, where characters managed individual or family businesses, eventually sharing their knowledge and their contacts with selected co-workers, later to become the new managers of the *taberna instructa.* The relevance the freedman gave to skills and commitment when choosing the next manager, who therefore gained a better position in the *familia* as shown by inscriptions, is a very important factor. Besides judging the results achieved by those subjects to their power, indeed, these freed slaves committed to business had developed a real entrepreneurial mentality. In other words they were inspired by a true vision, the same they tried to pass to their own slaves to ensure the best future for the activity. This topic becomes more complex and fascinating if we shift the analysis to financial activities, a field where Jean Andreau's works remain fundamental.[46] Along with the important case of the *Sulpicii* from *Puteoli*, deeply examined by Giuseppe Camodeca,[47] there were other important *familiae* we know from epigraphy: the *Egrilii* from *Ostia*[48] and the *Publii Caucilii*.

The *Publii Caucilii* lived in Rome during the reigns of Augustus and Tiberius. From two epigraphical sources related to them,[49] we understand that a patron had appointed four of his many freedmen, *Felix*, *Speratus*, *Salvius*, and *Helles* to work in the wine marketplace (*forum vinarium*) as *argentarii*, i.e. responsible for loans and payments. A fifth freedman mentioned in the inscriptions, *Callippus Felix*, was not involved in such activities. The know-how acquired by the four *argentarii* was transferred to other members of the servile, then libertine *familia*, but the logic behind the process didn't agree with patronage bonds, instead it depended on the skills and capacity shown by their slaves. This is demonstrated by the fact that *Eutychus*, *Hyginus* and *Eros*, *Callippus Felix*'s or maybe one of his freedmen's freedmen, became *argentarii*, even though their patron never worked as such.[50]

The story of the *Publii Caucilii* not only shows the functional transmission of entrepreneurial skills from freedman to freedman for the continuity of the *taberna instructa* and for the patrons' wealth, but also the clear intention of freed slaves to entrust only the best of their employees with the managing of the business, independently from patronage bonds. Even in this case a new generation of manager freedmen was chosen following entrepreneurial criteria to achieve better profits, resulting from the transmission of the skills possessed by former managers. Another conclusion can be added to this one, precisely related to the importance held by the trust for the success of client-business relationships, as happens today. The constant

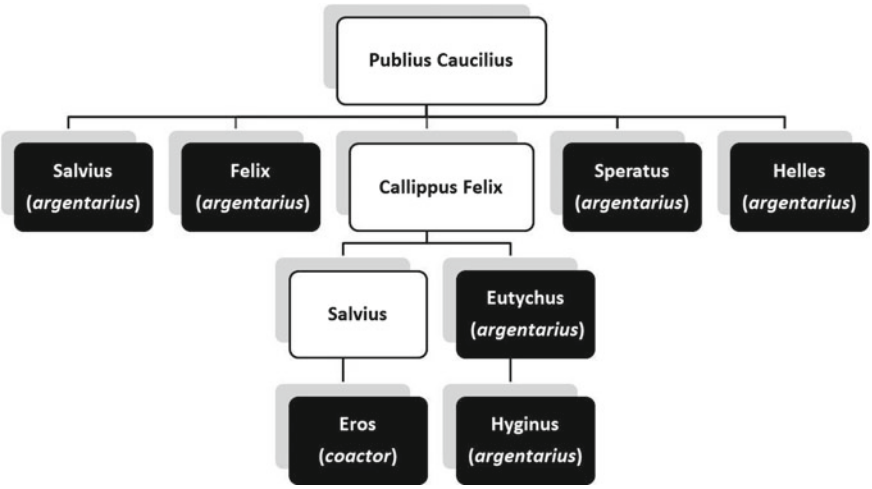
[46] Andreau (2015).

[47] Camodeca (1999).

[48] About the *Egrilii* see Barja de Quiroga (2010), whose conclusions about the patron-freedman realationship are very interesting.

[49] CIL, VI 9181; CIL, VI 9182 = ILS 7502.

[50] A third slave manumitted by *Callippus Felix*, whose name was again *Salvius*, doesn't seem having kept managing the enterprise, even though it is not possible to completely rule out the hypothesis that CIL, VI 9182 recalled him and not a homonym. This possibility, though, is highly doubtful because the monument curators define themselves *Lysimachi et Callippi libertorum*, probably in order to mark a distinction between them and the first slaves freed by *Publius Caucilius.*




The branch of Publius Caucilius' *familia libertina* whose members were engaged in business activities

generational tie between a family name and a *taberna instructa*, improved its reliability, encouraging more users to resort to the same libertine *familia* during the years, even though the first patron, often an aristocrat, was not linked, even indirectly, to the business. As a final observation on the *Publii Caucilii*, it is worth noting that in order to further limit the risks connected to a credit activity, the original patron chose to appoint four freedmen to the management of a business that was considered unpredictable even in ancient times.[51]

Despite their limited number, these and other few cases testify an interesting social and anthropological phenomenon: the existence of a true bi-univocal relationship between some freedmen and *negotia* in the Roman world. The dynamics ruling the transmission of entrepreneurial know-how to slaves—both belonging to the master or to other people—employed in the *taberna instructa* and later manumitted, are somewhat similar to the current principle of competent managers, who often take the place of the owner's children and inherit companies. However, given the specific dynamics of Roman society, the reasoning behind the freedman's choice was totally different from that of current owners who prioritize their business more than their family's well-being. This choice became almost automatic if the freed slave assigned to a successful *taberna instructa* aimed at improving the social standing of his heirs, who could invest business profits to start a political career, detaching themselves from direct management. By contrast, the freedman looked at his slaves—or employees—, gaining more and more managing skills, acquiring experience, getting acquainted with his customers and working on the reliability of the business. In other words,

[51] About this see Ligios (2015) with bibliography.

the freedman watched them facing the same challenges he had faced back in his days of slavery. The psychological relationship between a freedman patron and his subordinates had a double nature: on the one hand he felt rightfully superior to them, as master and patron, on the other hand he vividly remembered the time when he shared their same objectives. For the freed manager slave, finally emancipated, business had never been a marginal investment, rather torment and delight, a source of concern, the basis of his social standing and the ultimate reason of scorn for other respectable Roman citizens. Since these past experiences remained part of a collective memory, the servile and libertine *familia* could truly become a dimension where all the members shared the same aims and ideologies, conditions which Max Weber, and the author of the *Oeconomicon* before him, deemed essential for the rise of the modern capital economy.[52] In many ways, indeed, some libertine households could share a different idea of prestige. However, *dignitas* was not a concept open to debate in Roman society. Only the political career of the *filii familias* was an indirect source of real prestige for freedmen, the only one acknowledged by the rest of their fellow citizens, as we can deduct from a few epigraphical texts, in which freed slaves didn't mind showing their identity.[53]

The side effects of the continuity of Roman social models prove to be interesting. The *familia*-model business, by using an ad hoc expression, was based on factors that are still important today for many solid and successful family businesses.[54] The founder, in this case the freedman who firstly transformed his patron's activity in a successful business, by choosing to raise the overall business value, transferred his knowledge to a manager bearing his own family name, even if he was not one of his relatives. The choice of the successor, whose relationship with the patron was sometimes marked by sincere affection and a common vision, spread new life and skills in the *taberna instructa.* Recent reports on the performance of Italian family businesses show that opening leading working positions to third people plays a critical role in terms of longevity and success. Roman freedmen who had reached the independence from their patrons and decided not to shut down their *taberna instructa*, by manumitting their slaves or training those freed by other members of the libertine *familia* gained the double advantage of freely choosing their successor, avoiding pressures from relatives and ensuring positive continuity to the business. As seen before, the use of the same family name and often of the same surname as

[52] See Bertram Schefold's contribution in this volume.

[53] See for example CIL, IX 2128 or AE 2013, 216. As clearly shown by Suet. *Aug.* 2, 3 this could negatively affect the freedmen's children's *cursus honorum*, so it is not surprising to see that such tombstones usually appeared only after the son had reached a higher social status. See also CIL, V 6896, an interesting example of family depiction made by a soldier and town magistrate, who in his will gave instructions to build a monument which records his grandmother was a freedwoman but omits the status of his grandfather, easily identifiable as a freedman from his *cognomen.*

[54] This is shown by the data gathered by the AUB Observatory on Italian family businesses, whose Eighth edition (2016) has been edited by G. Corbetta and F. Quarato. The report is available at the following http://www.aidaf.it/wp-content/uploads/2014/08/8%C2%B0-Osservatorio-AUB_-2016.pdf.

well in the owners' onomastics, a primitive form of branding, certified the quality of the *taberna instructa*, with a decisive impact on reliability and profit.

To conclude, the abovementioned cases show the importance of questioning the origins of *Trimalchio*'s freedmen. The rich *Augustalis* had given up the direct business management and paved the way for his son thanks to his parading of social prestige and the establishment of useful relationships with political representatives of the local community. However, financing other freedmen, both his or other's, preventively and properly trained, ensured him the continuity of his old commercial businesses, trustworthy enough for him to continue investing in them. "I quitted business" ("*Sustuli me de negotiatione*") Petronius makes *Trimalchio* say, without further details on the destiny of his assets and staff, probably already safely assigned to other *Caii Pompeii* ready to inherit the management of that business.

The feeble parallelisms with the modern era clearly stop here. The very nature of the relationship bounding the ancient owner and his personnel inhibited the rise of an entrepreneurial class. The social prestige arising from giving up direct business management in exchange for indirect financing, loans and lands was the real achievement here, not the business continuity.[55] Even though a change of mentality could sometimes occur in specific circumstances, those who experienced it were not eager to further spread their ideas. Once again, we cannot but acknowledge the extraordinary ability showed by Romans in convincing their slaves to accept that same aristocratic social structure from which their misery originated. An ideology whose simple and ruthless logic effectively prevented the development of some important social changes. We need to wait for the industrial revolution to see a real entrepreneurial dimension become strong enough to overturn the power of the landed aristocracy.

Yet that vision, found among marginalized social classes, often lacking self-awareness, existed in Roman times, and denying that the servile *peculium* could sometimes show the features of a real investment would be an exaggeration.[56] Such a reasoning, concerning this peculiar phenomenon, finds its place in the wider enquiry about ancient Rome's missing industrial revolution. Kyle Harper and Willem

[55] The hostility of Roman aristocracy towards financial and commercial business was not categorical, as shown by D'Arms (1981) and, more recently, by Mouritsen (2011, pp. 208–212), who takes into examination the indirect involvement of local élites in business management.

[56] Bürge (2010). The solidity of some of the author's arguments, aimed at showing a substantial functional identity between the *peculia* entrusted to the *filius familias* and to the *servus*, doesn't characterize the following reasoning, who fails in finding alternative proposals for the reading of the *peculium*. Bürge himself cannot but avoid pointing out the fact that from more independent slaves, masters expected tangible results in the field of economic and financial activities. Refusing to see the *peculium* as an investment the master made on the slave means ruling out the fact that even if masters couldn't control their distant slaves' activity (a distance, it is worth remembering, chosen by the *dominus*) this didn't put at risk their wealth, not even when the slaves acted as simple *praepositi*. Masters could rest easy, thanks to shackles, crosses, nooses, collars, whips and other instruments of torture and death, whose use could be delegated to specialized staff and whose efficiency as a deterrent was more than real. Slaves planning an escape, a fraud or simply lacking enough self-confidence to risk their masters' money investing it, usually chose to change their mind to avoid putting their safety at risk.

Jongman,[57] especially considering archaeological data in the light of the new statistical tools, have recently reaffirmed their position in this regard, arguing that the Roman Empire did not lack the conditions necessary for the rising of a different model of society. In addition to this, other historians of the industrial revolution, opposing the traditional vision of the problem and following Nick Crafts' arguments,[58] remark how the technological and economic development faced by England in the eighteenth century, was just one of the many elements that contributed to the phenomenon, alongside important cultural and social factors, with special reference to the acknowledgment of the dignity of the bourgeoisie.

The ability showed by Romans in maintaining an enduring and widespread consensus to a social system based on tyranny and inequality demanded a high price in terms of technological, economical and socio-political development.[59] The Empire couldn't but catch a glimpse of what his future could have been with different conditions, the spark of a missed revolution, some traces of which still survive in a few stories told by precious stones.

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[57] The reference is to Harper (2017) and Jongman (2014).

[58] Crafts (1977).

[59] In this regard, however, some questions remain debated, namely the weight of chance in social evolution. It would be a mistake to give too much credit to literary passages like the famous Suet. *Vesp.* 18, which describes Vespasian denying a technician (*mechanicus*) the opportunity of realizing new machinery to lift heavy loads, for the sake of labour market.

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# Slaves Sales in the Roman Empire and Perspectives of Comparison


**Francesca Reduzzi Merola**

Scholars who intend to study Roman economy must necessarily address the topic of slavery. Present in every ancient civilization, only in Rome slavery received complete legal regulation and capillary diffusion. During the archaic age the phenomenon was not particularly widespread, since the arrival of large masses of slaves, mostly prisoners of war, took place only with the beginning of Roman expansionism, and reached its peak between the II cent. BCE and II cent. CE.

*Servi* (according to the most common denomination, but they were called also *homines*, *mancipia*, etc.) were employed in every sector of production, thus allowing us to use the Marxist expression "slave mode of production" regarding the economic organization of ancient civilizations, especially the Greek and Roman ones.[1]

As a matter of fact, slaves appear in most texts of juridical interest of the Roman world, both as mere objects and protagonists. A large part of these sources concerns legal transactions and, therefore, activities which are directly or indirectly relevant for economy.

As part of the research on Roman economy and the role played by slavery, it is essential to discuss, at the beginning of my contribution, the questionable argument advanced and reiterated by prof. Morris Silver, Emeritus in the Department of

[1] Marxian thought on ancient slavery and the "Asiatic mode of production", as is well known, is mainly expressed in Karl Marx, *Grundrisse der Kritik der politischen Ökonomie*, written in 1857–1858, but published only in 1939–41; for an English translation see Nicolaus (1973), and especially the Chapter "Forms which precede capitalist production. (Concerning the process which precedes the formation of the capital relation or of original accumulation)". Recently on the *Grundrisse* Musto (2008); see also the Marx's *Capital* (1887) Part 3, Chap. VII, Sect. 2. An important approach to Roman slave economy, from a Marxist point of view, is De Martino (1979, esp. 69–85; 263–293 and 409–429). Further considerations about "chattel slavery" and Marxian theories in Konstan (1975, 145–169); on the Italian debate, very interesting the insightful discussion by Mazza (1976, 95–124).

F. R. Merola (✉)
Dipartimento di Giurisprudenza, Università di Napoli Federico II, Napoli, Italy
e-mail: reduzzi@unina.it



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Economics at New York University. In his 2011 essay,[2] Silver identified "contractual slavery" as the most frequent type of subordination present in Rome, in his opinion determined by the self-sale of free individuals as slaves, i.e. a "voluntary slavery". If his hypothesis (provocative, I would say) were true, one should consider false all the evidence, above all legal, on the ways of acquiring a servile condition, on slave trade, on the treatment of slaves by the owners, on the ratio of legislative interventions regarding the position of *servi*[3]…

The same scholar returned on the topic in 2016 with another long study entitled "At the Base of Rome's *peculium* Economy"[4]; the slaves were encouraged to have a *peculium* to carry out economically relevant activities—he claims—because they were "voluntary slaves"; in fact, according to the scholar, slaves born at home or those reduced to slavery by war imprisonment were not sufficiently encouraged by the *peculium*; the voluntary ones, on the other hand, could expect to be freed after about six years,[5] and once freed they would fully enter the mechanisms of Roman economy. Everyone can see how these theories are unacceptably forced, since they not only lack evidence to back them or even worse because they often misconceive the sources.[6]

Considering, however, that the purchase of slaves sold by private owners, by agents (subordinates, as children, freedmen or slaves) or by slave traders, the *venaliciarii*, was one of the most widespread ways to obtain manpower, we must turn to the legal texts and to the documents of legal practice to understand the features of slave sales in the different parts of the Roman Empire.

After the effort made by Augustus to unify and bring peace to all the territories under Rome, during the following decades and at the same pace of the imperial expansion and the connected diffusion of Roman law among provincial citizens, took place a standardization of legal practices culminating in the years following 212 CE, when the edict of Caracalla granted Roman citizenship to all free inhabitants of the

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[2] Silver (2011, 73–132).

[3] Needless to say one does not want to overlook sources such as Ulp. 10 *ad Sab.*, D. 28.3.6.5, discussed in the essay quoted in the preceding footnote, in which there are references to free individuals who sold themselves as slaves, but these do not seem the predominating cases of Roman society. On this problem cf. Peppe (2009, 159–161; 2010).

[4] Silver (2016a, 67–93). See also Silver (2013, 53–61; 2016b, 184–202), where Silver argues that at the beginning of the Principate the majority of slaves in Rome were "voluntary" and precisely "self-sellers", individuals who had sold themselves in the great markets of the Greek East with the hope of finding in Rome a better future and better job perspectives. On the number of slaves in Roman world and on the modes of enslavement cf. Scheidel (2011, 287–310).

[5] Silver (2011, 92–93), on the basis of Cic. *Phil.* 8.11.32. The six year period of time mentioned by Cicero goes from Caesar's passing the Rubicon to the date when the oration was delivered; the text relates of a much longer period than that endured by "good and hardworking" war prisoners (*Etenim, patres conscripti, cum in spem libertatis sexennio post sumus ingressi diutiusque servitutem perpessi quam captivi frugi et diligentes solent, quas vigilias, quas sollicitudines, quos labores liberandi populi Romani causa recusare debemus?*): nothing allows to consider 6 years as the average period of "self-enslavement" since here Cicero is speaking about *captivi*!

[6] As in the case related above in nt. 6.

empire (apart for a few and discussed exceptions).[7] From that moment on, in fact, all citizens who wanted to do so could litigate according to the principles of the *ius Romanorum* but, as we shall see, even before, parties who were not Roman *cives* could turn to the provincial governor rather than rely on local law to solve private disputes.

Here, I am interested in comparing some documents, especially the *testationes* (declarations with probative value) of the slave sales made in different parts of the empire between the first and third century CE.

I therefore will examine four documents: the first was found in Herculaneum, and it is dated first century CE ($TH^2$ 60)[8]; the second was found in Dacia (March 17th, 139 CE, *FIRA*. III 87); the third was discovered in Londinium (first-second century)[9]; and, finally, the fourth: a papyrus from the Middle Euphrates (number 6 identical to number 7, two copies of the same document, written in Marcopolis on November 6th, 249 CE in the prefecture of Mesopotamia and Osroene[10]); all probative declarations.[11]

First of all, we need to look at the milieu: the Herculaneum document was performed within the municipal elites, thus in a class of individuals with considerable financial possibilities[12]; in Dacia we are probably facing foreigners who inhabited villages; for the tabula of *Londinium*, a vicar slave of a *servus Caesaris* and a foreigner (but the location where the purchase was made remains unknown); the papyri of the Middle Euphrates, on the other hand, give us an account of the daily life of inhabitants of small villages.

All those who buy in the various parts of the empire, be they citizens, women, foreigners or slaves, do so according to the principles of Roman law; the forms are similar (with the differences that we will examine shortly). In the documents we find the characteristics of the slave-girl (or slave-boy) who is being sold, the age, sometimes the nation and the guarantees for latent defects. The formulary of *mancipatio*,[13] which appears in the documents written in Latin, has been variously interpreted: it is my opinion that the solemn act of *mancipatio*, required by Roman law to transfer the ownership of a "*res mancipi*" as was a slave, was not carried out in this particular case; this act, in effect, could only be accomplished by Roman citizens with the presence of witnesses, not by foreigners, let alone by slaves. Although some scholars believe this *mancipatio* did not have the same effects as a "normal" one,

[7] Among the recent studies see Corbo (2013), Purpura (2013, 73–85), and Marotta (2009).

[8] I quote following the new edition by Camodeca (2017, 169–176).

[9] It is the *emptio puellae Fortunatae*, the *Tabula Londiniensis* edited by G. Camodeca, in the *cura secunda*, Camodeca (2006, 225–230), who corrected the mistakes of the author of the *editio princeps* by Tomlin (2003, 41–51).

[10] Feissel et al. (1997, 3–57).

[11] The texts are quoted at the end of this paper.

[12] Above all, Camodeca (2000, 99–119), and many other authors in the same volume.

[13] In the papyrus from Euphrates one reads (I translate the Greek) «Having received the price from the buyer (female), the seller (female) has delivered to her (verb *paradídōmi*) the slave to possess, to own, to sell, etc.» (*eis tò échein*, *ktâsthai*, *pōleîn*, and other verbs indicating the capacities of the owner).

as if it were a "degenerate" *mancipatio*, in the light of all the available documents I would say that its presence is due to the chosen formulary, reproduced in a pedestrian way. A piece of evidence reinforcing this hypothesis comes from the *testatio* of a sale of a *puella dacica* (in *FIRA*. III 87). In this document we find a wrong reference to the eviction *pro parte* with the locution "*ex eo*" (instead of "*ex ea*"). The mistake seems to derive from a standardized formulary: the slip of the scribe (who mistook the reference to the masculine instead of the feminine) is a symptom of the use of formularies prepared by legal experts certainly circulating in the provinces.[14]

As far as the *pretium* is concerned, it is possible to provide some elements thanks also to the very recent discoveries: in Dacia a *puella* was worth 205 *denarii*; in *Londinium* a slave was sold for 600 *denarii*[15]; in the Tabula of Herculaneum[16] under investigation the figure is missing, but we know that in the same town, in the same years, 2825 *sestertii* were paid for an adult slave (a *homo*, about 700 *denarii*[17]); in the Euphrates papyrus number 6: 600 denarii for a slave-boy "more or less" 13 years old, but 700 *denarii* for a slave-girl of the same age (Pap. Euphr. 8).[18] It is possible to compare this information with that given by a famous *Epistula* by Horace, the second of the second book, where in verses 1–19 we find in a poetic form the sale of a slave-boy for 8000 *sestertii*.[19] The price is significantly higher if compared to those just mentioned in the documents under examination, but perfectly understandable for a sale made in the *Urbs* of a *puer* with diverse and appreciable qualities (ability to sing, knowledge of Greek, etc.).[20] Among the papyri of the Middle Euphrates, there is a single case of sale of animals, an adult "red haired" mare in Carre (Pap. Euphr.10): the agreed price is higher than those attested for all the slaves: 750 *denarii*. In Tab. Ravenna, *FIRA*. III 134, a girl-slave in the year 150/1 is purchased for 625 *denarii*.

The liability for eviction, i.e. the duty of the vendor to compensate the buyer if the latter was deprived of the thing by a third party who claimed to be the real owner, was implied in case of *mancipatio* of *res mancipi*, as was a *servus*. However, if the slave had been delivered with a simple "*traditio*" (as—in my opinion—had occurred in the cases attested by these documents), and therefore the ownership had not been yet transferred to the buyer, the buyer was guaranteed with a stipulation (of twice the value *stipulatio duplae*, in general, but also *simplae*, *scil. pecuniae*), which appears in all the documents, also in the *pro parte* formulary (or *pro quota*), in the case of several co-owners: in the *tabula* of Londinium[21] or in the Transilvania

[14] I refer to my essay Reduzzi Merola (2002, 395–406).

[15] 1 *denarius* is worth 4 *sestertii*.

[16] In the new edition by Camodeca (2017, 169–203).

[17] $TH^2$ A6, and 1900 *sestertii* (probably) for an adult slave (475 *denarii*); the thousand is integrated by G. Camodeca, editor of the document, $TH^2$ 59+D01.

[18] In the Papyrus n. 9 a slave of unknown age is worth 550 *denarii*.

[19] V. 5: … *eritque tuus nummorum milibus octo, …*

[20] I refer to my recent essay Reduzzi Merola (2016, 259–268) titled *Orazio, il servus fugitivus e l'editto.*

[21] Camodeca (2006, 225–230) and Reduzzi Merola (2010, 43–49).

tablets, *FIRA*. III 87 and 88[22]; and in the clause of *katharopoíēsis* in the Papyri of ME., analogous to the *bebaíosis*; the latter is frequent in Egyptian papyri, while we find the *katharopoíēsis* in this papyrus from Euphrates, as well as in *P.Euphr*. 8 and 9, and in other oriental documents.[23]

The similar features of these documents coming from various geographical areas lead us to think that the scribes of the various imperial provinces had in front of them a series of formularies which they used without major changes regardless of the kind of individuals who were carrying out the sale or from the slaves being sold. Thus, to give an example, in the Papyri of the ME, the abbreviation that translates with the expression "more or less"[24] ("more or less about 13 years old") finds a parallel with our document of Dacia, *FIRA*. III 87, where line 3 deals with the sale of a slave-girl *circiter annorum plus minus sex*. In both cases the expression repeats the concept of approximation in a redundant way.

One must bear in mind another fact: the documents from Herculaneum (as those from Pompeii) account the praxis of Rome, while those from Dacia, Britannia and Medium Euphrates reflect the provincial praxis. Dacia and Britannia appear less influenced by local law, of which we do not have significant traces and still less of Hellenistic law.[25] As for the Mesopotamian papyri, instead, we feel the strong influence of Hellenistic law, as can also be inferred from similar Egyptian papyri.[26] But all the documents have common basic features, they use Roman law schemes to protect the parties. All this is the result of what we could call using modern terminology: "globalization of trade".

Some problems still have to be discussed: the *Tabula Londiniensis* refers to a sale, *emptio*, performed by a *servus vicarius* of an imperial slave, a slave subordinated to another slave.[27] As we have seen the patterns of buying and selling were widespread throughout the empire, but in this specific case, since the slaves had no legal capacity, what was the purpose of keeping a document that had probative value in a possible trial? Was it kept by the buyer-slave in the perspective of obtaining freedom, and therefore for the purpose of becoming owner of the slave-girl who was being bought? Or would the *vicarius* deliver the document to his *servus ordinarius*, the imperial slave to whom he was subjected?

The parties mentioned in the Dacian tablet were protected by the *ius honorarium*[28] as *peregrini* who operated according to the rules of Roman law. After 212 CE it is clear

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[22] See also TH$^2$ 61; *FIRA*. III 133, Side, Pamphilia, 151 CE.; *FIRA*. III 132, from Seleucia, Pieria, 166 CE.

[23] Cf. Feissel et al. (1997, 17). On *katharopoíēsis* Nörr (2002, 529–547) and here bibliography. The verb *katharopoieîn* literally indicates "to make pure".

[24] L. 12 of Pap.Euphr. n. 6, l. 4 of n. 7.

[25] See on this matter Franchini (2008, 1–17, especially 11–16).

[26] Cf. the documents selected and discussed by Straus (2004).

[27] See the good doctoral thesis by Marianne Béraud (2018) (Université de Grenoble), *Esclaves d'esclaves. Vicarii et vicariae dans le monde romain (IIIe siècle av. J.-C. – IVe siècle ap. J.-C.)* soon to be published.

[28] The rules produced by the praetor peregrinus' edict for the administration of justice among foreigners (*peregrini*) in Rome or among Romans and foreigners.

that he who appears in court in a province is in the first place a Roman citizen who wants to see his right protected by Roman law. On the other hand, the inhabitants of the eastern provinces of the III century CE, while opposing many aspects of Romanization, seem to see in Roman law a sure benchmark.[29]

Nevertheless, apart from the interpretative problems posed by some of these texts, one must stress how all the documents under examination follow patterns proper to Roman law and adopted by the aediles[30] in their edict on the sale of slaves and *iumenta*; the edict was received in Italy by the municipal magistrates, then in Herculaneum by the *aediles*, also endowed with a limited *iurisdictio*,[31] to be placed in relation with their responsibilities on city markets and their *cura annonae*.[32] Protection was certainly granted for the *cives*, according to the principles of *ius civile*; it would be granted to the *peregrini* by the *ius honorarium*[33]; and, in any case, evidently making a sale in Alburnus Maior (Dacia) according to the principles of Roman law offered greater guarantees than carrying it out according to local customs.[34]

In the Tablet of Transylvania (*FIRA*. III n. 87, but also in 88–90) we find the *fiderogatio* of the buyer and the *fidepromissio* of the seller,[35] both who were not likely Roman citizens,[36] as we said, in a similar form to that of the Euphrates papyrus under investigation: *pístei eperótesen* (*fide rogavit* the buyer) … *pístei omológesen* (*fide promisit* the vendor). This further verbal obligation arises to guarantee the principal one, a stipulation directed against eviction.[37] A similar wording of *fidepromissio* is present in some *tabulae ceratae* from Pompeii, TPSulp. 4 and 13–14, where some *peregrini* promise with *vadimonia* to appear in trial, and TPSulp. 56 and 58, where some slaves contract the obligation to repay a sum received by loan.[38]

Certainly the *fidepromissio* was used when the parties were not Roman citizens, or if they were of servile condition, when a valid *stipulatio* could not be made, since as Gaius asserts in his *Institutions*, 3.93, *sponsio* was proper to the Roman *cives*, while the other verbal obligations *vero iuris gentium sunt, itaque inter omnes*

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[29] See De Giovanni (2007, 74–77).

[30] Minor magistrates responsible for the regulation of public markets.

[31] Also the aediles of the Hispanic *municipium* of Irni mentioned in c. 84 of the *lex Irnitana* seem to have competences for controversies up to 1000 *sestertii*; see Lamberti (1993 especially 64–69, with other bibliography, adde) Lamberti (2000, 237–256) and Rodger (1996, 189–206).

[32] Cf. De Martino, (1975, 719) and Camodeca (1992, 146–147; 1999, 115).

[33] On the application of Roman law and local law in the provinces see Richardson (2016, 113–117).

[34] Very interesting recent reflections on the problem of the relationship between local law and Roman law in Ando (2016, 283–293).

[35] *Fiderogatio* and *fidepromissio* are also present in other triptychs from Transylvania, *FIRA*. III 88,8 9 and 90.

[36] See Ciulei (1983, 18–22), Sambrian (2005) available on line; see also Cristaldi (2007, 219–222), and Romeo (2010, 359–361).

[37] Thus also in the *Tabula* of Fortunata where we find the same wording, since the buyer-slave and the vendor (likely) a *peregrinus*, were indicated in the missing pages of the document.

[38] Cf. on the loan contracted by Niceros, *servus arcarius* of the colony Iulia Augusta of Puteoli, in TPSulp. 56, at length Bramante (2012, 155–168).

*homines, sive cives Romanos sive peregrinos*, *valent.*[39] It seems plausible, then, that verbal obligations initially limited to particular cases were later more constantly and generally used without the reference to the *pístis* (*fides* in Latin), even when, as in our Mesopotamian papyri, both the seller and the buyer participated in the *civitas Romana.*[40]

In the texts examined the object of the sale is a slave-girl (*puella*) or a slave-boy; in one of these, however, the buyer is also a slave (*vicarius*), who does not seem to act on behalf of his *ordinarius* (who is a *servus Caesaris*, an imperial slave) or the emperor, but appears fully independent.

Thus we are in the presence of a new aspect of the participation of slaves in the Roman economy and of the "slave mode of production". The slave as *res*, as a thing, as part of the slave labour taken into account by Marx is evidently not sufficient to explain the development of Roman economy in which not only freedmen but also the *servi*, the slaves, carried out economically relevant operations often unbeknownst to their owners.

So if on one hand the Marxist analysis of slave societies[41] is always a base from which to start studying the economic and commercial structures of Rome, we need undeniably to examine other dependency situations in which the slave was not a mere object but rather one of the actors of Roman economic life, as the *filii familias.*

## Texts Discussed

TH$^2$ 60, *emptio puellae*, before 63/4 CE.:
…
Eam puellam q(uae) s(upra) s(cripta) est, sanam ess[e]
[furtis] noxaque solutam, [fugi]tivam,
[erro]nem non esse praestari [e]t
[dupla]m pecuniam ex formula edicti
[aedili]um curulium, ita uti adsolet,
[quae h]oc anno de mancipis emundis
[vendu]ndis cauta comprehensaque
[est], dari, haec sic recte dari
[fieri]que, stipulata est Calatoria
[---]e, spopondit C(aius) Iulius Phoebus.
[Actum Herculani ---].
…

[39] Cf. Gai 3.92. Vd. also Reduzzi Merola (2015, 201–206).

[40] Cf. Spagnuolo Vigorita, T. (1993, 38–39); and also Mélèze Modrzejewski (1993, 985–1007, especially 1004–1007) and Nörr (2010, 173–198, especially 187; see also 2004, 152–188).

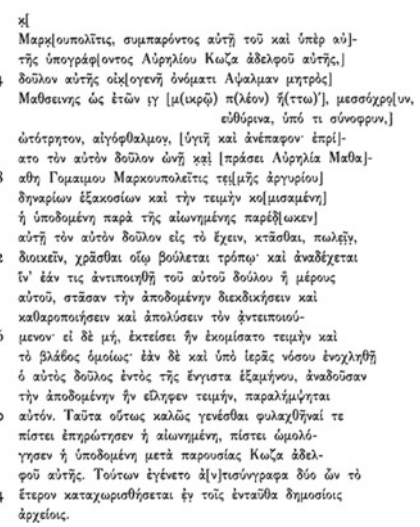
[41] About this theme, still remarkable is Colognesi et al. (1978).

*FIRA*. III 87 - 17th March AD 139 CIL III, p. 936, VI
Triptych discovered at Rosia Montana (Alburnus Maior), Romania, in 1855:
Maximus Batonis puellam nomine
Passiam, sive ea quo alio nomine est, annorum
circiter p(lus) m(inus) sex empta sportelaria
emit mancipioque accepit de Dasio Verzonis Piruesta ex Kaviereti[o],
(denariis) ducentis quinque.
Eam puellam sanam esse a furtis noxisque
solutam, fugitiuam erronem non esse
praestari. Quot si quis eam puellam
partemve quam ex eo (ea) quis evicerit,
quominus Maximum Batonis quo-
ve ea res pertinebit habere possi-
dereque recte liceat, tum quanti
ea puella empta est, tam pecuniam
et alterum tantum dari fide rogavit
Maximus Batonis, fide promisit Dasius Verzonis Pirusta ex Kaviereti.
Proque ea puella, quae s(upra) s(cripta) est (denarios) ducen-
tos quinque accepisse et habere
se dixit Dasius Verzonis a Maximo Batonis.
Actum Karto XVI k(alendas) Apriles
Tito Aelio Caesare Antonino Pio II et Bruttio
Praesente II co(n)s(ulibus).

Tabula Londiniensis cum emptione puellae (first-second century), Ed. Camodeca, G.:
Vegetus Mon(t)ani Imperatoris Aug(usti) ser(vi) Iucun-
diani vic(arius) emit mancipioque accepit pu-
ellam Fortunatam sive quo alio nomine
est natione Diablintem de Albiciano
… * sescentis
ea(m)que puella(m) de qua agitur sanam tradi-
tam esse erronem fugitivam non esse
praestari
quod si qu[i]s eam puellam de
qua agitur part[em]ve quam [ex e]a e [vi]
cer(i)t quom[i]nu[s] [Vege]tum [Montani]
Caesaris ser(vi) [vi]c(arium) [eumve] [a]d < ea > que[m] ea res
This is not in the actual text, but can be reconstructed:
*pertinebit habere possidereque recte liceat tantam (or: duplam) pecuniam recte dari stipulatus est*
*fiderogavit Vegetus Montani Caesaris Imperatoris servi vicarius*
*fidepromisit Albicianus*

Pap. Euphratensis n. 7, November 6th 249 CE. Sale of a young slave. Ed. Feissel, D., Gascou, J., Teixidor, J.:

7



κ[
Μαρκ[ουπολῖτις, συμπαρόντος αὐτῇ τοῦ καὶ ὑπὲρ αὐ]-
τῆς ὑπογράφ[οντος Αὐρηλίου Κωζα ἀδελφοῦ αὐτῆς,]
δοῦλον αὐτῆς οἰκ[ογενῆ ὀνόματι Αψαλμαν μητρὸς]
Μαθσεινης ὡς ἐτῶν ιγ [μ(ικρῷ) π(λέον) ἢ(ττω)'], μεσσόχρο[υν,
εὐθύρινα, ὑπό τι σύνοφρυν,]
ὠτότρητον, αἰγόφθαλμον, [ὑγιῆ καὶ ἀνέπαφον· ἐπρί]-
ατο τὸν αὐτὸν δοῦλον ὠνῇ κα[ὶ πράσει Αὐρηλία Μαθα]-
αθη Γομαιμου Μαρκουπολεῖτις τε[μῆς ἀργυρίου]
δηναρίων ἑξακοσίων καὶ τὴν τειμὴν κο[μισαμένη]
ἡ ὑποδομένη παρὰ τῆς αἰωνημένης παρέδ[ωκεν]
αὐτῇ τὸν αὐτὸν δοῦλον εἰς τὸ ἔχειν, κτᾶσθαι, πωλεῖν,
διοικεῖν, χρᾶσθαι οἷῳ βούλεται τρόπῳ· καὶ ἀναδέχεται
ἵν' ἐάν τις ἀντιποιηθῇ τοῦ αὐτοῦ δούλου ἢ μέρους
αὐτοῦ, στᾶσαν τὴν ἀποδομένην διεκδικήσειν καὶ
καθαροποιήσειν καὶ ἀπολύσειν τὸν ἀντειποιού-
μενον· εἰ δὲ μή, ἐκτείσει ἣν ἐκομίσατο τειμὴν καὶ
τὸ βλάβος ὁμοίως· ἐὰν δὲ καὶ ὑπὸ ἱερᾶς νόσου ἐνοχληθῇ
ὁ αὐτὸς δοῦλος ἐντὸς τῆς ἐνγιστα ἑξαμήνου, ἀναδῶσαν
τὴν ἀποδομένην ἣν εἴληφεν τειμήν, παραλήμψηται
αὐτόν. Ταῦτα οὕτως καλῶς γενέσθαι φυλαχθῆναί τε
πίστει ἐπηρώτησεν ἡ αἰωνημένη, πίστει ὡμολό-
γησεν ἡ ὑποδομένη μετὰ παρουσίας Κωζα ἀδελ-
φοῦ αὐτῆς. Τούτων ἐγένετο ἀ[ν]τισύγγραφα δύο ὧν τὸ
ἕτερον καταχωρισθήσεται ἐν τοῖς ἐνταῦθα δημοσίοις
ἀρχείοις.

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