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


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## 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

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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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