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# Trade as a Premise for Social Complexity

Anamaria Berea

Center for Complexity in Business  
University of Maryland

## Abstract

The argument of this paper is that trade is an important causal factor for the origins of social complexity, not just a co-evolutionary process. Ancient trade played a crucial role in the origins of the first state level society (Early Uruk) and was a primary premise for social complexity between 9000 and 3000 BC. Due to the advantages of clay harvesting and reliable water transportation and due to a series of innovations (*e.g.*, pottery wheel and the tokens system), there emerged a series of institutions, such as money, redistribution, and wage payments during the first state level polity. These institutions subsequently increased the level of social complexity and economic development of the Early Uruk society from a city to the status of the first political economy. A secondary hypothesis of this paper is concerned with the type of organization of this first political economy. The argument is that Uruk was more an entrepreneurial organization that paid wages according to the division of labor and less a central governance for the redistribution of the public goods. It was a “political enterprise” with both entrepreneurial and political attributes.

## Introduction

**THE PURPOSE OF THIS RESEARCH PAPER** is to investigate a seemingly simple question: What role has trade played in the origins of social complexity, when history tells us the first polities were formed thousands of years ago? In order to answer this question this research focuses on the formation of the first state, Uruk. Uruk was not only the first state level society (early Uruk – 5500-4000 BC), but also the first empire and the first international political system (Middle Uruk - 3700 BC) (Cioffi-Revilla, 2001). The archeological evidence that supports this analysis comes particularly from the transition period between the Ubaid IV and the Early Uruk. Social complexity is defined as a form of organization for groups and individuals that behave given a complex set of rules and have developed some forms of institutions; that have developed rules of behavior,

organization and interaction that are more than just about survival and adaptation (Cioffi-Revilla, 2010). In other words, the group has developed some exogenous rules of living, and is not just an endogenous, informal collection of individuals. For example, a clan is not a complex society, but a chiefdom is.

Scrutinizing the most primitive polities (or political economies) known to date is very exciting and one of them is the Fertile Crescent around 8000 BC (Fernandez-Armesto, 2001). The insights from my analysis are shedding light into some causal processes for the emergence of a complex society and complex political relationships. The motivation for this research is to answer the question of what role trade played in the origins of such social complexity or political systems. Currently, trade has been considered more or less intertwined with the economic development of the early societies, but the emphasis has been on trade as a consequential process associated with the development of civilizations (Fernandez-Armesto, 2001), rather than a causal, pre-determining factor for the formation of societies and polities. The “co-evolutionary” hypothesis seems implicit throughout historical and anthropological writings; but what about a causal hypothesis?

My argument tests two hypotheses: the principal hypothesis states that trade is a predetermining factor for social complexity (I will refer to this as the “causal hypothesis”); the subsequent hypothesis states that the early complex social forms of organization resemble the organization of firms or small polycentric systems of governance (Ostrom, 1997) (I will refer to this as “the entrepreneurial hypothesis”). If both these hypotheses are true, then the first polity or political system would prove to be a “transformative complex adaptive system” (diZerega, 2009), that changed both the ecosystem and the human organization mainly due to the expansion of trade.

Social complexity, according to Simon’s Hypothesis, is produced by the social environment and not by human behavior (Simon, 1996). Other authors have an understanding of social complexity that is closer to the emergence of civilizations (Fernandez-Armesto, 2001), others with the emergence of states (Marcus, 1998).

In a restrictive definition political complexity implies a specialized development of institutions. Administrative specialization and geographic control require a certain degree of institutional diversity themselves (North,

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1981; 1990; 2005). My paper focuses on the emergence of the first specialized institutions in the polity of Early Uruk. I will argue that these institutions are **money, labor management, merchant colonies, and systems of redistribution of imported goods**, institutions unknown before in history.

In a less restrictive understanding Hayek's theory of spontaneous order says that the emergence of social complexity comes from the unintended, non-designed outcomes of individual, purposeful actions (Hayek, 1945). In one of his seminal papers, "The Use of Knowledge in Society", Hayek showed how the price system emerged - not by design - as the most efficient way of conveying the relevant information in the market. In the earliest political economy of Uruk the first historical records show that different types of money circulated simultaneously with barter. Money was used for complex transactions – cheap money for cheaper transactions (*i.e. barely was reportedly used as a form of currency*), while more expensive money (*i.e. clay*) for more complicated exchanges.

While the transition from spontaneous order to social complexity or to a fully formed political economy is not very well understood and represents one of the big questions in the science of collective behavior today (NAKFI, 2014), several public choice or institutional economists have published work on the idea that spontaneous order leads to norms, endogenous institutions and polycentric communities (Hayek, 1964; North, 1981; Ostrom, 1997; Ostrom, 1990; Wagner 2007) In the political economy framework the "market square" and the "political square" are intertwined and the political square "lives" more like a symbiont out of the market square (Wagner, 2007). These "political enterprises" (Wagner, 2007) in the early political economy of Uruk were primarily formed of what anthropologists call "the elite" (Algaze, 2001) - the group of people who had a monopoly over the imported goods and over the temple granaries where these goods were stored. The monopolistic nature of the political enterprise of Uruk is exerted through the control over the produced and imported goods and over the redistribution of these goods; thus, they were controlling trade.

In modern times one of the known important consequences of trade is the spread of languages, culture, and recorded economic history (*e.g.*, Silk Road, spice routes) (UNESCO, 2008). And the spread of languages, as Vincent Ostrom showed, is a defining factor for the emergence of

polycentric communities (Ostrom, 1997). The process of trade implies not only the exchange of goods, but also an exchange of information that implicates learning. Ostrom views language as medium of exchange - a currency for non-monetized relationships. After repeated trade – and the evidence shows repeated trade with the people living in the Zargos Mountains, in Susa, in Egypt and in the Northern Levant – the people of Uruk might have developed a “common language” as the basis for the newly formed networks that sometimes became complex enough to form polycentric communities. Such polycentric communities emerging out of trade were the merchant colonies from Tepe Gawra, East Iran, and Tell Habuba Kabira. According to Owen the people from late Ubaid period and late Uruk did not think of themselves as being part of a single culture or group, but rather they identified with a single larger town they lived in or nearby (Owen, 2007). They thought of their world as “a patchwork of rival groups” – polycentric – and not as the “Sumerian” or “Mesopotamian” society, as we understand it today.

Currently there is a lack of research in the economics literature on the origins of trade and the origins of political economies. Trade is a fundamental social phenomenon that can be found anywhere around the world and any time in the history of human complex systems, but there is a lack of theoretical and empirical work that would improve its understanding and emergence in a robust<sup>1</sup> way. One reason there is still a gap in the research concerning the *origins* and *emergence* and *formalization* is the difficulty in obtaining and tracking relevant data.

Vernon Smith argued in his Nobel Prize Lecture that cultures which have evolved markets have enormously expanded resource specialization (Smith, 2003). But, as with any fundamental emergent social phenomenon, entrepreneurship (as it relates to resource specialization) must exhibit robust evolutionary traits of self-adaptation and growth on the very long term and at large scales.

My analysis starts with the theoretical background laid down by some of the most prominent economists mentioned above (and others) on the theory of trade and markets and on the emergence of institutions within

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<sup>1</sup> “Robustness” refers to the property of complex adaptive systems to persist under perturbations (Felix & Wagner, 2006)

a political economy. Then, I pursue a methodological analysis that attempts to clarify the distinctions between the causal and co-evolutionary processes. Using this theoretical and methodological framework, I match the existing historical, archeological, and anthropological findings and thus I construct my argument for the two hypotheses that I am testing: the principal hypothesis on trade as a premise for social complexity and the subsequent hypothesis on the early polity organization into firms (the entrepreneurial hypothesis).

### Methodological background

In order to construct my argument I reviewed the current, most widely accepted theoretical literature in entrepreneurship (Shane, Kirzner and Schumpeter), institutional (Douglas North), and political economy (Vincent Ostrom), and overlaid the archeological evidence from the Uruk sites as published by historians and anthropologists (Algaze, Owen, Schmandt-Basserat, Niessen) in order to understand how the ancient evidence fits the current theories and how together these can be tied into a causal argument, as shown in Figure 1.

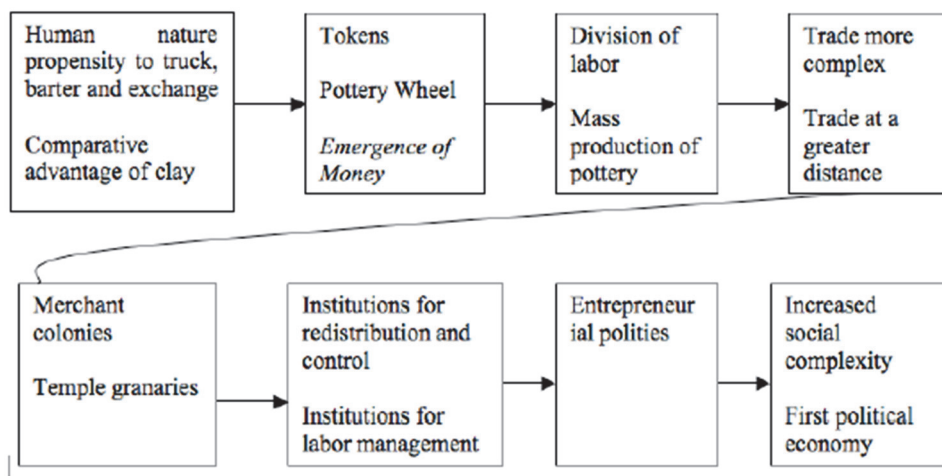


Figure 1. The Line of argument for the causal and co-evolutionary processes in the first political economy

### *The causal hypothesis*

Trade is a process, a human behavior inherent to human action and social interaction (Mises, 1949). “The propensity to truck, barter and

exchange” is a propensity inherent to human nature, as stated by the father of economics in “*The Wealth of Nations*” (Smith, 1776). Thus there is a humanly intrinsic and aprioristic element in trade that would instantaneously place it at the “origins” of some processes and human behaviors. But my argument here is not that trade is an aprioristic human expression of social relationships and thus, by direct deduction, a premise for social complexity. My attempt is to emphasize the role of trade as a basic human social interaction with a degree of universality that would have characterized the people from tens of thousands of years ago as well as it characterizes the people of today.

Axtell and Florida (2001) make an important argument about cities and firms as clusters of social organization that follow a Zipf distribution of their size. The Zipf distribution follows the mathematical law that the number of entities or events is inversely proportional to their rank, and it was observed in the distribution of words on a corpus, the city or firm sizes, the magnitude of earthquakes, or the occurrence of deadly events (Zipf, 1949). Their empirical and modeling findings show that people and firms (*i.e.*, human organizations) have a tendency to co-locate geographically. As historical evidence shows, in the first political economy traders started to organize and co-locate in merchant colonies.

The Greek word for exchange, “*catallactics*”, designates a complex phenomenon that involves not only the exchange of goods, but also the exchange of personal relationships. In the political economy framework the catallactic space is not confined just to the “market square”, but belongs as well to the co-evolution of the market and political squares where people interact and exchange goods, services, and relationships that can be monetized or non-monetized or both (Wagner, 2007). Thus, the catallactical nature of trade supports the co-evolution hypothesis of trade and social complexity - the more complex the trade, the more complex the society.

As previously said, the argument for the causal hypothesis comes not from the nature or the characteristics (attributes) of trade, but from the emergence of institutions specific for a political economy. There are two sets of conditions that imply the causality argument: the necessary and the sufficient. The necessary conditions for complex trade are the comparative advantages in the Ricardian sense (Ricardo, 1817) offered by the society and the technological innovations of the society. In the case of Uruk, the physical

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environment promotes the harvesting of clay to make pottery. This is an advantage when compared to other incipient civilizations or societies at the time. The ease of water transportation on the Euphrates is also another comparative advantage. The innovation in the use of tokens and the pottery wheel also offer advantages for this incipient society. The sufficient conditions would therefore be new, emergent institutions such as money, wages, redistribution, and merchant colonies. None of these conditions or the equivalent of these institutions was known before this time in history, at least based on the evidence we have to date (Fernández-Armesto, 2001).

### *The entrepreneurial hypothesis*

Entrepreneurial alertness is the innate ability of the entrepreneurs to coordinate their own future expectations and present actions (Kirzner, 1973), in the context of the market process and their network of competitive entrepreneurs. The entrepreneurs are able to do this at the micro-level, internal type of coordination by becoming creators of relevant knowledge for their actions. The historical evidence from the Uruk period (and described later in this paper) shows that the traders in stone and clay and the maritime travelers looking for new trade opportunities are such entrepreneurs.

There is an ongoing theoretical debate about entrepreneurs as *causal* (Schumpeter, 1942) or *consequential* (Kirzner, 1973) actors with respect to market disequilibria. If knowledge is imperfect and actors are only optimizing based on that imperfect knowledge, then coordination and learning can never be achieved. With the discovery of new territories and new products available in the early Uruk maritime expansion, trade had become a learning process that led to the formation of the first merchant colonies known in history to date.

Entrepreneurs are not necessarily single individuals who create and disseminate or diffuse knowledge at the individual level. Entrepreneurial action can be a *collective* action guided towards a single goal. But this collective action is preceded by a unified decision that led to entrepreneurial action. The maritime expeditions of Uruk were organized collective actions to trade clay for stone, wood, or precious stones. The traders of Uruk proved to be more successful than the traders of the Zargos Mountains due to their ability to invent and innovate institutions such as money and merchant

colonies. These would make both information (Hayek, 1945) and geographical distance (Axtell and Florida, 2001) much more efficient.

The space for simultaneous discovery (consequential actors) and creation (causal actors) of entrepreneurial action can be achieved in asymmetric information networks, where one entrepreneur has more information than another (Venkataraman, 1997). Moreover, one of the unintended consequences was the transformation (diZerega, 2009) of their geographical and social space, resulting in building cities, starting agriculture, and inventing institutions. In this sense, the early people of Uruk are procedural actors (Simon, 1996) who transformed newly discovered opportunities into productive returns within the bounded environment provided by the asymmetric information networks in which they were embedded (Fortunato & Alter, 2011).

The emergence of entrepreneurship in Early Uruk also depended on preserving and extending such information networks. Archeological evidence shows that the “creative destruction” type of entrepreneurship (*e.g. mass-production of pottery is transformative at a very large scale in the economy*) is intimately related to the emergence of recorded information (*i.e. tokens for accounting*) (Owen, 2007; Algaze, 2001). In addition, the evidence<sup>2</sup> of the first maritime traders and merchant colonies between Ancient Babylon (6000 BC) and the hunter-gatherers of the Zargos Mountains shows that adverse selection markets do not unravel (Akerlof, 1970) in the presence of entrepreneurial discovery.

Hidalgo *et.al* (2007) showed that the product space and economic growth are interdependent at the level of a country; similarly, the co-evolution of entrepreneurs and opportunity space in the earliest state level society can explain why the tokens and the pottery wheel were technological shocks (Kydland and Prescott, 1982) that boosted this early economy into economic and urban growth.

Busenitz laid down a framework (Busenitz, 2003) for researching entrepreneurship as a process emerging out of multiple interactions (both social and ecological in nature); this is an important methodological framework because it changes the focus on the organization as the unit of

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<sup>2</sup> Oldest archeological and historical evidence known to date



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analysis and shifts it towards a framework that takes *processes* and *interactions* of multiple stakeholders in a complex environment as the subject of analysis. This brings into light entrepreneurship as a transformative complex adaptive system as well.

Entrepreneurial outcomes can therefore be viewed as (at least partially) depending on the interactions of individuals with each other and within their social and natural ecology (Smith, 2003); thus, formal and informal institutions are regarded as sources of opportunity. This interaction framework is a departure from the mainstream theories of the firm that are focused on the traits and behaviors of individuals, as well as from network theories that examine the incidence and location of inter-firm networks irrespective of where these contacts are oriented (*i.e. the exploitation of opportunity that is bounded by geographic or institutional space*).

Equally important in this approach is the development of skills among local producers and traders, in order to identify and exploit those opportunities (Shane, 2003). Both producers and traders are entrepreneurs who not only barter, but also exchange relevant knowledge. Their goal is to coordinate their future expectations with their present actions. The emergence of entrepreneurship can thus be looked for in the behavior of actors who create and discover information.

### **Historical Evidence – The Necessary Conditions**

As stated in the introduction, the premise for conducting this research is the attempt to test two hypotheses: trade as a cause for social complexity and the emergence of a political economy from entrepreneurial processes. The following historical evidence, although non-exclusive, is sufficient to construct an argument in favor of these claims.

*Clay and water transportation.* As Algaze showed, the advantage of Southern Mesopotamia in terms of geography and lowland for agriculture is very important for the organization of the early polities in the area (Algaze, 2001). The Ricardian comparative advantage of the people in Mesopotamia, both the Ubaid and the later Uruk people, has been as a source of clay and the use of water transportation on the Euphrates. But they lacked stones, precious materials, wood, and metals, for which they had to trade. Comparative advantage theory is one of the earliest and widest accepted theories in economics that proves how economies may create growth and

prosperity by specializing in one skill or resource and engaging in mutually beneficial trade with other economies (Ricardo, 1817), and the story of trade between Uruk and Zargos is evidence of how this played out in the early creation of polities and societies.

Algaze provides a comprehensive anthropological study of the Early Uruk (Algaze, 2001). He explains the development of the initial complexity through the unique ecological and geographical framework of the early Mesopotamian civilization. Indeed, the abundance of clay and the demand for stone that was not within the reach of a hunter-gatherer society have led to the emergence of trade and of the trade routes to more distant geographical places. Also, the Euphrates was easily navigable and thus, although the early people of Uruk did not know about the horse, they were able to travel by water to find places with which to trade. The early trade routes were done almost exclusively by water on the Euphrates. The Tigris, according to Owen, is less navigable and much steeper, and thus there was not a network of canals on the Tigris to the same extent as there was on the Euphrates (Owen, 2007). These routes could go over 800 miles away.

*Tokens.* Denise Schmandt-Basserat has published a very elaborate study on the system of tokens as precursor to cuneiform writing. These tokens were used for accounting, recording economic data such as labor and product quantities, and also for communication and writing. This first object oriented system (Schmandt-Basserat, 1997) played a crucial role for the emergence of institutions and for the entrepreneurial actions of the political enterprise of Uruk (see Figure 2).



Figure 2. Examples of early tokens excavated from Uruk (courtesy Oriental Institute, University of Chicago (left) and Craig Carey, Asst. Prof. of English at University of Southern Mississippi (right)).

Tokens are not the same as writing. As Niessen showed, writing was important for the development of civilizations, but it was not a causal factor.

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Rather, just as with the tokens, writing was a consequence of economic interactions and development and a major phase in the evolution of social complexity (Niessen, 1988).

He argues in favor of the idea that writing, although one of the most important inventions for the development of civilizations, does not fully explain the actual process of development. He deemphasizes the invention of writing as a turning point, viewing it as simply one more phase in the evolution of social complexity (a co-evolutionary process in the terms of this paper) and as the result of specific social, economic, and political factors. Tokens were such a consequence of specific economic conditions of the primitive households.

Accounting and labor bookkeeping existed at the origin of the cuneiform writing, as Schmandt-Basserat suggests, and writing enabled letters of political propaganda and the organization of long-distance exchange (Schmandt-Basserat, 1996). A token would incorporate the shape of the concrete object, the word for the object and the number of the object to be counted. The token system was a consequence of the need to trade and do accounting in the primitive early economy and the system and was a major factor for settling the first merchant colonies thousands of miles away – tokens were found at Tell Habuba Kabira, where they were very small (Schmandt-Basserat, 1996).

The early Uruk people had not yet domesticated horses, but invented this object oriented system for accounting, economic records, and an organized complex, distant trade, not just a barter economy. This was also before the invention of abstract counting and mathematics, which came around 3000BC.

The tokens were also used to count time. The need to count time and record time was a consequence of the division of labor - people producing different products recorded their labor time for producing a certain good on the token designated for the good. This was also the cause of the emergence of cuneiform writing. Tokens came before cuneiform writing and thus writing emerged from an object-oriented system used for accounting in the economy and not from pictographs or art or cultural needs, as initially thought.

*“The foremost function of tokens was to count goods. Plain tokens occurred concurrently with farming and served to count such agricultural products as animals and quantities of cereal. Complex tokens coincided with industry, keeping track of products for which Mesopotamia was famous: textiles and garments; luxury goods, such as perfume, metal, and jewelry; manufactured goods, such as bread, oil, or trussed ducks. [...] The shift from plain to complex tokens implies that the evolution of the system was closely tied to economic change. In turn, the counters can disclose the resources of past communities. Plain tokens can be clues to the domestication of plants and animals.[...] Complex tokens can identify the development of workshops.” (Schmandt-Besserat, 1997)*

Complex tokens played an essential role in the collection of the dues and tributes that sustained the first Mesopotamian city-states. They signal state formation in southern Mesopotamia. Furthermore, the geographic distribution of complex tokens in strategic administrative centers outlines the area controlled by the South Mesopotamian bureaucracy and tells us about its organization.

The clay tokens were used to represent commodities, and perhaps even units of time spent in labor, and their number and type became more complex as civilization advanced. A degree of complexity was reached when over a hundred different kinds of tokens had to be accounted for, and tokens were wrapped and fired in clay, with markings to indicate the kind of tokens inside. These markings soon replaced the tokens themselves, and the clay envelopes were demonstrably the prototype for clay writing tablets.

Thus, the token system coincided with agriculture, the storage of goods, and an economy of redistribution.

*Fast pottery wheel.* Another very important piece of evidence for trade and social complexity is the invention of the pottery wheel. The fast pottery wheel was crucial for the division of labor and for the mass production of pottery that would undoubtedly lead to complex trade.

The society previous to Uruk, the Ubaid people, plentifully used clay from the Mesopotamian Alluvium and also used the turnette (the slow wheel) to make pottery. If initially the pottery was decorated, with time it

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became simpler, shifting its usage from decorative objects to utilitarian objects of a more common use.

The invention of the fast pottery wheel enabled the mass production of pottery and the division of labor, two very important conditions for the emergence of labor management-like institutions. According to Owen (2007) the fast pottery wheel might have been invented in the late Ubaid period, but came into wide use during the Uruk period. On the tokens the picture of a bowl and a head would indicate a ration of food, or what I would call a wage. Owen (2007) calls the Uruk economy a “managed economy”, where the temples provided rations or “paid” people for the labor to build and maintain the buildings and to produce the goods that would afterwards be traded by the temple.

In Early Uruk ceramics production started to concentrate at large centers, implying the mass scale specialization that resulted from the fast pottery wheel.

### **Historical Evidence – The Sufficiency Conditions**

All these lines of evidence might support trade and the development of complex trade, yet they do not explain trade as a premise for social complexity. This premise relies on the evidence of institutions. The way trade is linked back (had a causal feedback) to social complexity is through the emergence of these complex institutions that would characterize an early political economy or a complex polity (Cioffi-Revilla, 2001). The evidence of institutions such as money, merchant colonies, redistribution, and wages would come to suffice the argument in this respect.

*Money.* The emergence of money was one of the rapid consequences of the increased economic development and increased trade between the cities. Money is the first institution of the market process and the first money took the form of barley, silver, or gold.

*“Materials that clearly functioned as money are, to arrange them in ascending order of value: barley, lead, copper or bronze, tin, silver, gold. Of these barley, lead, and copper or bronze functioned as cheaper monies; tin was mid-range; silver and the much rarer gold were high-range monies. This is not to say that other physical objects or substances did not occasionally function as money: cows, sheep,*

*asses, slaves, household utensils, and everything under the sun occasionally had a money function.*” (Powell, 1996)

Money was not used for cheap transactions, for that one used the barter system. And grain was not viable for long distance trade, it was used only as local, cheap money. The emergence of money enabled the organization of the complex trade and of the long-distance trade almost immediately, as a very rapid process.

*Trade routes and merchant colonies.* Evidence of trade from as far as India and Anatolia was found even for the earlier Ubaid people. They brought from India amazonite and from Anatolia obsidian. One of the first outposts, at Tepe Gawra, would evolve into a presumably merchant colony during early Uruk. Initially, it had three temples that were facing a central plaza, and if we accept the hypothesis that the temples were conducting trade and paying wages in goods, this would be a strong support for the idea that Tepe Gawra was a first merchant colony.

The early Uruk period faced a more complex economy and more exchange networks than the Ubaid. They imported goods such as copper, gold, silver, jewelry stones (carnelian, turquoise, amethyst, lapis, quartz), stone for architecture, probably wood and other perishable goods (textiles, oils, spices, foods). The organization of long distance exchange was done by water transportation on the Euphrates and by centralized storage in each city’s central ceremonial or public precinct (Owen, 2007). Uruk pottery was found at Susa (Elam), Zagros Mountains, Egypt, Anatolia. From Egypt they later imported lapis, while from Anatolia they imported timber, olive oil and silver, while from Afghanistan (Zagros) they imported lapis and gold. The evidence of these later imports is from early to middle Uruk, which suggests that trade had indeed expanded both geographically and in diversity of goods.

Moreover, the Uruk people started to establish settlements at the places where they traded most – merchant colonies, and after Tepe Gawra, they settled at Tell Habuba Kabira in Northern Levant and in the far east of the Zagros Mountains of Iran. This spans geographically an 800-1000 miles radius away from the center of Uruk. According to Owen (2007), “the location of many of these settlements made sense for controlling key points along trade routes or access to certain natural resources.”

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Tell Habuba Kabira was approximately 8 hectares in size and contained perhaps around 5000 people. Archeological evidence suggests that it was occupied for generations without any fortifications, after which a 6 m thick wall with towers was built. This might suggest that the colony had increased wealth and was afraid of attacks. The cone wall mosaics at this center might suggest that the individuals here did have considerable wealth. Some of the tokens and bullae (the envelopes of tokens) suggest some forms of primitive contracts that kept track of trade.

Increasing trade had also led to the organization of central urban storage facilities in Uruk – such as temple granaries- that were under the control of the “elite” and used for redistributing the goods to the people into the city. Consequently, they invented institutions for the redistribution of goods into the city and thus the early state level institutions of redistribution and control rose in Uruk.

*Temple granaries as labor management institutions.* By 4500 BC, with the first city like centers established by the Ubaid people (Ubaid II and III), evidence was found of the first temples or central mounds that had a different, designated role other than the rectangular houses. These mounds showed a special architecture and later developed into what we know as “temples”.

The same spot of these central mounds appeared to be used for temples for a long period of time, from Ubaid until Ur III (approximately for 2500 years, the same consistency in location!) (Owen, 2007). Some of them have been re-built even up to 17 times, while each temple was used for an average of 150-200 years. This consistency in architecture-use has not been found anywhere else, which signals the vital importance of these temples for the Mesopotamian people. Now the question is what role these temples had. There is no doubt that the temples had primarily a religious functionality (the presence of the altars). My concern here is the economic role they might have played.

The development and complexity of the architecture and size of the temples follow the same evolutionary path as the cities – from small and simple to large and complex. Initially, they were a one-room, modest structure that with each re-building got bigger and more elaborate. This could be a signal of more elaborate religious thinking, increased

demographics, but could also be an evidence for increased economic development and complexity.

There is no doubt among archeologists and historians that the temples were a “shared institution”. But this shared institution is the first one to emerge in Early Uruk, as opposed to the household level rituals from Catal Huyuk (Owen, 2007). As a public institution, they gathered people not only from the large city, but also from the smaller polycentric communities surrounding that did not have their own temple.

*“These temples must have been places where labor and goods were concentrated.”* (Owen, 2007)

One reason is that the architecture itself was labor intensive to maintain and build and the houses of the wealthiest people were built around the temples. These people, as I argued above, had monopoly over the traded goods. The different levels of wealth of the people are a strong indicator for trade and economic development (no evidence of putative control). The cemeteries show no difference in the wealth status, which presumably show that the wealth was not a consequence of religious control.

The evidence shows clearly that the temples were used as storage for both the goods produced and the goods imported. The consistent increase in the size and complexity of rooms added show that the amount of storage increased significantly over time. If the temples had solely a religious function, then only the altars (“cella”) would have changed with each rebuilding and there would not have been added multiple smaller rooms surrounding it.

The concentrically spatial arrangement around the temple is another indicator of some existing institutions of labor management and goods redistribution. Around them, besides the houses of the wealthiest, there were craft workshops and farmers around the edges.

## **Discussion**

The archeological findings and the theoretical argument described above, on the whole, show that the simultaneity of some fundamental innovations and the complex organization for trade led to the emergence of the first political economy institutions, and that the first state level society can be viewed as a transformative complex adaptive system.



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Trade accrued in the level of organization, geography, and complexity due to these innovations; and subsequently increased trade led to the increased complexity of the social and political space of Uruk, as well as the transition between the Ubaid and Early Uruk. Trade has always been associated, one way or another, with the economic development of civilizations, but my argument here is that local trade and the barter economy of the Ubaid people plus their innovations resulted in the complex trade and political economy institutions that spurred the growth of Early Uruk, thus crystalizing the first state level society known in history.

The complex trade here can be also viewed as a form of free international trade. Archeologists themselves often refer to the goods brought into the cities as “imported” and it is accurate to do so. There is a difference between local trade, (exchange performed with money or by barter) and international trade, which was sometimes associated with contracts (the tokens at Tepe Gawra). The distinction within the early polities framework is mainly geographical (the distance) and in the nature of products (heterogeneous) and less political (state-organized trade with revenue for a central organization, such as the temple). The nature of this early type of international trade supports the hypothesis of the entrepreneurial political enterprises. There is a monopolistic advantage given by the imported goods, but there is also no central state-organized trade yet, that would treat the imported goods as public goods that bring revenue for the central government that can expand the administrative specialization.

More organized institutions implicitly mean increased social complexity. The archeological evidence of the merchant colonies, the temples with economic functions, and the emergence of money support the increased level of economic, social, and political complexity, as defined in the beginning of the paper.

The evidence discussed in the third part of the paper shows that trade directly supports the “institutional diversity” of the political complexity and later the “putative control” (as evidenced by the emergence of walls around the cities), but less the concept of “administrative specialization” (Cioffi-Revilla, 2001).

The lack of evidence for fiscal institutions of taxation and for monetary institutions that issue money shows there is less administrative

specialization at this stage. The evidence of labor management and the emergence of institutions within the polycentric communities show more entrepreneurial characteristics at the organizational level of collective action.

When I first started this research, I was expecting to find a lot of evidence supporting the co-evolutionary hypothesis and very scarce evidence for a causal hypothesis for the period in history that is under scrutiny. The abundance of indirect supporting evidence for the emergence of institutions was a very nice finding and the construction of the argument based on this evidence followed theoretical and methodological deductions.

This argument, if accepted, undoubtedly has broader implications for the origins of trade and the origins of economic institutions. The entrepreneurial character of the early polities does not remove completely the nature of central governance, it only moves it into the background. There is a lack of evidence of property rights over the traded goods at this stage, which means that we must treat them as public goods, whether domestically produced or imported. But the use of these goods as wages for labor and the use of tokens as means of accounting, as soon as the division of labor occurred - instead of an equal redistribution as expected within an egalitarian society - supports the entrepreneurial hypothesis.

The line of argument laid down here can potentially be extended to other geographical areas of origins of social complexity (*i.e. China, Africa, Central America*) that occurred later than Uruk. If some of the earliest political economies of these areas experienced complex trade following the discovery of some innovations and also experienced some forms of early institutions, then the same type of reasoning from Figure 1 could be applied. And this evidence from these areas would extend the strength of the causal argument.

The purpose of replicating this exercise would be to observe if the distant merchant colonies and the temples as institutions of the first political economies would emerge out of the interplay of producing and trading agents and several exogenous innovations (wheel and tokens in the Uruk case, there could be others in the other cases).

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## Summary

The major finding of this research is the emergence of the institutions of political economy as a consequence of complex trade. These institutions spurred the first political economy and first state level society of Early Uruk. My attempt was to cover both the necessary and the sufficient conditions in support of trade as a premise for social complexity.

A secondary important finding is the organization of collective action more as a firm (entrepreneurship) than as a central government, which only subsequently followed. The state-level society was initially a set of polycentric communities and lacked any type of fiscal or monetary institutions that are necessary for a central-governance hypothesis. The *state* of Uruk was a consequence, not a premise, of the growth and expansion of the early political economy.

The major implication of this causal argument tends to a theoretical reframing of the origins of the social complexity. Social complexity should include trade in its origins, besides the demographics, geography, war, and other factors. The label of “economic development” is insufficient to explain the economic processes of the very first polities. Moreover, I believe that trade should not be just one of the premises, but one of the primary ones.

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### **Bio**

**Anamaria Berea** is a Research Associate at the Center for Complexity in Business, University of Maryland and a Research Fellow at The Capital Institute. She has a dual PhD in economics and computational social science and her research is focused on the emergence of communication in biological and social networks, by applying theories and methods from economics and information science to reinterpret historical, anthropological, biological and artistic evidence regarding fundamental aspects of communication.