THE DEEP HISTORICAL ROOTS OF MODERN CULTURE: A COMPARATIVE PERSPECTIVE.*

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Abstract: This paper presents evidence showing that since antiquity there have been two opposed types of institutional systems: one resembling central planning and present in ancient China, ancient Egypt, the Inca Empire and other territorial states, and another one with strong market institutions, protection of property rights present mostly in city-states not just in the Mediterranean but throughout the world. Evidence is presented that these institutional differences dating back to the antiquity, and shaped by special geographical conditions, can be seen to be at the root of the two cultural systems in today's world: individualism and collectivism. These cultural differences have effects on economic performance and institutions in today's world.

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1. Introduction

In recent years, a vibrant new literature has developed on the economics of culture. A large part of that literature examines the effects of cultural values and beliefs on economic outcomes (growth, institutions, fertility choices, female labor force participation, ….) It is more challenging to understand the origins of different cultures. A large part of the existing literature aims at understanding the role of particular historical variables on particular cultural traits. A good example is the research by Alesina et al. (2011) on how differences in soil types led to the choice of use of the plough or the hoe in working the fields, and how this affected gender roles and cultural norms related to gender (other examples are discussed below). To this day, there has not been systematic analysis of the role of historical institutional systems on broad cultural systems. This is what we try to do in this paper.

For institutionalist economists, there is often the preconception that pre-industrial economic systems were roughly similar, or that their differences were not that marked. There is instead a strong focus on institutional differences in a more recent past, culminating with the coexistence of capitalist and socialist economic systems in the twentieth century. However, if we go back in history, as early as what Jaspers (1951) calls the axial age (between the 8th and 3rd century BC), we will find that there existed very different institutional systems among early states. The philosophies and religions that emerged during the axial age were a reflection of the existing institutions of the time and one can argue that their differences reflected institutional differences across the major existing civilizations. Surprisingly and interestingly, the philosophies and religions of the axial age (ancient Greek philosophy, Hinduism, Bhuddism, Zoroastranism, Confucianism, Judaism, etc…) nearly all still play an important role in the modern world. They are the main inspiration behind modern cultures and cultural differences observed in today's world.

Looking at economic systems in the ancient world, we find that some systems (Egypt, China, Peru under the Incas and others) were more like centrally planned economies. There was no private property of land (the land belonged to the Emperor or ruler), agricultural goods and craft goods were allocated by the government. Markets were hardly developed and foreign trade was under the control of government. For lack of a better wording, I will call them **statist systems**. Other economies, like ancient Mesopotamia, Athens, the Aztecs in Mexico, the Champa (covering roughly today's South Vietnam) were more clearly market economies with private property of land and developed markets, both domestically and internationnally. I will call them **market systems**. Many other systems were in between both of these systems, as documented below.

These differences have been noted before. Max Weber (1922) used the term of *patrimonial state* to characterize states like Ancient China and others where the absolute domination of the father figure in a family is projected onto the state. Private and public property are blended in the patrimonial state.

Wittfogel (1957) theorized about oriental despotism and hypothesized that the absolutist rule in ancient China and Egypt was based on fact that the absolutist rule facilitated what he called the hydraulic state where the state organized large scale irrigation systems, which created conditions that made bureaucratic and government despotism inevitable.

Polanyi and coauthors (1954) documented the limited role of markets, where private goods were exchanged, in the Antiquity.

Trigger (2003) provides a very interesting classification of ancient societies, based on archeological evidence. He emphasizes mostly the difference between territorial states and city-states but his classification is quite comprehensive and based on extensive scholarly evidence.

Among economists, Greif and Tabellini (2017) analyze the relative importance of clans in formation of cities in China and Europe. They find that in Chinese history, the development of cities was based on clans and clan organization, which has played an extended role in Chinese history. In contrasts, cities in Western Europe developed on the basis of individual citizenship. They trace these differences to cultural differences: generalized morality in Europe versus limited morality within the clan in China. The cultural differences they emphasize are close to the difference between individualism and collectivism that we put forward in this study.

British historian MacFarlane (1978) found that as early as the 13th century, individualist culture was more prevalent as on the European continent and that households tended to be more nuclear, relying more on the market in economic transactions than societies where people were embedded in larger clans.

Mayshar et al. (2017) emphasize the role of transparency in production. Whenever output could easily be measured, peasants worked directly for the state, as was the case in ancient Egypt. When output was instead less transparent, peasants had property rights over land like in Mesopotamia.

In this paper, I present a data base based on historical and archeological research to characterize the major differences between statist systems and market systems in the antiquity. The evidence we present shows clearly that these two systems form distinct institutional clusters that are comparable to the difference between socialism and capitalism in the twentieth century. These different systems operated in mostly rural societies where modern industrial technology was largely absent and where labor and land were the major factors of production.

Why do these differences matter today? Why study the difference between statist and market systems in the distant past except to satisfy our natural historical curiosity? The argument put forward in this paper is that these institutional differences from the past matter a lot to understand the world's long term economic and societal trajectories. Indeed, following Bisin and Verdier's (2001, 2017) canonical analysis of the dynamics of cultural transmission, and especially the joint dynamics of institutions and culture, we can hypothesize that particular early institutions have affected cultural values and beliefs, which has in turn helped consolidate both these institutions and the underlying culture. Given the inertia of culture predicted from the Bisin-Verdier model (see also Roland, 2004), institutions may have affected cultural values and beliefs that are still present in today's world.

The main cultural divide in the world today, according to cross-cultural psychology, is the one between individualism and collectivism (see Heine, 2008; see also the survey in Gorodnichenko and Roland, 2012). Individualist culture places the individual at the center, values individual rights and freedom, opportunity and individual success. Collectivist culture sees instead the individual as embedded in a community (tribe, clan), emphasizes conformity, adaptation and harmony.

These cultural differences have important effects in today's world. In Gorodnichenko and Roland (2017), it is shown that individualist culture provides a boost to innovation and long run growth. Individualism also affects institutional change. In Gorodnichenko and Roland (2015), individualism leads to earlier adoption of democracy than collectivism, and the latter may lead to stable autocracy. The degree of vertical integration in multi-national companies is also seen to depend on cultural differences, especially between individualism and collecvitism (see Kukharskyy et al. 2016). Many other variables can be argued to be affected by these cultural differences (see Gorodnichenko and Roland, 2012).

While economists have increasingly recognized the importance of culture, alongside institutions, on economic outcomes, there is also a large literature trying to explain the origin of cultural differences. This is not an easy topic because it is difficult to disentangle the effects of culture from their causes, and filtering out the causes of culture is important to better understand its effects.

Psychologists Kashima and Kashima (1998) remarked that cultural values could be traced back to linguistic differences. To the extent that the structure of a language reflects cultural values and beliefs, one can analyze linguistic and grammatical structures to discover cultural differences. Kashima and Kashima pointed out an important difference: whether or not a language prohibits to drop the personal pronoun in a sentence. This is for example prohibited in French, German and English, but not in Italian or Spanish. The idea is that a prohibition would indicate a more individualist culture as it insists on differentiating individuals by a clear indication of the pronoun used (first, second or third person). Another distinction is whether a language has or not two different pronouns for the second person (*Tu* and *Vos* in Latin) to differentiate between a more informal and a more

formal way of addressing a person. The existence of two distinct pronouns for the second person of the singular (existing in French and Italian but not in English for example) would indicate a more hierarchic and less egalitarian culture. Similarly, they also single out whether there is a single or several expressions for the first pronoun of the singular. For example, there is only one expression in English (I) , but several in other languages like Japanese. The idea is that if there are multiple expressions, language emphasizes more the social function of the person whereas if there is only one expression, language emphasizes more the individuality. Kashima and Kashima (1998) document the statistical correlation between the linguistic measures they put forward and measures of culture such as Hofstede's individualism score. Some of their variables have been used as instrumental variables to analyze the effect of culture on institutions (see e.g. Licht et al. 2003, Tabellini, 2008).

Other researchers have emphasized the role of the distribution of particular variants of genes in different countries in shaping cultural values. For example, Chiao and Blizinsky (2009) and Way and Liebermann (2010) analyzed respectively the role of variants of genes (called alleles in life sciences) that lead more easily to depression when faced with stressful situations and the role of variants of genes that create more pain from social exclusion. These authors found that a higher frequency of those variants of genes were more present in societies with collectivist culture. The basic idea is that those societies and communities with high frequency of those alleles that developed cultural values and social norms to protect individuals from stressful situations and social exclusion would fare better than those that did not develop such values and norms.

A similar logic is found with the historical presence of particular pathogens. Fincher et al. (2008) and Murray and Schaller (2010) find that countries where there was a strong presence of pathogens before the 20th century developed more collectivist cultures. Again, the idea is that in areas with high presence of pathogens, those communities that developed more collectivist norms, restricting individual behavior and showing a less open attitude towards foreigners would be more likely to survuve better.

Other explanations for the origin of individualism versus collectivism involve the higher frequency of rice crops over other wheat crops since rice is more labor-intensive and requires better coordination (Thalhelm et al. , 2014) or a higher presence of irrigation (Buggle, 2015), in the spirit of Wittfogel (1957). On the other hand, Knudsen (2017) finds that a higher reliance on fishing for one's livelihood in history is more associated to individualism.

These are all interesting explanations, and most of those variables can be used as instrumental variables. Nevertheless, it is relatively easy to see that these explanations are partial at best. Given the important effects of culture on institutions and economic performance, one would gain from coming up with a more comprehensive historical explanation of the emergence of cultural differences.

This is precisely our goal in this paper. We have gathered a number of variables that characterize institutional differences in the ancient past as well as geographical variables that may explain these early institutional differences.

In section 2, we provide some narratives from the antiquity to illustrate the institutional differences we focus on that are characteristic of ancient societies. On that basis, we develop in section 3 a classification of variables that should matter to understand these institutional clusters of the past, their origin and why they may have affected cultural development. In section 4, we describe the data base we have been building to measure those variables. In section 5, we give some preliminary regression results based on this new data set. Section 6 concludes.

2. Statist versus Market Systems: Some Narratives from the Antiquity.

It is useful to start with a narrative comparison of ancient Egypt and ancient Mesopotamia to illustrate the institutional differences we have in mind.

Egypt was a territorial state with the Pharaoh having authority over the extent of Egypt's territory. The area around the 800 km long Nile was of exceptional fertility. Seasonal flooding deposited minerals on both sides of the Nile, making the earth very fertile for grain like barley and wheat. What is important for our purpose is that the production conditions along the sides of the Nile were geographically rather similar, creating homogeneous conditions of production on the productive parts of the territory. This means that there were no great benefits in trading grain from one region of the Nile with another region. Because of the homogeneity in conditions of production, instead there were great advantages in coordination and specialization producing such great monuments as the pyramids, but also various specialized craftwork (Trigger, 1993). In ancient Egypt, resources were in general allocated by the government. Internal markets were limited and foreign trade was carried out by the government (Trigger, 2003, p. 351). Ordinary peasants did not have private property over land. They were working the land and the government instructed them how much grain to deliver to the government (Trigger, 2003, p. 320). Note also that while slavery was widespread in Egypt like in the ancient world, slaves were in general property of the government, not of private households. In effect, households did not, as a rule, own private slaves (Trigger 2003, p. 160). Laws that were codified in Egypt were mainly about regulating attitudes and behavior of ordinary Egyptians towards the Pharaoh and the ruling elite (Trigger, 2003, p. 228-233). In contrast to Mesopotamia, there was no formal legal code regulating relations between citizens, but provincial officials had rights of life and death over their subjects, there were detailed regulations defining punishments in case of theft of state property, evasion of *corvée,* duty towards the government, thefts from temples, royal tomb robberies, conspiracies against the king. Social stratification in society was rather low. There was relative equality between ordinary citizens. They were not slaves but were mostly unfree as they lacked any basic rights. The Egyptian government administration functioned

in a relatively meritocratic way. High level officials enjoyed high prestige and becoming one was the most important aspiration among ordinary citizens (Trigger, 2003, p. 627).

On most of these aspects, Mesopotamia, located not too far from Egypt along the Tigris and Euphrates river, was completely different. Mesopotamia was composed of city-states for a large part of its history starting from the Sumerian city-states. In contrast to the Nile where conditions of production were quite similar and homogenous, there were marked differences between Northern and Southern Mesopotamia. Southern Mesopotamia was quite rich in agricultural goods but had few other natural resources. The North instead had lots of stone, timber, bronze and produced luxury goods. Because of this geographical heterogeneity in conditions of production, there was a lot of trade between cities of Northern and Southern Mesopotamia (Finer, 1997, p. 106). Trade inside cities was less developed as noted in Polanyi et al. (1954). Private merchants had an important role in Mesopotamia since trade was quite developed and organized to a large extent by these private merchants (Trigger, p. 343). Craftwork was also mostly done by private craftsmen (Trigger, p. 364). Markets for land were highly developed in contrast to Egypt (Trigger, p. 333) and markets for private slaves were thriving (Trigger, p. 158). Also in contrast to Egypt, the law codified relations between citizens, in particular regarding conflicts over private property. One of the biggest aspirations in society for citizens was to end up being an owner of large tracts of private land (Trigger, 2003, p. 333).

If we look at other ancient civilizations, we find that ancient China had many similarities to ancient Egypt. From what we know even about the earliest dynasties, the Shang dynasty (1600-1046 BCE) and the Zhou dynasty (1046-256 BCE), these similarities are already quite striking. These dynasties developed around the Yellow River and, like in Egypt, conditions of production were quite homogenous, mostly propitious for growing wheat (Keightley, 2014). There is evidence of strong specialization and division of labor in craftwork in imperial workshops (Trigger 2003, p. 371-373). Farmers did not have private property over land as all land belonged formally to the Emperor (Trigger, p. 325-26). Laws were designed to regulate relations between the Emperor and his subjects, specifying punishments associated to breach of obligations of subjects towards the Emperor. When China was unified for the first time with the Founder of the Qin dynasty (221-206 BC), the doctrine of "legalism" stated that the Emperor should use the tool of the Law to exercise his power over citizens. The Law is thus seen as an instrument of oppression to further the interests of the ruler. This is still the case in modern China. Mao Zedong was an admirer of the founder of the Qin dynasty, Qin Shi Huang Di, and when president Xi Jinping mentions the Rule of Law, he has the Chinese legalist tradition in mind. Like in Egypt, in ancient China there were no private slaves, only public slaves working for the Emperor, for example in the construction of the Great Wall. Prisoners of war were usually killed instead of being taken as slaves. One difference between ancient Egypt and China is that clans played a much larger role in China. Clans were regrouped in cities and the Emperor

managed relations with his subjects via the heads of clans (Finer, p. 450; see also Greif and Tabellini, 2017). An important innovation of ancient China is the establishment of population registries to control the movement of populations. In contrast to medieval Europe, people needed an official permit to live in a particular place. The modern *Hukou* thus already existed a long long time before the Communist Regime, putatively since the Xia dynasty and the legendary Yu the Great already. Interestingly, the Mongols took over the institution of population registry from the Chinese in other territories that they controlled, in particular in Russia when it was under Tatar control, and the Russians took it over in their turn after the collapse of the Mongol Empire and the Establishment of the Russian tsarist regime out of the Grand Duchy of Moscow and kept it under communism as the famous *propiska*, which helped limit freedom of movement of Soviet citizens.

Other ancient civilizations looked much more like Mesopotamia. This was very much the case for Assyria (growing out of Northern Mesopotamia to the West, ancient Greece (covering modern Greece but also Asia Minor and the Sea in between) or ancient Phenicia (located roughly in the territory of today's Lebanon). These civilizations all were able to benefit highly from trade and had quite developed foreign as well as domestic trade. They also had strong social stratification with on one hand free citizens enjoying hereditary status, citizenship and political participation rights, and on the other hand people without rights and freedom, such as slaves, but also intermediate categories. Ancient Greece in particular was difficult to conquer because of its geography, alternating mountainous terrains with proximity to the sea, both important obstacles to external conquest. Proximity to the sea made also taxation difficult as merchants could smuggle goods via the sea and evade customs.

These differences in ancient civilizations could be observed on different continents. Everywhere where states had formed, some countries had institutions closer to Egypt and China, while others had institutions closer to Mesopotamia and ancient Greece.

The Inca Empire in Peru and the Andes region was for example very much like Egypt and China. Trade was very limited and production was organized by the state in what was called " vertical archipelagos" (Murra, 1968). The Aztec Empire in Central Mexico and the Mayas in Southern Mexico were instead more organized as city-states where there was a large role for trade and markets (Trigger, pp. 114-16).

3. Institutional clusters in the Ancient World and their effects on modern culture.

The narrative of the previous section give us a sense of the kind of variables that may matter in describing ancient systems as either statist systems or market systems.

3.1. Classifying institutions of the Ancient world.

The basic forces at play leading early societies in the ancient world to be either statist or market systems can be characterized in terms of two of the most important, arguably even the two most important principles in economics: the benefits from trade versus the benefits from specialization. The theory of comparative advantage created by Ricardo explains how trade can make everybody better off. One does not even need Ricardo's idea about specializing in one's comparative advantage to understand the benefits from trade. The Coase theorem already explains how trade makes everybody better off. The theory of division of labor created by Adam Smith explains how task specialization can spectacularly expand productivity. These two principles 1) the benefits from trade, 2) the benefits from specialization can deliver the key insights for why we could observe the two systems in the antiquity: market systems versus statist systems.

These two principles have usually been put forward in the context of industrialization. Note however that the force of these principles is equally valid in societies where capital and technology are less developed. Indeed, benefits from trade are universally valid, but they become stronger when the costs from trade are brought down via reduction in transport costs made possible by technological progress. Similarly, the benefits from specialization can be reaped without machines. All that is needed is a division of labor and tasks. Of course, machines help increase the benefits from division of labor, but they are not a precondition to its benefits.

Different societies faced different initial conditions. Some were facing heterogeneous conditions of production in their geographical surroundings. This created strong potential benefits from trade, thereby encouraging the formation of markets and a class of merchants, as well as demand for protection of private property rights. Conversely, in societies where conditions of production were more homogeneous and where potential benefits from trade were smaller, it was possible instead to enjoy larger benefits from specialization and division of labor by having a larger number of people participate in production so as to establish a much finer division of labor and specialization of tasks. In those societies, strong states developed exercising control over all of society, with the means available to them at the time.

Other geographical variables could affect the benefits of trade relative to the benefits of specialization. A first one is easiness of transport. Lower costs of transport made it possible to engage in trade over larger distances, making it more likely to find larger benefits from trade. Geographical closeness to a hot trading zone would similarly affect the benefits from trade.

Geography may also have affected the easiness of taxation, which would favor the development of the state. Trade routes over land made it easier to post

customs officers to tax merchants traveling from one place to another. Maritime trade routes on the other hand made it more easy to smuggle goods, especially if commodities could be loaded and unloaded at different places along the coast.

Geographical variables may also affect the easiness with which a territory could be invaded, which would also favor the development of a territorial state. Plains are the most vulnerable. Mountainous areas offer more protection.

The difference in benefits of trade relative to benefits of specialization led to a certain number of sharp institutional differences. The first relates to property rights and the law. Statist systems did not have private property or a legal system to protect private property rights. Two areas where one can see this typically is land and slaves. In the antiquity, land and slave labor were two important factors of production; land because output was mostly composed of agricultural products, and slaves because their labor force could contribute to all sorts of products and services. In statist systems, peasants were not owner of their land, which belonged to the ruler. Slaves were put to work on government projects like the pyramids or the Great Wall, but there was no private market where households could buy and sell slaves.

Legal systems would be different in statist and market systems. In market systems, the role of the law would be to protect private property rights and the rights of free men and women. In other words, the law would protect individuals from both the state as well as from other individuals encroaching on their rights. In statist systems instead, the law is seen as an instrument used by the ruler to ensure obedience of his subjects. This is "rule by law" instead of "rule of law". In this case, the law specifies the duties of subjects towards the ruler as well as the punishments associated to breach of law. The law is thus more an instrument of oppression than an instrument of protection. The best example for this is the "legalist" doctrine in China introduced by the first Emperor who unified the country Qin Shi Huang, the founder of the Qin dynasty.

Differences in property rights and legal property right protection would translate into differences in development of markets, both domestic and foreign. Market systems would have developed private markets. Private merchants would play an important role in trade, and their role in society would be important. In statist systems, domestic markets would be less developed, foreign trade would be conducted mostly for the ruler or via government channels. Private merchants would be more marginalized in society.

Similarly, cities would play a more important role in market systems compared to statist systems since market development is associated to the development of cities. In contrast, in statist systems, one would tend to observe more the development of territorial states since a strong government would be able to coordinate production over sufficiently large territories. Statist territorial states

would thus also be more centralized while market systems would have more decentralized forms of government.

Statist systems would tend to be less tolerant towards foreigners whereas market systems would be more tolerant. Indeed, a high level of trade is associated with high level of ethnic diversity as merchants travel in and out of countries. Instead, statist systems would be wary of tolerating too many foreigners on its territory as it is less easy to exercise control over foreigners than over local subjects.

Similarly, weak clan systems would be more favorable to market development whereas strong clan systems would be associated with non market allocation of resources within the clan. Whether clans were strong or weak depended much on existing kinship systems. Many kinship systems in the world are unilineal, meaning that someone's descendance is traced through either the father (patrilineal or agnatic system) or through the mother (matrilineal system). Unilineal or cognatic systems are more favorable for clan development as somebody's membership of a clan is easily traceable to male or female ancestors. Living in large clans means allocation of resources within the clan, thus without using market transactions. Other kinship systems like the bilineal kinship system that has been prevalent in Northern Europe throughout history for example mean that one's ancestors should be traced through both one's father and mother. With bilineal systems, there is no more a clearcut membership of a particular clan. Households tend to be more nuclear families with less extensive ties to other family members. As a consequence, members of nuclear families have to make more use of the market by exchanging goods and services with people outside their family. Bilineal kinship systems would thus tend to be associated with stronger development of markets and property rights, whereas unilineal kinship systems would be associated with strong clans and a smaller development of markets (on the effects of kinship, see the recent paper by Enke, 2017). As was the case in ancient China for example in the Shang dynasty, the Emperor would rule over his territory via relations with clan heads, where clans were living in urban concentrations.

One would also expect to see stronger social stratification in market systems compared to statist systems. Indeed, this is implied by the combination of private markets for slaves as well as laws protecting property rights of citizens. In Athens for example, free citizens enjoyed the most rights as they could hold political offices and vote. Metics, resident aliens, were free but did not have political rights. Finally, slaves had no rights at all. The caste system in India or hereditary aristocracy in feudal Europe is illustrations of strong social stratification. Social stratification tended to be lower in statist systems as most people were unfree and shared this lack of freedom in a rather egalitarian way.

3.2. The effect of ancient institutions on modern culture.

We now discuss the effects of statist and market systems on culture. The framework within which we are looking at this is very similar to the canonical

model of Bisin and Verdier (2014) about the joint dynamic of institutions and culture. We indeed ask to what extent the different institutional systems of the ancient world affected cultural value and beliefs. We make several arguments to that extent. Given the fact that these different institutional systems existed for a very long time, cultural systems had the time to emerge in a consistent way. Given the inertia of culture (see in particular Roland, 2004), it is plausible to think that cultural differences in the world today are, at least to a partial extent, the legacies of the cultural systems that formed in the ancient world.

First of all, social stratification may have worked as a powerful force for the emergence of individualist culture. Indeed, an important characteristic of individualist culture is social prestige reward from standing out. Social stratification leads those at the top of the social hierarchy (free citizens in Athens, Brahmin caste members in India, Dukes and Counts in feudal Europe) to stand out. Since the elite plays an important role in elaborating and diffusing cultural values, one can understand how social stratification leads to values glorifying such stratification.

At the same time, private property is also a factor leading to the development of individualist values. The extent of private property may be seen as defining somebody's value. The larger the size of one's property, the more one stands out and the higher one's social status.

One can also understand how statist systems would have fostered collectivist values. First of all, inside large clans, some division of tasks existed between members of the clan. Fulfilling one's position and fitting in the life of the collectivity, whatever one's position, would be rewarded by social prestige. A similar logic can be seen to apply outside the clan and in society at large, in particular for those having a position in the government administration. Being a loyal servant of the Emperor and fulfilling one's duties would be rewarded by promotion, but also by social prestige.

These arguments may seem somewhat abstract but a comparison of some of the main philosophies and religions that emerged in the Ancient world can make these ideas more concrete. Confucianist philosophy is a good example of a collectivist philosophy. It has been argued that the success of Confucianist philosophy at the time of the Zhou dynasty was due to the fact that it codified existing social norms and cultural values. Without explaining in detail Confucianist philosophy, it is quite striking that it insists on people holding their rank in society and in fulfilling the duties of their rank. Thus, a younger brother is to show respect to older brothers, a son to his father, the living to their ancestors, subjects towards the Emperor. Stability and order require people adhering to the norm of behavior associated to their rank inside the family and within society. Similarly, fathers were obliged to treat their sons fairly, and the Emperor had the duty of behaving in a benevolent way towards his subjects, or else he would risk losing the "Mandate of Heaven". Buddhist philosophy also has strong elements of collectivism. Buddhism does not encourage individuals to stand out, but instead to lose their individuality,

abstract from their desires and merge with the surrounding universe. These Eastern philosophies stand in contrast with Greek philosophy and Judeo-Christian religion (and later Islam), that are more individualist. Greek philosophy encourages individuals to excel, be it as a soldier, a philosopher, a politician or a merchant, and considers competition as healthy means to excellence. Christian religion emphasizes salvation of the individual and the relation between the individual and God. These aspects of Christian religion were reinforced later with the different variants of Protestantism.

If our hypotheses are valid, then we should see an empirical link between variables characterizing statist systems and collectivism on one hand, and variables characterizing market systems and individualism on the other hand. It is not the first time such hypotheses have been formulated, but I am not aware of a similar historical data collection as in this paper to investigate whether these hypotheses hold water.

4. A data base on Comparative Historical Institutions

Using extensive historical and archeological sources, we collected data on the variables listed in Table 1 for 97 countries. The country list is not exhaustive. We restricted ourselves to the list of countries for which we have Hofstede individualism/collectivism scores since the primary aim of our research is to understand how ancient institutional systems still affect modern culture, i.e. values and beliefs.

This first data collection is based uniquely on the reading of historical and archeological scholarly sources on the topic. Needless to say, this involves a huge effort in the collection of historical information. In doing this data collection, we had to make several choices.

A first choice we had to make was on the exact time period to focus on for each country for the data collection. The basic choice we made was to choose the oldest period of early civilization for which we have historical and archeological sources. This usually coincides with ancient state formation, but not always.[1] Since there is a relative invariance in institutional characteristics, especially at the time of the formation of ancient civilizations, we can be confident to measure variables that had a certain degree of persistence. There is of course no absolute time invariance on all variables, but it is nevertheless quite strong when we consider all variables together. This time choice was relatively straightforward in most cases, as these ancient civilizations affected future historical developments. This is obvious for example in the case of China, ancient Rome or ancient Greece. It is not obvious at all for ancient Egypt, the longest lasting ancient civilization, that was not

[1] For example, the Philippines did not really have state formation before Spanish colonization. This is also the case for some African tribes.

only wiped out two thousand years ago, but that does not seem to have left many traces in contemporary Egypt. One might argue in that case that later periods might be more relevant. It would, in our view, however be arbitrary to do things this way, and this kind of data selection would bias our data collection towards finding strong persistence of early institutions. We think it is more transparent to look as far as possible in history to understand the emergence of particular institutional clusters and their historical impact. On the other hand, in some cases, not only have ancient civilizations disappeared, but their ancient populations were replaced by new and completely different populations. This is the case for example with British colonies in the United States, Australia, Canada and New Zealand where immigration and the quasi-elimination of indigenous populations by the new migrants profoundly transformed those countries. For those countries, we simply used the institutional data we have for the UK since this is the largest origin of the migrants. Similarly, for Singapore, we used the data from China. Country composition of migrants thus played an important role in our choice of time period for a country. A choice that is potentially more controversial is the choice of the post-Tatar Duchy of Muscowy for Russia. Russian historiography always emphasizes Kievan Rus as the cradle of Russian civilization, but this has become more and more controversial over time. We think our choice is reasonable since tsarist Russia really started to develop only after the elimination of the Tatar yoke, and our data collection shows that the Tatars left a deep influence on Russia's institutions.

A second issue has to do with the absence of overlap between current country boundaries and ancient boundaries. If ancient boundaries are larger than the current ones, there is no problem. The problem arises when ancient boundaries were smaller than the current ones. This is mostly the case for some big countries. The most obvious case is India. Here, we collected data on the institutions of three ancient empires/kingdoms: the Mauryan Empire (322 BCE-185 BCE) that covered mostly Northern India but expanded most to the South under Emperor Ashoka; the Bengal Kingdom that straddled current Bangla Desh and current West Bengal in India, as well as the Tamil kingdoms. Similarly, the current territory of South Vietnam was covered for a very long time by the Champa Empire (27 BCE-1453 CE), while North Vietnam was part of China for more than thousand years.

A third issue has to do with the fact that in some cases, there have been multiple influences. We tried to avoid as much as possible to choose multiple time periods in history, but in some cases it was impossible to do otherwise. The most obvious case is that of Latin America. On one hand, important ancient civilizations had developed there, which are impossible to ignore: the Inca in the Andes region, the Aztec in Central Mexico and the Maya around the Yucatan peninsula. On the other hand, Spanish colonization lasted roughly 500 years and had an enormous influence on Latin America. In some cases, the influence of the Spanish was predominant as they occupied territories inhabited by tribes that had not yet reached statehood, that died out or were exterminated to a large extent, and for which we have very little information. Again the population criterion played an

important role here. The Philippine tribes had not yet reached statehood by the time of Spanish colonization, but the autochtonous population remained very large, so we took their influence into account. A choice that may appear controversial is that we did not take into account any colonial influence in Africa, except for South Africa colonized by the Boers. Indeed, the colonial era in Africa has been much shorter (roughly 100 years) than in Latin America and one can argue that colonial powers in Africa did not leave an imprint as big as the Spanish (or the Portuguese) left in Latin America.

Table A1 in the appendix shows the mapping between modern countries and ancient founding civilizations.

We scored most of the variables we collected with numbers from 1 to 10, using particular criteria for our scoring. This is the case for the following variables: 1) heterogeneity of production conditions, 2) easiness of transport, 3) closeness to a hot trading zone, 4) easiness of taxation, 5) easiness of conquest, 6) nature of the legal system (citizen-citizen or ruler-subject), 7) property rights over land, 8) property rights over slaves, 9) development of trade within the polity, 10), development of foreign trade, 11) the role of merchants in society, 12) the importance of cities, 13) government decentralization, 14) tolerance towards foreigners, 15) ethnic diversity, 16) extent of social stratification, 17) strength of clan. There is somewhat of a continuum in the measurement of those variables, and we tried to score country variables using a scale of 1 to 10 to reflect this continuity. Other variables were coded as dummy variables. This is the case for kinship variables (unilineal vs bilineal) as well as whether the ancient countries were city-states or territorial states. The appendix contains the scoring criteria used. We are constructing a web appendix that contains not only the scores but also the supporting historical evidence. Many of these variables can be better measured, especially those determined to a large extent by geography.

The disadvantage of our method is that we can be used of arbitrariness in the scoring. This is why we want to make the data available in a transparent way so as to correct possible mistakes of judgment.

5. Preliminary data analysis

We start by showing the correlation matrix between the variables we collected. This is shown in Table 2. Significant correlations are indicated in bold. As we can see, many of the variables are strongly correlated, which is not suprising given our expectations of observing institutional clusters.

5.1. Institutional clusters in ancient times.

To put some order in our descriptive analysis, we start by looking at the relation between exogenous variables and institutional variables. In Tables 3 and 4, we look at the effect of geographical variables on the intensity of trade in ancient

times. In Tables 5, 6 and 7, we look at institutional and social effects associated to higher levels of trade and in Table 8, we look at long term effects of early institutions on culture.

Table 3 looks at the relation between heterogeneity of production conditions, ease of transportation, easiness of taxation and closeness to a hot trading zone on intensity of domestic trade, intensity of foreign trade as well as on the importance of merchants in society. Note that easiness of conquest was not significantly correlated with those variables and we omitted it in the Table. The variables have the right sign and are mostly significant, though heterogeneity of production decisions ceases to be significant when we include closeness to a trading zone, arguably due to multicollinearity since the two variables are strongly correlated.

Table 4 looks at the importance of cities in ancient times as a function of the same variables and the results are roughly similar. This time, easiness of conquest appears significant. Cities were indeed not only places of trade, they were also safe havens protecting people from outside aggressors.

Table 5 looks at the determinants of legal systems, i.e. whether legal systems were "citizen to citizen" protecting property rights, or instead "ruler to subject" regulating the behavior of subjects towards their ruler. As one can see, legal systems that were "citizen to citizen" were associated to higher intensity of domestic and international trade as well as importance of cities and merchants. It is also associated to ease of transportation, which, as seen in Tables 3 and 4, affected the intensity of trade.

Table 6 looks at the extent of the institution of private slavery. We see similar effects as in Table 5. Private slave markets were more present in places where there was high intensity of domestic and international trade and where merchants and cities played a more important role. It is also correlated with geographical variables affecting the intensity of trade.

Figures 1 and 2 look at the relationship between some variables that take only two values. In Figure 1, we can see that clan strength was stronger in unilineal kinship systems relative to bilineal kinship systems. This is not surprising given our discussion of kinship systems. In Figure 2, we see that property rights of land were more developed in places with bilineal kinship systems, which also corresponds to our analysis above.

Table 7 looks at the extent of social stratification in ancient times. As we can see, it is positively correlated with the importance of markets for private slaves, with the law being "citizen to citizen", with the importance of merchants and with private land ownership. It is negatively associated with clan strength. This is not surprising given our above discussion that market systems tend to create more social stratification than statist systems, where most people are not free.

From these descriptive regression, we get a pretty good picture of statist versus market systems. Statist systems had lower intensity of domestic and foreign trade, cities played less of a role and the role of merchants was smaller; legal systems were focused on the relation between ruler and subjects rather than relations between citizens, the institution of private slavery was less present and private land ownership was less developed; social stratification was also less developed. Our empirical analysis also shows that statist systems were more likely to emerge under geographical conditions where conditions of production were more homogeneous, transport was less easy but conditions of taxation were more easy. These results all correspond to our theoretical discussion from section 3.

5.2. Ancient institutions and modern cultures.

We now examine to what extent these ancient institutional systems may have affected modern culture, as we hypothesized in section 3. In particular, we look at the extent to which market systems tended to develop a more individualistic culture, whereas statist systems developed a more collectivist culture.

First, we see in Figure 3 that individualism scores are higher in places that used to be organized as city-states rather than as territorial states. Indeed, individualist culture is associated with the culture of citizenship, which has deeper roots in societies that were organized as city-states. Figure 4 shows that individualism scores are higher in societies that had bilineal compared to unilineal kinship systems. Indeed, the latter had stronger clan systems, which is more conducive to collectivist culture.

Table 8 looks at the relation between a certain number of variables and Hofstede individualism scores. Column 1, showing a positive and significant correlation between ease of transportation in antiquity and individualism, can be interpreted as a reduced form regression. Indeed, ease of transportation reduced the cost of trade and encouraged formation of trade, private property and legal systems protecting property rights. Column 2 shows that ancient legal systems emphasizing relations between citizens are positively and significantly associated with individualism scores. Column 3 shows a positive and significant positive association with private slaveholding and column 4 shows a positive and significant effect of social stratification. Column 5 shows all these three variables to be significant in a joint regression. This confirms our view that ancient market systems fostered individualist culture giving social prestige to individual achievement whereas statist systems bred a collectivist culture awarding social status to conformity and embeddedness.

6. Conclusions.

We have put together a new data base relative to institutions in ancient history. We find that some societies were organized as statist systems with resource allocation done by the state, underdevelopment of property rights and legal systems focusing on enforcing the power of the ruler. Other societies were more market oriented, with a big role for trade, both domestically and internationally. These societies had legal systems focusing more on conflicts between citizens, such as conflicts over property.

It appears that geography may have played an important role in determining whether ancient societies became statist or market systems. One important variable relates to heterogeneity or homogeneity of conditions of production. Heterogeneity created large benefits from trade, which may have led to the emergence of market systems, whereas greater homogeneity may have generated benefits from division of labor and specialization, which may have led to the formation of statist systems.

We have shown that countries that used to be ruled by statist systems tend today to have a more collectivist culture, while countries where market systems developed in the past, tend to have a more individualistic culture.

This research is only in its beginning and many questions are raised relative to the deeper reasons behind the emergence of these two different systems in the antiquity. For example, how to explain why could the benefits from trade not be reaped via centralized resource allocation?

The data collection needs to be much improved. In particular, many of the geographical variables used to explain different institutions can certainly be better measured. Given that the institutional data have been collected and scored via existing historical scholarship, one may be concerned of potential biases in data collection. We will put online not only our scores for particular variables, but also literature notes to justify particular scores.

Finally, it is important to disentangle relationships between many of the variables introduced here. We are well aware that the current paper does not go beyond broad quantitative description. Nevertheless, given the novelty of the data and the approach, we think this descriptive exercise is an important first step.

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TABLES

TABLE 1. Statist and Market Systems Compared.

	market institutions	**statist institutions**
Comparative advantage of trade		
heterogeneity of production conditions	strong	weak
easyness of transport	strong	weak
closeness to hot trading zone	strong	weak
Other geographical variables		
easyness of taxation	weak	strong
easyness of conquest	weak	strong
strength of property rights		
Legal system	citizen-citizen	Ruler-subject
Land ownership	Private and public	Public
Right to own slaves	private and public	public only
Development of markets		
internal markets	strong	weak, central allocation
foreign trade	private	for the ruler
role of merchants	strong	weak
Importance of cities	large	weak
Government and society		
type of state	city-state	territorial state
government decentralization	strong	weak
tolerance to foreigners	strong	weak
ethnic diversity	strong	weak
social stratification	strong	weak
strength of clan	weak	strong
kinship	bilineal	unilineal

Table 2. CORRELATION MATRIX.

	Indiv.	domestic trade	Internat. trade	clan str.	social strat.	Imp. of merch.	Toler. of for.	Ease of Trans.	Imp. of cities	Law (citizen to citizen)	private slaves	Hetero. trade cond.	Close to a trading hot zone	ethnic div.	Eas. of tax.	Eas. of congu.	Land rights	gvt centr./concen.
individualism	1																	
domestic trade	0.6392	1																
international trade	0.5701	0.7727	1															
clan strength	-0.477	-0.3521	-.3275	1														
social stratification	0.3367	0.2849	0.2614	-0.1884	1													
importance of merchants	0.5327	0.8291	0.7668	-.3955	0.2207	1												
Tolerance of foreigners	0.1903	0.4649	0.4992	-0.1229	0.2679	0.6226	1											
Ease of Transportation	0.5410	.6231	.5797	-.2440	0.1334	.6476	.4354	1										
Importance of cities	-0.064	.4662	.5398	-0.0454	.2175	.5431	.6017	0.4521	1									
Law (citizen to citizen)	.6625	.6384	.6214	-.2746	.2481	.5744	.3010	.4788	.2258	1								
private slaves	.5585	.6845	.7103	-.3821	.3067	.6831	.5834	.5928	.4101	.6930	1							
heterogeneity of trade conditions	0.1359	.2739	.4227	-0.086	.2491	.3368	.3986	.2758	.4173	.2760	.3704	1						
Close to a trading hot zone	.3789	.5975	.6137	-.2328	0.131	.6380	.7163	.6676	.5354	.3762	.6162	.4054	1					
ethnic diversity	-0.016	.2615	.2999	-0.0458	.2607	.3341	.6848	0.1999	.4853	0.1928	0.3921	.5048	.4596	1				
easiness of taxation	-.2566	-.3106	-.3590	0.1868	0.0529	-.4892	-0.1746	-.3116	-0.0349	-.4432	-.4143	-0.1056	-0.1932	0.0714	1			
easiness of conquest	-0.0555	-0.0136	-0.0341	0.1613	0.0757	-0.0252	.3727	0.172	0.1792	0.0459	0.0851	-0.03	.2499	.3836	0.1786	1		
private land rights	.6547	.7725	.6833	-0.4372	.2735	.7657	.4126	.6116	.2899	.8018	.7315	.2688	.5589	.2292	.4171	-0.0689	1	
gvt centraliz./concentration	-.2088	-.3923	-.4017	-0.002	-0.1409	-.4431	-.4342	-.3292	-.3828	-.4889	-.3945	-.2743	-0.2037	-.2716	.5132	-.2460	-.3599	1

TABLE 3: Potential benefits of Trade and intensity of Trade in Ancient Times

	(1) Domestic trade OLS	(2) Domestic trade OLS	(3) International trade OLS	(4) International trade OLS	(5) Importance merchants OLS	(6) Importance merchants OLS
Ease of transportation		0.470***		0.259**		0.284***
		(0.106)		(0.111)		(0.105)
Hetero. Trade conditions	0.291**	0.032	0.413***	0.216**	0.310***	0.079
	(0.134)	(0.119)	(0.116)	(0.092)	(0.110)	(0.094)
Close to trading hot zone		0.259**		0.267**		0.308***
		(0.121)		(0.115)		(0.106)
Easiness of taxation	-0.406***	-0.251**	-0.350***	-0.243**	-0.476***	-0.352***
	(0.135)	(0.116)	(0.116)	(0.108)	(0.102)	(0.085)
Observations	84	83	84	83	84	83
R-squared	0.172	0.514	0.267	0.496	0.282	0.562

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Importance of cities in Early Times.

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS
Ease of transportation		0.239*		0.228*
		(0.123)		(0.121)
Heterogeneity of trade conditions	0.535***	0.293*	0.548***	0.303*
	(0.122)	(0.167)	(0.118)	(0.165)
Close to a trading hot zone		0.316*		0.298*
		(0.160)		(0.160)
Easiness of taxation	-0.056	0.058		
	(0.097)	(0.082)		
Easiness of conquest			0.211*	0.056
			(0.116)	(0.103)
Observations	83	82	83	82
R-squared	0.164	0.340	0.191	0.340

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE 5: Institutional effects. Law citizen to citizen.

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS
Domestic trade	0.720***				0.268	
	(0.076)				(0.180)	
International trade		0.813***			0.567***	
		(0.097)			(0.213)	
Importance of merchants			0.749***		0.228	
			(0.091)		(0.226)	
Importance of cities				0.260**	-0.224**	
				(0.124)	(0.106)	
Ease of transportation						0.548***
						(0.145)
Hetero. Trade conditions						0.217
						(0.167)
Close to trading hot zone						0.034
						(0.159)
Observations	95	95	95	86	86	83
R-squared	0.408	0.386	0.330	0.051	0.479	0.272

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE 6: Institutional effects. Private slaves

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS
Domestic trade	0.792***				0.308*	
	(0.066)				(0.178)	
International trade		0.943***			0.510**	
		(0.072)			(0.208)	
Importance of merchants			0.904***		0.216	
			(0.073)		(0.199)	
Importance of cities				0.477***	-0.005	
				(0.111)	(0.101)	
Ease of transportation						0.426***
						(0.124)
Hetero. Trade conditions						0.206
						(0.138)
Closeto trading hot zone						0.402***
						(0.134)
Observations	96	96	96	87	87	84
R-squared	0.468	0.504	0.467	0.168	0.568	0.460

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE 7. Social stratification in ancient times.

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS
Private slaves	0.167***					0.133
	(0.061)					(0.091)
Law citizen to citizen		0.138**				0.001
		(0.064)				(0.110)
Importance of merchants			0.161**			-0.066
			(0.076)			(0.124)
Private land ownership				0.156**		0.072
				(0.061)		(0.126)
Clan strength					-0.127*	-0.055
					(0.069)	(0.074)
Observations	93	92	93	91	93	90
R-squared	0.094	0.062	0.049	0.075	0.036	0.103

Notes: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE 8: Long run effects of early institutions on individualism scores

	(1)	(2)	(3)	(4)	(5)
Ease of transportation	4.028***				
	(0.583)				
Law citizen to citizen		4.185***			3.021***
		(0.487)			(0.523)
Private slaves			3.629***		1.304**
			(0.477)		(0.544)
Social stratification				3.790***	1.660*
				(1.076)	(0.860)
Observations	95	95	96	93	92
R-squared	0.293	0.439	0.346	0.113	0.502

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

FIGURES

Figure 1

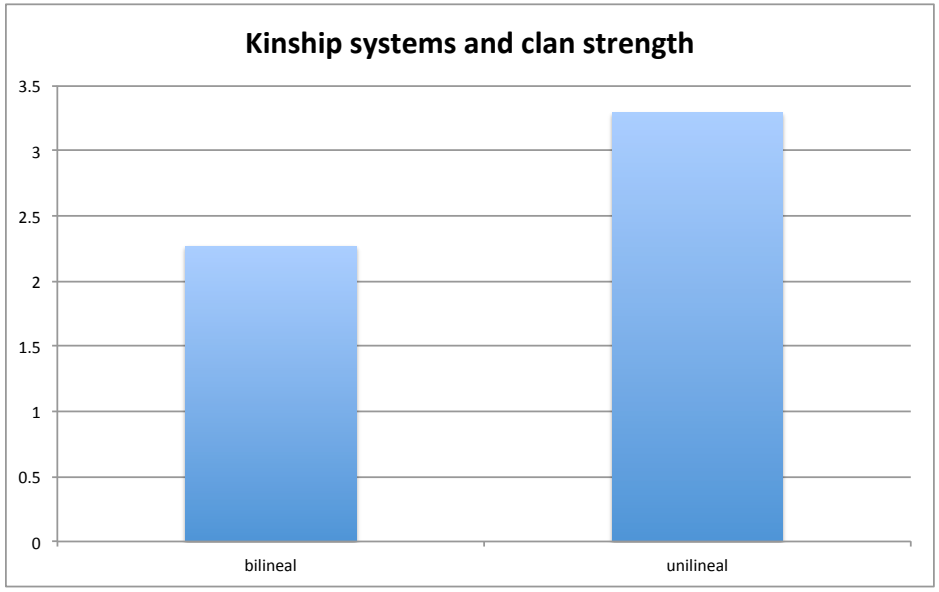


Figure 2

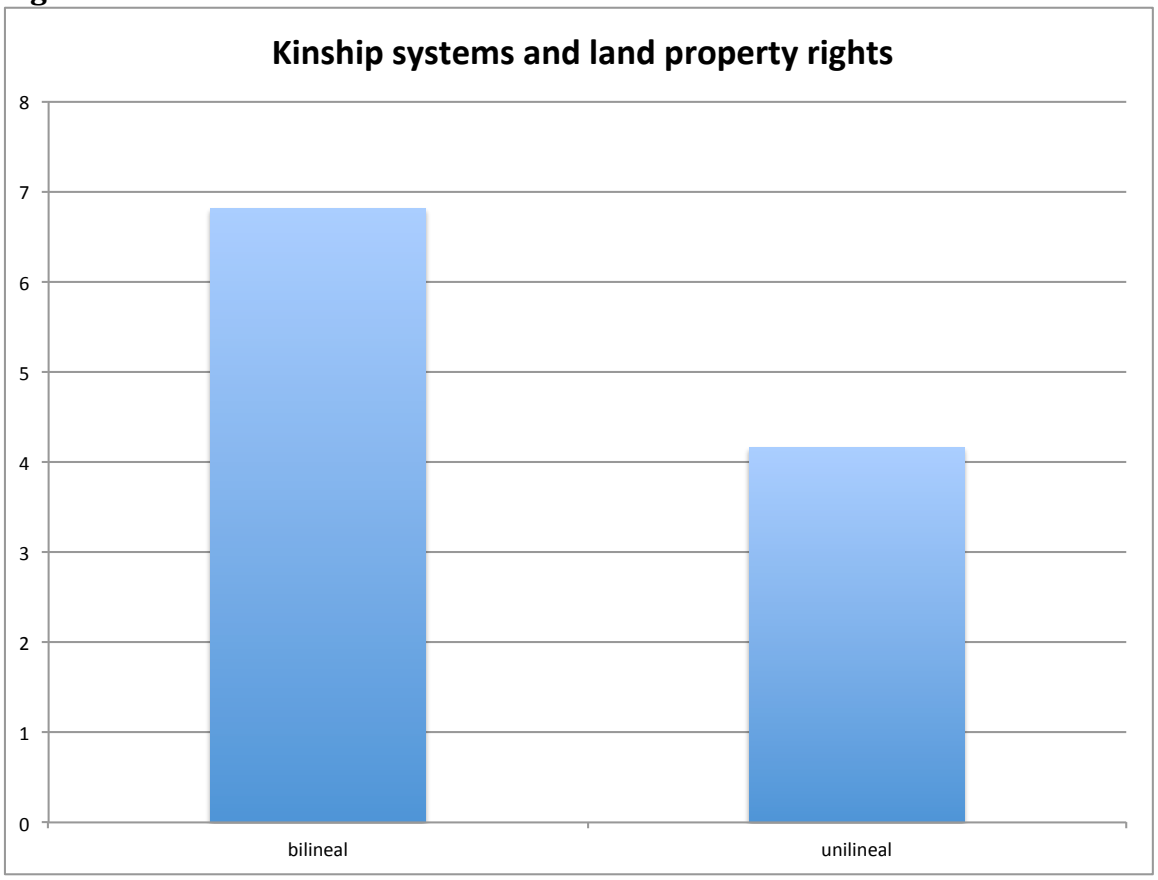

Kinship systems and land property rights
8
7
6
5
4
3
2
1
0
bilineal
unilineal

Figure 3

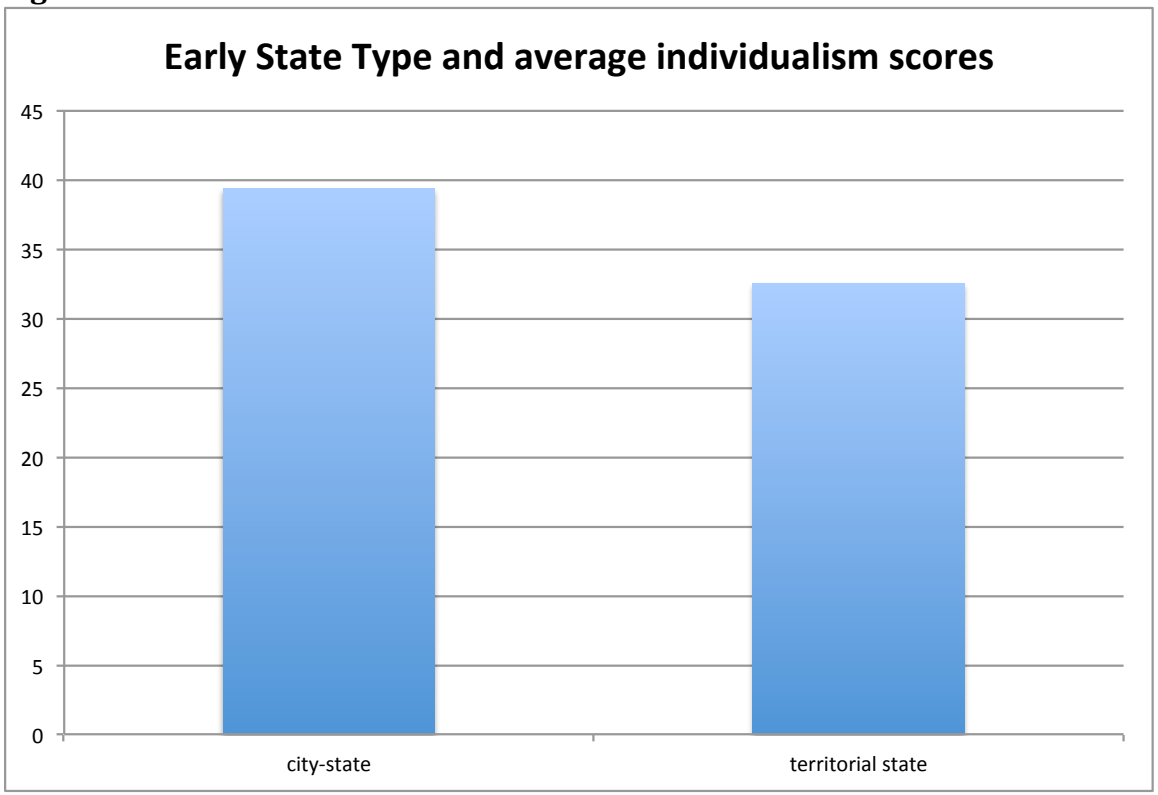
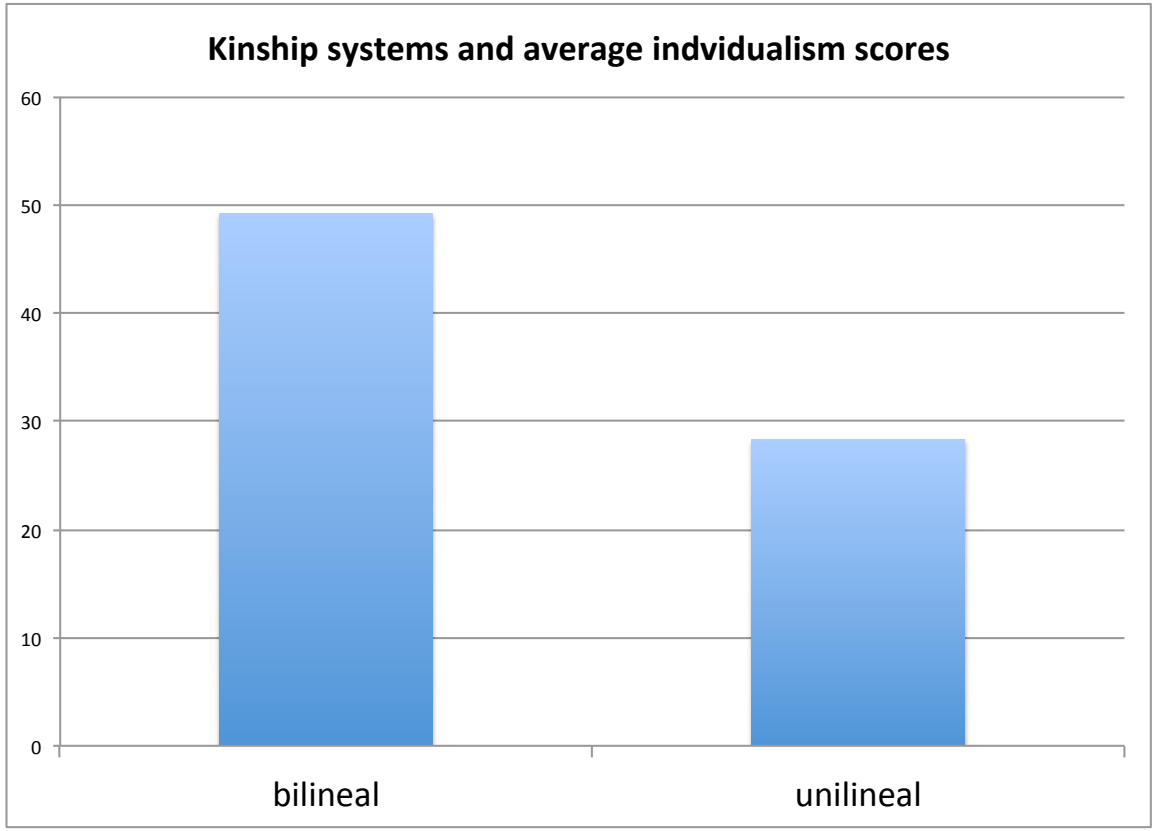

Early State Type and average individualism scores
45
40
35
30
25
20
15
10
5
0
city-state
territorial state

Figure 4


Kinship systems and average indvidualism scores
60
50
40
30
20
10
0
bilineal
unilineal

.

APPENDIX.

Table A1. Mapping between modern countries and ancient or founding civilizations

Albania	Illyria	France	Franks
Angola	Kongo, Mbundu, …		ancient Rome
Argentina	Spanish colony	Germany	Ancient Germanic tribes
Australia	English colony	Ghana	Ashanti
Austria	ancient Germanic tribes	Greece	Ancient Greece
Bangladesh	Bengal	Guatemala	Spanish colony
Belgium	independent cities	Honduras	Spanish colony
Bhutan	Bhutan	Hungary	Hungary
Brazil	Portuguese colony	Iceland	Viking
Bulgaria	Blakanic Bulgaria	India	Mauryan Empire
Burkina Faso	Mossi kingdoms		Tamil states
Canada	British colony		Bengal
Chile	Inca	Indonesia	Indonesian Islands
	Spanish colony	Iran	Ancient Persia
China	Ancient China (Shang and later)	Iraq	Mesopotamia
Colombia	Inca		Assyria
	spanish colony	Ireland	Celtic Ireland
Costa Rica	Spanish colony	Israel	ancient Israel
Croatia	Ancient Rome + Eastern Adriatic coast	Italy	Ancient Rome
Czech Rep.	Bohemia	Jamaica	Spanish colony
Denmark	Viking	Japan	Ancient Japan
Dominican Rep.	Spanish colony	Kenya	Swahili kingdoms
Ecuador	Inca	Korea	Ancient Korea (Gokuryo, Baekje, Silla)
	spanish colony	Kuwait	Mesopotamia
Egypt	Ancient Egypt	Latvia	Livonia
El Salvador	Spanish colony	Lebanon	Phenicia
Estonia	estonian tribes	Libya	Arabia
Ethiopia	Aksum	Lithuania	Grand Duchy of Lithuania
Fiji	Fiji	Luxembourg	Germanic tribes
Finland	Finnish tribes		

(continued below)

Table 2 (continuation)

Malawi	Maravi	South Africa	Boers
Malaysia	Malaysia + Sumatra	Spain	reconquista Castille
Mexico	Aztec		Catalonia
	Maya		Aragon
	Spanish colonizer	Sri Lanka	Sri Lanka
Morocco	Morocco	Sweden	Viking
Mozambique	Tonga, Makua, Maravi and Karanga	Switzerland	Germanic tribes
Namibia	German colony	Syria	Mesopotamia
Nepal	Nepal		Assyria
Netherlands	Independent cities	Taiwan	China
New Zealand	English colony	Tanzania	Swahili kingdoms
Nigeria	Yoruba	Thailand	Dvaravati
Norway	Viking	Trinidad and Tobago	Spanish colony
Pakistan	Ghaznavid	Turkey	Seljuk/Ottoman
Panama	Spanish colony		Assyria
Peru	Inca	United Arab Emirates	Arabia
	Spanish colony	United Kingdom	Saxons
Philippines	Spanish colony	United States	English colony
	pre-colonial	Uruguay	Spanish colony
Poland	Piast dynasty	Venezuela	Spanish colony
Portugal	reconquista Portugal	Vietnam	Champa
Romania	Balkanic region	Vietnam	North Vietnam/Southwest China/Tonkin
Russia	Russia post-Tatar (Muscowy)	Zambia	Bemba Kingdom
Saudi Arabia	Arabia		
Serbia	Balkan		
Sierra Leone	Tribes of Sierra Leone		
Singapore	China		
Slovakia	Hungary		
Slovenia	Ancient Rome + Balkan		

SCORING CRITERIA (DESCRIPTION TO BE COMPLETED).

Heterogeneity of production decisions.

1-2: Very homogeneous geographical environment, one or only a few kinds of resources. Typically, barren land due to climate or other geographical constraints; alluvial plain only for grain production; plantation economy
3-4: A few kinds of resources/products, some differences of environment across the geographical surroundings.
5-7: Some diversity of notable resources, a differentiated environment across the geographical surroundings and closeness to places with different resources.
8-10: Very diverse geographical environment, many kinds of resources. Typically, vibrant interregional trade of natural resources

Easyness of transport

1: no access to water transportation (lakes, rivers or sea); land transportation has to overcome significant natural barriers (jungles, swamps or high mountains) typically lacked beasts of burden and wheeled carts
2: lacked navigable rivers, land transportation encounters significant natural barriers (jungles, swamps, high mountains)
3: lacked water transportation, land has some natural barriers that block communication
4-5: lacked river transportation, but land routes are well-maintained and do not encounter much natural barriers
6: Moderate river transportation, land transportation has some barriers (hills, trails, forests, deserts)
7: Moderate river transportation, easy land transportation. (well-maintained roads or plains)
8: fairly easy maritime and/or river transportation, difficult land transportation (e.p. jungles, mountains, bogs)
9: easy maritime and/or riverine transportation, moderate difficulty of land transportation (e.p. forests, deserts, hills, trails)
10: easy maritime and/or riverine transportation; easy land transportation (road systems; plains, etc)

Land Ownership

1: no evidence of private ownership in society, state ownership dominates.
2: no evidence of private ownership in society, state ownership + communal or chief ownership
3: no evidence of private ownership in society, communal ownership dominates.
4: some evidence of private ownership, which coexisted with communal/familial/institutional ownership

5: mixed, limited private ownership
6-7 Private land dominates, cannot be transferred; usufruct rights; not inheritable, reverted to the state after death (iqta, Prazo)
8: Private land dominates: owned by a single person; cannot be transferred. Inheritable but had only usufruct rights.
9 Private land dominates: owned by a single person; limitations on land transaction or little evidence of land transaction (example: land can only be transferred within the clan or kindred); inheritable, an individual can dispose the land at his or her own will.
10: Private land dominates: owned by a single person; strong evidence of land transfer and transaction. Can be inherited, an individual can dispose the land at his or her own will.

Private Slavery

1: no slaves: serfdom and servants; masters integrated war captives into the clan/ adoption;
2: no private slaves: uncommon for individuals to hold slaves; typically, slaves were war captives; slaves were held by the chief/ruler/king/state and worked for the ruler; absence of slave market and slave trade; communal work or corvee labor replaced slavery in public works
3-4: private slaves existed, yet played a minor part in economic life. Little evidence of slave market and slave trade
5-6: individuals can own slaves; existence of slave market and slave trade; slavery coexisted with serfdom and other forms of labor in society
7-8 slaves were traded in market as property; individuals can own slaves; existence of slave market and slave trade; law defined slaves as objects; slavery played an important economic role in society
9-10: Private slaves
slaves were traded in market as property; very common for individuals to own slaves; very active slave market and slave trade; law defined slaves as objects; slavery played a very important economic role in society

Role of Merchants

1: No market, reciprocity and redistribution
2-3: taxation to discourage private trade, state agents competed with private merchants
4-5: strictly regulated market with private merchants + state monopoly
6-7: strictly regulated market with private merchants
8-9: government had certain limitations on private trade
10: Private merchants in a free market

Government centralization

1: decentralized. Lacked a form of government; society is fragmented into many small and autonomous entities (bands/families/villages)
2: Decentralized, lack a central government. many local authorities are autonomous and there is not a single central authority unifying them (tribes)
3: mandala/large chiefdom/tribal confederations. The central authority has weak or only nominal suzerainty over local authority, local authorities are de facto independent and autonomous
4: suzerain-tributary/vassal relationship (feudalism)
5-6: power is shared between the central authority and local authorities/institutions; the central government has limited control over local authorities, some areas (cities/towns/state) have rights of autonomy
7-8: the central authority is powerful and is able to exert influence and control over local authority, but the effectiveness is limited by some other factors (ineffective bureaucracy/religion/communication etc.); local authority keeps certain independent rights
9: highly centralized government; the central government has effective economic and political control over most local government (certain areas have limited autonomy/tributary states/vassal states)
10: highly centralized government; the central government has an effective bureaucracy/tools to control local authority in almost all aspects

SOCIAL STRATIFICATION

1: society is not stratified (egalitarian). Status is not hereditary. Typically seen in pre-states or in tribes, clans based on kinship
2: Few distinguishable social strata existed in society. Status is not hereditary for the most cases and widespread mobility between different social strata
3: Society has a few social strata. Status is not strictly hereditary and meritocracy could provide possibility of vertical mobility
4: Society has a few social strata. Some strata are hereditary while there is mobility in the others. Example: Hereditary freemen and slaves. Lacked hereditary aristocracy within freemen. the vertical mobility within the group of freemen is possible and prevalent
5: Society has many social strata. Some strata are hereditary while there is mobility in the others. Example: Hereditary freemen and slaves. Weak hereditary aristocracy within freemen. the vertical mobility within the group of freemen is possible
6,7: Society has many social strata. Most strata are hereditary; limited vertical mobility between strata. Example: hereditary freemen and slaves. Within the freemen group, there were the distinctions between hereditary aristocratic groups and commoners/peasants/serfs
8, 9: Society is highly stratified. Caste existed in most social classes/groups. An individual's status is almost strictly hereditary. Limited vertical mobility among different strata in the hierarchy

10 Society is highly stratified. Strong Caste in almost all classes/groups. An individual's status is strictly hereditary. Social status is ascribed; very limited vertical mobility among different strata in the hierarchy

(TO COMPLETE)