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THE ORIGINS AND SEQUENCES OF CIVILIZATIONS

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ABSTRACT

Recent archaeological data suggests specific points of origin for most major sequences of civilizations. Since we are dealing with origins, and the information available on early societies is sparse, we will consider early societies of at least 3,000 – 5,000 people and significant architecture as civilizations (as archaeologists are wont to do). We point out that the lifetime of these civilizations tends to be about 1,000 years and use that information, and other data, to deduce sequences of civilizations in the Americas and the Middle East.

In particular, Andean civilizations (and possibly Mayan civilizations) may have originated at Caral, Peru and followed paths to the north and south culminating in Mayan/Aztec civilization in the north, and Inca civilization in the south over a period of roughly four thousand years. The almost linear geometry imposed on the movement of civilizations by the Andes mountains leads to sequences of civilizations of one thousand years duration that are roughly linear geographically to the north and south.

Similarly, civilizations in the Middle East may have originated in the region around Göbekli Tepe, Anatolia c. 9600 BCE shortly after the end of major climate swings twelve thousand years ago. The sequence of early civilizations in Asia Minor and the Fertile Crescent suggest that they sprung up periodically on the two-dimensional geometry of the region. Subsequently the number of descendent civilizations obscured the geographical pattern of growth.

Other possible points of origin for civilizations include the Yellow River region of China and the Indus Valley region of India.

Thus early civilizations appear to have an orderly sequence of growth from specific points of origin.

INTRODUCTION

The origin of civilization has been a topic of much interest over the years. Numerous questions have been raised about the origin and development of civilizations. What conditions are necessary for the development of a civilization? Why did a civilization develop at one location but not at a similar location elsewhere? When do conditions become ripe for the development of a civilization? After a civilization appears,
how does it evolve? Do civilizations, in themselves, have a natural lifetime? Is there a common pattern to the passage from one civilization to a successor civilization in the same general region?

All of these questions have been the subject of theoretical speculation. It has been difficult to address these questions empirically because historic times have a plethora of Eurasian civilizations in interaction with each other and a long clouded prehistory that obscures the manner of development of successions of civilizations. American civilizations have not been as numerous and were more geographically dispersed. However, archaeological data is only now becoming available that would help answer these questions in the Americas.

THE EARLIEST CIVILIZATIONS

The earliest civilizations in the Middle East and in the Americas appear to have sprung up in specific locations and then to have spawned successor civilizations. A sequence of successor civilizations has been identified in Anatolia and two sequences in Peru. They show a consistent geographic pattern — particularly in the case of Peru, where the civilizations regularly appear at approximately 1,000-year intervals separated by distances of the order of 200 kilometers, plus or minus.

The case of the development of the earliest civilizations in the Americas is especially interesting because the Andes mountains constrains the movement of people to a linear dimension along the west coast of South America. It also raises the possibility that the ultimate origin of all Central American civilizations may lie in Peru.

The area where the earliest civilizations have been found is Anatolia and the Fertile Crescent of the Middle East. These civilizations have been traced back as far as c. 9,600 BCE (just after the beginning of climate stabilization after the ice ages).

Other possible locations for the origin of “first civilizations” such as the Yellow River region in China and the Indus Valley region of India do not as yet appear to have a sufficiently known early prehistory (prior to 5,000 BCE) for analysis.

Some results of our study of the aforementioned early civilizations are the following:

• The first civilization in a given region emerges in an area that 1) has the resources needed to support the development an “affluent” society with a significant leisure class; 2) has a population capable of developing those resources; and 3) is isolated enough from other groups to develop.
their society initially in comparative security without the debilitating effects of constant warfare.

- The first civilization diffuses its social and cultural knowledge to nearby regions through trade, hunting expeditions, and searches for raw materials, such as obsidian.

- After a period of roughly 1,000 years (the apparent lifetime of an isolated civilization) the first civilization disappears and one or more “daughter” civilizations appear at some (not very far) distance and go through similar processes, thus leading to a similar succession of civilizations.

THE NORMAL LIFETIME OF A CIVILIZATION

At first glance civilizations do not appear to have a fixed or meaningful average lifetime. Chance external and internal events can, and do, end civilizations. And the variety of cultural and social institutions of civilizations would seem to militate against a fixed lifetime.

Yet if we examine isolated civilizations we find that they seem to have a fixed lifetime of about one thousand years after which they seem to dissipate or peter away. Some examples of these isolated (or semi-isolated), one thousand year civilizations, and their lifetimes, are shown in Table 1:

<table>
<thead>
<tr>
<th>Civilization</th>
<th>Lifetime</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sumerian</td>
<td>1100</td>
<td>3000 BCE–1900 BCE</td>
</tr>
<tr>
<td>Classical Mayan</td>
<td>1123</td>
<td>223 BCE–900 CE</td>
</tr>
<tr>
<td>Northern Peru: Moche (Moehica) Civilization</td>
<td>1150</td>
<td>400 BCE?–750 CE</td>
</tr>
<tr>
<td>Norte Chico Region, Peru: Caral Civilization</td>
<td>900</td>
<td>2700 BCE–1800 BCE</td>
</tr>
<tr>
<td>Egyptian Civilization</td>
<td>934</td>
<td>2558 BCE–1624 BCE</td>
</tr>
<tr>
<td>Southern Nubia: Kingdom of Kush</td>
<td>1004</td>
<td>654 BCE–350 CE</td>
</tr>
<tr>
<td>Mauritania &amp; Mali: Empires of Ghana &amp; Mali</td>
<td>950</td>
<td>600? CE–1550 CE</td>
</tr>
<tr>
<td>Zimbabwe: Great Zimbabwe Civilization</td>
<td>1000</td>
<td>500 CE–1500 CE</td>
</tr>
<tr>
<td>China: Yellow River Civilization</td>
<td>1083</td>
<td>2205 BCE–1122 BCE</td>
</tr>
<tr>
<td>Japan</td>
<td>846</td>
<td>1022 CE–1868 CE</td>
</tr>
<tr>
<td>Anatolia: Çatalhöyük</td>
<td>1500</td>
<td>7500 BCE–6000 BCE</td>
</tr>
</tbody>
</table>

The 1500-year “lifetime” of Çatalhöyük may be overestimated due to the proximity to a later settlement on the opposite side of its river that
appears to have started growing as Çatalhöyük was declining.

Some of the civilizations that seemed to “just peter out” are Classical Mayan, Kush, Caral, the Empires of Ghana and Mali, Çatalhöyük, and Great Zimbabwe. It is quite remarkable that isolated or semi-isolated civilizations end for no apparent reason. Blaha 2006 suggests the reason is epigenetic – a multi-generation genetic effect. Based on the lifetime of these early civilizations we conclude that there appears to be a one thousand year lifetime for civilizations.

THE EARLIEST CIVILIZATIONS

The earliest civilizations in historical times date back to about 3,000 BCE. These civilizations are the Egyptian, Chinese, and Sumerian civilizations. There is evidence for prehistoric civilizations dating back to about 10,000 BCE when the world emerged from a phase of abrupt climactic changes punctuated by major ice ages. Since 10,000 BCE the world climate has been more or less stable with a few “mini-ice ages,” and thus conducive to the development of stable societies that can last for many generations and thus can accumulate wealth and make cultural advances.

Almost “immediately” after the end of the ice ages we find the development of the first vestiges of civilization – the structures of the Göbekli Tepe ceremonial center in southeastern Turkey (c. 9,300 BCE) with colossal, carved columns and sizeable monumental structures. Then Jerico (Tall As-Sultan) appeared about 9,000 BCE and Asikli Höyük, a town of perhaps a few thousand hunter-gatherers, appeared about 8,400 BCE. Asikli Höyük has residential buildings and some streets but no obvious fortifications suggesting that marauders were not a problem. Çatalhöyük, a large city of 5,000 – 7,000 inhabitants in the 7th millenium BCE, stands out amongst these sites because of its size. The dawn of the age of civilizations seems to have been rather rapid after climatic conditions became favorable, suggesting that the prerequisites for civilizations – skills and cultural values – existed before that time within the small hunter-gatherer groups of which Mankind was constituted.

In the Americas a similar beginning of civilizations appears around 2700 BCE in Caral Peru – a large city with several enormous pyramids. We shall see that Caral is arguably the mother of Andean civilizations, and perhaps even the grandmother of the civilizations of Central America and Mexico. The 7000 year difference in the beginnings of civilizations in Eurasia and the Americas is probably explainable by differ-
ences in climatic conditions, geography and population density. But detailed data explaining the difference remains to be found.

**REQUIREMENTS FOR THE START OF A FIRST-GENERATION CIVILIZATION**

If we examine the first civilizations in Anatolia and the Fertile Crescent, and in Peru, we see that certain conditions tend to promote civilizations although some of these conditions may be absent. Perhaps the general basis for the development of a civilization is a favorable environment for a large increase in wealth of a civilization both in external terms (food, gold, jewels and so on) and internal terms (a growth in knowledge and culture).

A list of the requirements for civilization based on the prior development of the basic talents and skills of humanity is:

- Good water
- Food sources:
  - Good fishing
  - Good hunting
  - Fertile fields for gathering initially and cultivation afterwards
- A sufficiently large population density in the region from which a city can aggregate.
- A generally pacific (peace-loving) population with the goal of increasing personal and communal wealth
- Good weather year to year
- An environment conspiring to provide easy steps upward in prosperity
- Peace until the civilization is well enough established to defend itself
- A growing population
- A growth of wealth from generation to generation

These features seem to be present in the case of the earliest civilizations in Peru and the Middle East. These civilizations are located near water, have fishing and hunting resources and fertile fields nearby with stable weather conditions and a lack of significant enemies initially (no fortifications).

**SEQUENCES OF CIVILIZATIONS**

An examination of Eurasian civilizations in historic times shows that they can be grouped in sequences of successive civilizations in var-
ious geographic regions. This is particularly true in regions separated from other civilizations by mountains and deserts. Some examples of regions with sequences of civilizations are China, India, the Middle East, Egypt and Europe (See Blaha 2002). Although there have been interactions and sizeable interchanges between these civilizations the large native populations of these regions have given stability to the culture and life style from civilization to successor civilization.

In the next section we will consider the case of Andean civilizations which will show a clear pattern of sequences of civilizations. Then we will consider Middle East civilizations at the dawn of civilizations 12,000 years ago and see suggestions of a pattern of sequences of civilizations. Lastly we will consider the possibility of a super-sequence of civilizations progressing from the first known Andean civilization to Classical Mayan civilization.

THE ANDEAN SEQUENCE OF CIVILIZATIONS

Beginning as early as 2700 BCE a series of civilizations developed along the coast of Ecuador, Peru and Chile. It appears that the first civilization was at Caral in the Supe River Valley about 120 miles north of Lima, Peru. Its beginnings have been radiocarbon dated to approximately 2700 BCE. About this time the Caral civilization was building several large pyramids on the scale of those at Giza, Egypt. Due to its age Caral has been called the mother of Andean civilizations. Caral is about eleven miles inland from the coast in the Supe River Valley. It obtained seafood from the coastal fishermen and shellfish harvesters. It had extensive irrigated fields not only for food but also for cotton to make clothing and for trade with the coast and with the interior.

Caral’s central location along the coast of Peru, and its early prominence, also suggest that it was a point of radiation of civilization to the coastal civilizations both to the north and the south as well as civilizations in the highlands.
Table 2. Some Andean civilizations prior to the Spanish Conquest.

<table>
<thead>
<tr>
<th>Name</th>
<th>Origin or Location</th>
<th>Approximate Dates</th>
<th>Tools</th>
<th>Pottery</th>
<th>Pyramids or Large Structures</th>
<th>Fortifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caral</td>
<td>Supe Valley</td>
<td>2694 BCE – 1800 BCE</td>
<td>Stone</td>
<td>None</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>Casma</td>
<td>Casma Valley</td>
<td>1500 BCE – 400 BCE</td>
<td>Metal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>La Florida</td>
<td>Lima Region</td>
<td>1710 BCE – 7765 BCE</td>
<td>Metal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Moche</td>
<td>Moche Valley</td>
<td>400 BCE – 750 CE</td>
<td>Metal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tiwanaku</td>
<td>Near south shore, Lake Titicaca</td>
<td>200 BCE – 1000 CE</td>
<td>Metal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Huari</td>
<td>Central Peruvian Highlands</td>
<td>200 BCE – 1000 CE</td>
<td>Metal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Chimú</td>
<td>Moche Valley</td>
<td>1000 CE – 1460 CE</td>
<td>Metal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Chincha</td>
<td>Southern Peruvian Coast</td>
<td>1000 CE – Mid-15th Century</td>
<td>Metal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Inca</td>
<td>Cuzco Valley</td>
<td>1359 CE - 1535 CE</td>
<td>Metal</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The civilizations that followed include the Casma, Moche, Huari, Chimú, Chincha and Inca civilizations. The Caral and Casma civilizations were primarily restricted to the valleys in which they resided although they had trade contacts with coastal and Amazon Basin societies. The Moche, Huari, Chimú, Chincha and Inca civilizations controlled sizeable regions and developed roads for their domains. Table 2 gives some basic details of these civilizations.

While it would be of interest to follow the trails of these civilizations in detail, our purpose is to identify the sequences of civilizations and see the broader picture of the dispersal of civilizations with time. Examining Table 2, and more detailed archaeological data, we can identify two sequences of civilizations (with the realization that their cultures and pottery occasionally changed during, and between, successive civilizations.) One sequence consists of the Caral, Casma, Moche, and Chimú civilizations. These lie to the north of Lima and the chronological order of these civilizations is progressively northward. Caral is about 200 km north of Lima; Casma is about 150 km north of Caral; the Moche Valley is about 200 km north of Casma. See Fig. 1.

The other sequence consists of Caral, La Florida, Huari, Chincha, and Inca civilizations. The latter three civilizations in this sequence are to the south of Lima. Cuzco, home of Inca civilization, is about 300 km southeast of Huari. Chincha is on the coast about 200 km from Huari. Huari is about 300 km from La Florida, and La Florida is about 200 km
southeast of Caral.

The Tiwanaku civilization does not appear to be part of a sequence although traces of its artifacts were found at Huari and elsewhere in the Andes. It appears to have disappeared by 1200 CE. This civilization, which lasted from perhaps 200 BCE to 1000 CE, dominated southern Peru, northern Chile, and eastern and southern Bolivia. Its capital city has an enormous step pyramid, the Akapana Pyramid. Most of its major buildings were constructed between 200 CE and 600 CE.

The two sequences of Andean civilizations that we have identified follow interesting geographic paths. Sequence I civilizations tend to go northward. Sequence II civilizations tend to go southward although the Inca civilization conquered both the northern and southern regions. The map in Fig. 1 graphically illustrates this point as does the distances between the various sites given above.

SEQUENCE I OF ANDEAN CIVILIZATIONS: CARAL, CASMA, MOCHE, CHIMÚ

The Casma civilization appears to have been a successor civilization to Caral. As Caral melted away in the 19th century BCE Casma civilization began about 1500 BCE. It ended in 400 BCE. Little is known of its history although its monumental buildings and artifacts are the subject of continuing study.

The successor of Casma civilization was Moche civilization. This civilization lasted from about 400 BCE to 750 CE. The successor of Moche civilization was Chimú civilization which lasted from about 1000 CE to 1460 CE. Chimú civilization also started in the Moche River Valley. Its capital was Chan Chan. In 1370 CE the Chimú ruler Ñançen Pinco expanded Chimú to include the territory from the Sana River in the north to the Santa River in the south. In the 15th century until the 1460’s Minchan Çaman expanded the domain further north to Piura and south to Lima. Chimú was conquered in the 1460’s by the Incas.

SEQUENCE II OF ANDEAN CIVILIZATIONS: CARAL, LA FLORIDA, HUARI, CHINCHA, INCA

Sequence II of Andean civilizations also begins in Caral – the “mother” of Andean civilizations. When Caral dissolved towards 1800 BCE it appears that its people dispersed both to the north and to the south.

The Casma civilization nicely fills the period from 1500 BCE to 400 BCE in the north. The successor of the Caral civilization in the
south is problematic. We know that a huge pyramid and building complex appeared in La Florida in the period from 1710 BCE to perhaps 776 BCE. We also know that successor civilizations generally seem to appear 200 – 300 km from their parent civilization in both sequence I and sequence II. The Lima – La Florida region is about 200 km southeast of Caral. Thus the time period, and the distance, seems appropriate for a civilization at La Florida. However the building complex at La Florida is largely unexplored and the extent of this civilization is unknown. Thus we will simply assume it existed as an intermediate civilization in sequence II (pending archaeological verification.)

![Figure 1. Two sequences of Andean civilizations.](image-url)
Sequence I goes generally north from Caral; sequence II goes generally south from Caral. The Inca civilization grew from Cuzco to absorb all of the coast and highlands between northern Chile and Ecuador.

The Huari civilization in the central Peruvian Highlands lasted from about 200 BCE to 1000 CE. The first period of the settlement of Huari occupied the period from 200 BCE to 600 CE. A sizeable Huari empire existed from 600 CE to 1000 CE from Cajamarca and the Chicama Valley in the north to the Ocoña Valley on the south – a distance of approximately 1000 km. The Huari city fell in 800 CE at the empire's peak, and the remainder of their domain slowly was lost over the following 200 years.

The successor of the Huari civilization appears to be the Chincha civilization (c. 1000 CE – 1450 CE) on the southern coast of Peru. This civilization was oriented to the sea and is said to have had large fleets of fishing vessels (in the thousands) that traveled to the fish-laden waters of northern Peru beyond the reach of the cold Antarctic current. At the time of the Spanish Conquest, Chincha was listed as having 30,000 households. We estimate a beginning for Chincha civilization at about 866 CE.

Inca civilization appears to have started in the 14th century. (We see here a parallel to Hellenic civilization with seafaring Greeks in the beginning and the Roman Empire as the Universal State.) In 1432 the Incas were confined to villages in the Cuzco Valley. The Incas record nine early rulers before Pachakuti 'Inka who reigned from 1438 to 1471 CE. Pachakuti and his successor Thupa 'Inka (who reigned from 1471 to 1493 CE) completed the expansion of the Inca Empire, which began in the 14th century under the fourth emperor Mayta Capac.

From 1493 – 1532 two wars of succession occurred. Thus when the Spanish arrived in 1532 they were able to take advantage of the opposing sides of the supporters of Huascar and Atahuallpa to conquer the Inca Empire.

**LINEAR GEOGRAPHY OF THE ANDEAN CIVILIZATIONS**

The coastal and highland areas of Peru offer a unique linear geography for the development and spread of civilization. If Caral is indeed the mother of Andean civilizations, as its age, central location on the Peruvian coast, and the pattern of successor civilizations suggest, then we see sequences I and II represent the successive flowering and expansion of successor civilizations in a remarkably orderly fashion to the
north, and to the south, resulting eventually in a unified Inca state embracing the entire region. In this respect one is reminded of the growth of bacterial colonies and mushroom rings. They expand outward from a center. It would seem that civilizations also expand similarly by first spreading their influence outward through trade and warfare, and then, when a sufficiently large population that have acquired the trappings of civilization from a nearby civilization develops on new land a new civilization blossoms. The earlier civilization with the baggage of declining land productivity and a bloated leisure class declines — perhaps aided by war with the new civilization.¹

The linear geography of the Andean coastline seems to make a clear case for a sequential blossoming of civilizations.

A MAYAN SEQUENCE OF CIVILIZATIONS

It appears that a sequence of Mayan civilizations existed in Central America. Classical Mayan civilization (223 BCE – 900 CE) is well known. Hodell et al⁸ has suggested that an extraordinary drought from 800 CE to 1000 CE was a major factor in its collapse. Warfare is often stimulated by a competition for food. A long drought leads to a scarcity of food, thus famine and an abandonment of cities.

Hodell et al also found major but less severe droughts in the periods: 475 BCE – 250 BCE and 125 CE – 210 CE. A number of pyramids and building complexes of the little-known Pre-Classical Mayan civilization were constructed before the 475 BCE – 250 BCE drought. It appears that Pre-Classical Mayan civilization ended somewhere within the 475 BCE – 250 BCE drought. Since the drought was less severe than the drought that ended Classical Mayan civilization, it was possible for a new Mayan civilization, Classical Mayan civilization, to begin (after a brief interregnum) in 223 BCE.

At present, knowledge of the Pre-Classical Mayan period is beginning to become available. We know of the sophistication of its artwork. But we know little else. We will use the date of the end of Pre-Classical Mayan civilization c. 300 BCE to set the date of the beginning of the civilization to c. 1300 BCE based on a civilization lifetime of approximately 1000 years. Is this beginning date reasonable? The year 0 in the Maya calendar is 3114 BCE — almost 2000 years prior to the estimated startup date. More importantly, it is known that Mayans lived in villages in 1500 BCE. Thus a beginning of Pre-Classical Mayan civilization of 1300 BCE seems reasonable.

The following facts are known about Pre-Classical Mayan civiliza-
tion and related cultures:

- South American influenced pottery has been found in Panama with dates as early as 2130 BCE.
- Pre-Classical Mayan civilization occupied Guatemala, Belize, and southern Mexico.
- Advanced Mayan artifacts have been found in the Guatemalan Highlands, and El Salvador dating to 500 BCE.
- Cival, a major Pre-Classical Mayan city in Guatemala, was founded in 1168 BCE. Its prime was reached in 150 BCE at which time it had about 10,000 inhabitants. It had pyramids and a large building complex.
- San Bartolo, in the Petén lowlands, Guatemala, has large, sophisticated artifacts dating back to 400 BCE, and Mayan handwriting samples dating back to 200 BCE.
- El Mirador in northern Petén, Guatemala was founded in 300 BCE and had a population estimated at 100,000 at its peak in 150 BCE – 150 CE. Its massive construction dwarfs Tikal.
- Tikal, in the Petén region, was a village from 900 BCE to 300 BCE. It then became a ceremonial center. Tikal underwent a period of major rebuilding and prosperity starting in 200 BCE. The immense Lost World Pyramid was built in the period from 900 BCE to 300 BCE.

The combination of Pre-Classical Mayan civilization and Classical Mayan civilization constitutes a sequence of closely related civilizations lasting for about 2,000 years, beginning about 1300 BCE.

THE ANDEAN-MAYAN CONNECTION

Although we commonly think of Mayan and Andean civilizations as distinct and separate (and this is true to a large extent), there is clear archaeological evidence that trade connections existed between coastal Andean cultures and Central American, and Mexican cultures, as far back as 2500 BCE to 3000 BCE, and probably earlier.

While Andean cultures are separated from Guatemala and Mexico by mountains, deserts, and “impenetrable” jungles, coastal travel in boats is comparatively easy. Indeed we have evidence of Colombian and Mexican influence in Ecuador, an outlying region of Andean civilizations. There is also evidence of Andean civilizations’ influence in
archaeological finds in the area of Parita Bay, Panama dating back to 2130 BCE.

The exchanges between Andean civilizations and Central America raise the question: did the trade with Andean civilizations provide the “spark” that ignited Pre-Classical Mayan civilization from a region of villages in 1500 BCE. The situation might be similar to the beginning of the European Renaissance due to the transfer of ideas and art from Classical Greece and Rome.

The time frames of trade and civilizations appear to be in agreement:

- Trade between Central America and Andean civilizations starting at least c. 2500 BCE.
- Evidence of trade exchanges up the coast to the Bay of Panama by 2130 BCE.
- Evidence of trade exchanges up to Chiapas, Mexico by 1500 BCE.
- Caral civilization lasts from 2700 BCE to 1800 BCE and the successor to the north Casma civilization lasts from 1500 BCE to 400 BCE. Both civilizations consumed seafood in large quantities and had extensive trading operations. Their seagoing capabilities are thus not in doubt.
- The city of Ocós (1500–1200 BCE) had highly developed pottery and the first temple-pyramid in Central America with a height of 26 feet.
- The Mayans transitioned from villages in 1500 BCE to Pre-Classical Mayan civilization c. 1300 BCE.
- The Pre-Classical Mayan city of Cival was founded in 1168 BCE.
- West Mexican Shaft Tombs (some as far back as 1500 BCE; most 200 BCE – 400 CE) very like Ecuador & Peru.¹¹ (Meighan & Nicholson, 1989)
- Coastal Colima (Mexico) Formative Period Capacha Phase (1500 BC) closely resembles pottery from Ecuador’s Machalilla phase11 (1500 BCE – 500 BCE) (Kelly, 1980)
- Metallurgy – starts 1500 BCE in Peru highlands; Colombia 200 BCE (approx.); introduced into West Mexico around 800 CE. Early West Mexican metallurgy very similar to South and Central American metallurgy.¹¹
Thus there is a chain of fragmentary archaeological evidence, and circumstantial evidence, supporting a link with the Caral-Casma sequence of civilizations. Trade was conducted largely in metals, minerals, gems, pottery, cloth and medicinal plants. Therefore one would expect the influence of the Caral and Casma civilizations on Pre-Classical Mayan civilization to be mostly in material goods and production techniques such as methods of pottery making. However the religion and daily life of the Central American peoples could also change based on new ideas brought in by the traders. It is particularly interesting that the first pyramidal structure in Central America was at Ocós. This structure might have been the prototype for the later pyramids of the Mayans.

One could ask why civilizations didn’t develop between the Andean civilizations and Guatemala. The reasons seem to be environmental. Much of the coastline between these regions consists of deserts or jungles with poor soils, a profusion of pests, and hot, humid climates. In addition much of the Colombian coast consists of small valleys that could not support more than small villages. Thus the gap between Andean and Central American civilizations.

Figure 2. Trade route along the South and Central American coastline from Peru to Mexico with dates of Parita Bay (2130 BCE) and Ocós (1500 BCE) artifact finds indicated.
A PREHISTORIC MIDDLE EASTERN SEQUENCE OF CIVILIZATIONS

In view of the sequences of Andean civilizations that we have found, it seems reasonable to inquire whether a similar sequence(s) of civilizations can be found in the Middle East: in particular, sequences of civilizations that ultimately became the Middle Eastern civilizations with which we are familiar in recorded history.

The Middle East does not have a linear geography like coastal Peru. Therefore we would expect the sequence(s) of civilizations to show a two-dimensional “fan-out” and thus be less obvious in their sequencing. Fig. 3 shows the locations of early civilizations/societies in the Middle East. Some of these civilizations/societies extend back in time to the 11th millennium BCE – before the relatively warm, stable climate that arrived around 8000 BCE marking the beginning of the Neolithic Period.

The “first” village of Abu Hureyra appears to have begun cultivating rye at the very end of the warm, moist interval (about 10,000 BCE) that preceded the unfavorable climate of the Younger Dryas. There is good evidence for the domestication of grains such as wheat after the Younger Dryas ended (about 8,500 BCE) and the climate had improved. Then farming became necessary when wild sources of food became insufficient to support a growing population.

In the period from 9,600 BCE to 8,000 BCE the earth appears to have warmed by about 19° C or about 1.2° C per century. (Compare this warming rate to global warming today which amounted to about 0.5°C in the past century.) During this warming period, communities and religious centers began to appear. The Gobekli Tepe ceremonial center in southeastern Turkey appeared by 9,300 BCE. The ruins of Gobekli Tepe in Anatolia near the Syrian border are truly impressive with their four colossal 50-ton, carved, 7-meter-tall limestone pillars, and the associated buildings, monuments, sculptures and painted stone panels. Two of the pillars have images of aroused lions ready to leap.

The radiocarbon dates associated with Gobekli Tepe range from 9560 BCE to 8430 BCE. Thus Gobekli Tepe stands at the juncture of the Epipaleolithic and Early Neolithic eras. The monumental architecture, and the implied knowledge of construction using large stones, as well as the artistry of the sculptures and clay figures suggest a well-developed culture and religious tradition. Gobekli Tepe was a pre-pottery civilization (like Caral in this respect) that participated in the initial
domestication of animals and plants, and the transition from a hunter-gatherer society to an agricultural society.

The roughly 1,000 year lifetime of Göbekli Tepe raises the possibility that it might have been the center of an early civilization. Although Göbekli Tepe is largely viewed as a ceremonial site it is important to remember that religious centers often have sizeable spheres of influence that could constitute a civilization.

Figure 3. Early civilizations/societies in Neolithic and Pre-neolithic, Middle East.

During Göbekli Tepe's lifetime a number of other sites appeared. Jerico (Tall As-Sultân) appeared by 9,000 BCE. At Asikli Höyük a town of hunter-gatherers appeared by 8,400 BCE with perhaps a few thousand inhabitants. The town has residential buildings and some streets but no obvious fortifications.

Starting about 9,000 BCE we see the beginnings of agricultural cultivation and animal domestication in the Fertile Crescent. And then in 8,000 BCE after "global warming" is over the Neolithic Period proper began. Farming, and villages, appeared in the Tigris and Euphrates Valleys, and in Syria, Lebanon, Israel and Jordan, before 7,000 BCE and in Greece by 7,000 BCE. The Neolithic Period starts in the Indus
River Valley by 5,000 BCE, in Southeast Asia and the Yellow River Valley (China) by 3,500 BCE, and in Mexico and Central America by 6,500 BCE. (There is evidence for much earlier cultures in the Yellow River Valley region perhaps extending back to 9000 BCE.)

A series of settlements also appeared across Anatolia within this framework of Neolithic hunter-gatherer groups and small agricultural communities. These settlements were interconnected through widespread trading channels (which also promoted information exchange). They were the intermediaries that eventually brought Neolithic culture to Europe. Some of these settlements are shown on the map in Fig. 3 and listed in Table 3.

Table 3. A table of some Neolithic and Chalcolithic civilizations/societies.

<table>
<thead>
<tr>
<th>Name</th>
<th>Approximate Dates</th>
<th>Artifacts</th>
<th>Structures</th>
<th>Fortifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epipalaeolithic Abu Hureyra</td>
<td>11th-10th Millennium BCE</td>
<td>Round huts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gōbekli Tepe Ceremonial Center?</td>
<td>9560 BCE-8430 BCE (radiocarbon dates)</td>
<td>None?</td>
<td>7 m. tall, Colossal (50 ton) Carved pillars. Monuments</td>
<td>None</td>
</tr>
<tr>
<td>Asilî Höyük, Hunter-Gatherers?</td>
<td>8400 BCE-7500 BCE</td>
<td>No, Animal figures, Beads</td>
<td>Residences, Streets, buildings</td>
<td>None</td>
</tr>
<tr>
<td>Pınarbaşı</td>
<td>Pre-Catalhöyük layers: 750-1300 years earlier than Catalhöyük</td>
<td>Yes</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>Kallepe</td>
<td>Pre-Catalhöyük quarry 400-1020 years earlier than Catalhöyük</td>
<td>Yes</td>
<td>Quarry</td>
<td>None</td>
</tr>
<tr>
<td>Can Hasan</td>
<td>Layers 750-1300 years earlier than Catalhöyük</td>
<td>Yes</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>Hacilar</td>
<td>Layers 100-970 years earlier than Catalhöyük; also 5600 BCE - 5200 BCE</td>
<td>Goddess figures</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>Pre-Pottery Neolithic B Abu Hureyra</td>
<td>7300 BCE-5800 BCE</td>
<td>Beads</td>
<td>Residences</td>
<td>7</td>
</tr>
<tr>
<td>Catalhöyük</td>
<td>7500 BCE-6000 BCE</td>
<td>Yes</td>
<td>Residences no streets</td>
<td>None?</td>
</tr>
</tbody>
</table>
A number of others are not listed, including Musular and Suberde. The dates for the Pre-Çatalhöyük layers are the “most likely” estimates from Hodder and are subject to change.

ORIGIN OF ÇATALHÖYÜK

Çatalhöyük stands out among early Middle East sites because of its size in the 7th millenium BCE. It appears to have had a population of between 5,000 – 7,000 persons in its prime and consisted of roughly 900 buildings. The only comparable city in that period in the Near East was Abu Hureyra in Syria. Because of Çatalhöyük’s population and the length of its existence (over a thousand years) we identify it as a civilization comparable to Caral in Peru (which had a similar population and lifetime.)

The origin of Çatalhöyük is uncertain but an interesting survey by Baird of a 1,000 square kilometer area around Çatalhöyük revealed that settlements existed within the survey area since about 17,000 BCE. In particular, in the 8th millenium there were 4 – 6 small settlements in the area. By 7,000 BCE these settlements appear to have disappeared and only Çatalhöyük exists. In Baird’s view the population of these settlements were most likely absorbed by the much larger Çatalhöyük. It is possible that they went to Çatalhöyük for reasons of safety (safety in numbers), or to take advantage of the division of labor that accompanies a larger population (stonemasons, more varied diets due to more farming activity, more social/religious life.) While Çatalhöyük does not have obvious fortifications, the continuous outer wall of a community without streets could play the role of a defensive wall. If attacked the population could bombard the invaders with rocks from their rooftops. It is interesting that an earlier site of hunter-gatherers, Asikli Höyük, had buildings that were separated by streets in some cases. Based on this fact, the continuous outer wall of Çatalhöyük takes on more significance as a defensive construct. The first appearance of true defensive walls (with slits) was at nearby Mersin in 5200 BCE – well after the occupation of Çatalhöyük.

The reason for the settlement of Çatalhöyük is uncertain, as is the reason for its demise.

A SEQUENCE OF ANATOLIAN CIVILIZATIONS/SOCIETIES

An examination of Fig. 3 and Table 3 reveals an apparent sequence of civilizations. This sequence of civilizations in the Neolithic and Chalcolithic periods occurs within a common cultural milieu that seems
to have been bonded by the sinews of trade, and by the travels of nomadic hunter-gatherer groups. Thus we see a westward moving sequence of civilization:

<table>
<thead>
<tr>
<th>Site</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abu Hureyra</td>
<td>11th – 10th Millenium BCE</td>
</tr>
<tr>
<td>Göbekli Tepe</td>
<td>9560 BCE – 8430 BCE</td>
</tr>
<tr>
<td>Asikli Höyük</td>
<td>8400 BCE – 7500 BCE</td>
</tr>
<tr>
<td>Çatalhöyük</td>
<td>7500 BCE – 6000 BCE</td>
</tr>
<tr>
<td>Hacilar</td>
<td>5600 BCE – 5200 BCE</td>
</tr>
</tbody>
</table>

Based on the broad range of cultural/trade connections in the region. This sequence invites comparison to the Andean sequences that we examined in the previous section. Other sequences to the south also appear to exist but the interplay of numerous societies makes the identification of simple sequences difficult.

**THE THOUSAND-YEAR LIFETIME OF CIVILIZATIONS**

At the dawn of civilization in Anatolia we find several 1,000-year societies: Asikli Höyük, Çatalhöyük, probably Pre-Pottery Neolithic B Abu Hureyra, and possibly Göbekli Tepe. We do not find societies of substantially longer duration. In addition, most of these early societies seem to just “peter out” at the end of roughly 1000 years or so. The roughly 1,000 year lifetimes support our hypothesis that civilizations and long-lived societies have an inherent 1,000-year lifetime.

**CONCLUSIONS**

Our analysis of the earliest civilizations in the Middle East and the Americas lead to the following conclusions:

- The three postulates in the introduction seem to be correct.
- Civilizations seem to have appeared rather quickly in a few favorable locations after the 11th millenium BCE when the climate stabilized at favorable temperatures for the development of long-term societies and civilizations.
- The initial civilizations/societies spread in various directions to form successor civilizations.
- The manner of their dispersal into successor civilizations is particularly evident in the case of Andean civilizations due to the linear geography of the coastline. It is also evident in the Middle East as well. The case of early Chinese and Indian civilizations is not clear due to a lack of detailed archaeological data on the period from 11,000 BCE to 4,000 BCE.
THE SEEDS OF CIVILIZATIONS

Figure 4. The earliest civilizations in various regions and their expansion into sequences of successor civilizations.

Based on the study of the first American and Middle Eastern civilizations, we have seen the seeds of civilizations appear and then propagate through successive generations to become successor civilizations -- culturally different in many ways, but bearing the commonality of having religions, architecture, the arts, culture, and the practical sciences of agriculture and husbandry – the hallmarks of civilization – thus giving new meaning to “looking into the seeds of time.” Fig. 4 shows the expanding ring of the earliest seed civilizations. Human societies started as hunter-gatherer groups, evolved into villages and, in some favorable cases, became the seeds of civilizations.

Today much of the world’s population resides in civilizations but in earlier times 7000 - 12000 years ago the vast majority of the world’s population was in hunter-gatherer groups or resided in small villages. The civilization sequences, that we have uncovered, suggest that civilization seeds occur infrequently, but once they occur, they generate sequences of civilizations over the millenia.

Notes
1 Since the information available on early societies is sparse, we will consider early societies of at least 3,000 – 5,000 people, and significant architecture, as civilizations. As a result we have a finer division of civilizations than is usually assumed by civilizationists.
Descriptions of these civilizations appear in Blaha 2006 and Blaha 2002.

Some of these dates are approximate and subject to change or recalibration. The overall pattern of approximate 1,000 year lifetimes is however quite evident. The dates are either well known or derived in Blaha 2006.

Very early prehistoric civilizations in China and India may well also exist. However, data on these civilizations, if any, are virtually non-existent.


Some books on these civilizations are Davies 1997; Moseley 1992; Pillsbury 2006.

These thoughts are similar in many ways to observations of Toynbee and others.


W. Saturno, D. Stuart, B. Beltran, Science Express (Online) 1/5/2006; and references therein.

Travel by boat from Peru and Ecuador and favored by excellent fishing grounds off the coast of Ecuador, and the Southeast Trade winds and currents towards Central America. The coast of Colombia is desert-like so boat traffic would be expected to pass Colombia and head to Central America, as archaeological finds corroborate. Interestingly, an early emigration from Africa also appears to have been waterborne along the coasts of Somalia and southern Arabia (N. Wade, Before the Dawn (Penguin, New York, 2007)).

Hosler 2002.

Interesting support for this separation appears in the jewelry of the Mayans which was based on jade while the jewelry of the Peruvian civilizations was based in part on emeralds (from the Bogota, Colombia area – the only source). Apparently the Mayans did not have inland Columbian trade routes.

GRIP ice core data from D. Dahl-Jenson et al, Science 282, 268-279 (1998). During the global warming period from 9,600 BCE to 8000 BCE temperatures above Greenland rose roughly 19° C
(or about 1.2° C per century) with presumably corresponding major changes in Anatolia. Göbekli Tepe appears to have lived through massive global warming at the end of the last ice age, starting at temperatures corresponding to about 19° C below the current (2006) average temperature over Greenland in 9600 BCE to about 5° C below current average temperature (2006) over Greenland in 8400 BCE.

14 Hodder 2006.

15 Abu Hureyra, a site on the Euphrates River in Northern Syria, was occupied in several phases: one phase of occupation occurred in the 9th millenium BC. Then after a long unoccupied period it was reoccupied (by a Pre-Pottery Neolithic B culture) in the 7th millenium – probably after a warmer spell that began around 7500 BC. It achieved large size (about 37 acres) – larger than Çatalhöyük (32 acres), and then was abandoned about 5800 BC.


REFERENCES


