

Questions

This course is about the state and its finance in history. Here we go back to origins. We are guided by the following questions

- **Origins of Settlements:** When and where did the earliest permanent human settlements appear?
- **First Buildings & Architecture:** When and where did built structures first emerge, and what drove their construction?
- **Chronology of Architecture vs. Domestication:** Did large-scale, monumental architecture precede the domestication of plants and animals, or did agriculture enable monumental building?
- **Origins of Agriculture:** When, where, and why was agriculture (the systematic domestication of plants and animals) first practiced? Which came first sedentism or agriculture?
- **Emergence of Private Property:** Given that early states relied on revenue extraction, when and where did the concept of private property first arise?
- **Agriculture & Property Relations:** What is the relationship between agricultural production and private property? Is private ownership a strict prerequisite for domestication?

Remarks on these notes: Answering some of the previous questions is at the heart of a fascinating and very active area of research. Recent hypotheses have been contradicted by more recent findings, and this process is in full swing. This activity is conducted by people from very different backgrounds (archeologists, anthropologists, economists) who use different approaches and tools, and, following their professional alleys, do not always try to find common ground. I am new to all this work, but I try to understand it using some logic. Bear with my very imperfect presentation. These preliminary draft notes.

1.Dawn



Grotte Chauvet (30,000 years ago)

The earliest material evidence connecting us to our ancestral mindset survives on cave walls in [Indonesia](#) (40,000 B.C.) and in Europe, where humans migrated during the last Ice Age. Far from validating Hobbes's famous characterization of primitive life as “nasty, brutish, and short” (Chapter 13 of *Leviathan*), the creators of Chauvet (30,000 BC), Altamira, and Lascaux produced art of a subtlety unmatched for millennia. Living by hunting and foraging, in a landscape comparable to contemporary northern Scandinavia, these humans utilized caves whose thermal stability—maintaining a steady 35 to 40°F—provided essential refuge from harsh glacial winters. The weather conditions were not favorable

for the invention of agriculture. An abundance of wild game sustained a relatively healthy life for hunters-gatherers.

Hunting large game requires collective strategy among individuals who would be easily overwhelmed on their own (evidenced by historical indigenous bison hunts). Evolutionary neuroscience confirms that major developments in the human brain—particularly in the neocortex—were driven by the demands of complex communication and social bonding.¹ In a celebrated passage from the *Politics*, Aristotle emphasized that “man is by nature a political animal”.² By *polis* (city), Aristotle meant an organism (similar to others in nature), self-sufficient community structured for the collective good.

¹ Shultz and Dunbar (2010), McNally et al. (2012). Recent events have shown that solitary confinement is one of the harshest forms of punishment.

² “The complete partnership formed from several villages is the city (*polis*), which has already reached the limit of virtually full self-sufficiency (*autarkeia*), so to speak—coming into being for the sake of living, but existing for the sake of living well. Therefore, every city exists by nature, since the primary partnerships do as well. For the city is their end (*telos*), and nature is an end; for whatever each thing is when its growth is fully completed, that we call the nature of each thing, just as of a human, a horse, or a household. Furthermore, that for the sake of which something exists and its end is the best; and self-sufficiency is both an end and the best.

From these considerations, therefore, it is clear that the city is among the things that exist by nature, and that man is by nature a political animal (*politikon zōon*). And he who is without a city by nature and not by mere chance is either a degraded human being or greater than a human being—just like the one reviled by Homer as:

“clanless, lawless, hearthless.” (Homer, Iliad 9.63)

For one who is such by nature is at the same time a lover of war, being isolated like an unattached piece in a game of checkers (*pettoi*).

Now, why man is a political animal in a higher degree than any bee or any gregarious animal is clear. Nature, as we say, makes nothing in vain. Man alone among the animals possesses speech (*logos*). Voice (*phōnē*) is an indication of pain and pleasure, which is why it belongs to other animals as well (for their nature has developed this far—to have a perception of pain and pleasure and to signify these to one another). Speech, however, exists to make clear the advantageous and the harmful, and so too the just and the unjust. For this is peculiar to humans in comparison

The end of the Ice Age

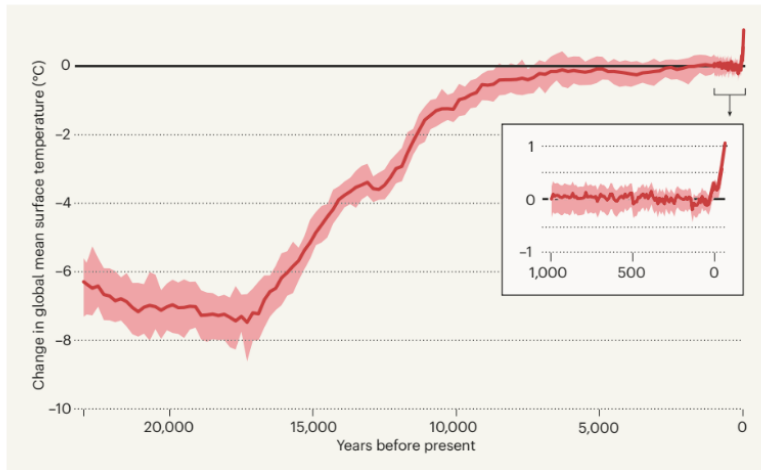


Figure 1 | Changes in the global mean surface temperature over the past 24,000 years. Osman *et al.*² combined proxy data – obtained indirectly through palaeoclimate records when direct data are unavailable – with climate models to compute the evolution of the difference in the global mean surface temperature relative to the average for the pre-industrial period of the past millennium (1000–1850). The shaded area represents a 95% confidence interval. (Adapted from Fig. 2 of ref. 2.)

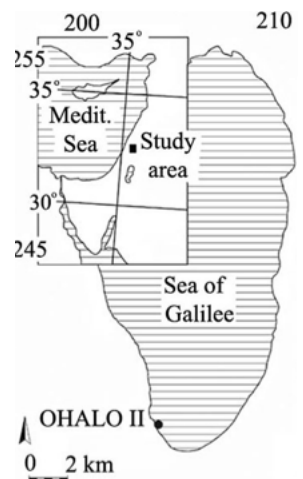
A small change in the Earth’s orbit slightly increased its solar energy intake, causing global temperatures to begin rising about 17,700 years ago (see figure), marking the beginning of the *Holocene* (holos-kainos, whole-recent/new). This orbital warming was accelerated by natural feedback loops like those driving modern climate change—specifically, reduced light reflection as ice sheets melted (albedo effect) and a steady rise in atmospheric CO₂. This warming trend was briefly interrupted around 13,000 years ago by a temporary change in Atlantic Ocean currents.³

Conjecture: A necessary condition for the emergence and the development of agriculture was the end of the Ice Age. The first buildings appear soon after the end of that period.

Actually, that statement is false, or, more precisely, some locations seem to have been less affected by the Ice Age and provide suitable conditions for cultivation. More extraordinarily, evidence of cultivation has been found in a 23,000-year-old hunter-gatherer sedentary camp on the shore of the Sea of Galilee.⁴

The discovery of “agriculture” as a natural process

Agriculture is defined as the domestication of plants and animals. In the 20th century, it was thought that agriculture was first “invented” in the *Fertile Crescent* (map below). The current view is very different. Using a panoply of tools from physics, chemistry and biology, archaeobiology (the study of all organic materials from archeological sites), and the bioarchaeology (the study of human remains from archeological sites) have exploded over the last 40 years, and are now vibrant areas of research. Consequently, Larson *et al.* (2014)⁵ could write:



with other animals: to alone possess a perception of good and bad, just and unjust, and the rest. And it is partnership in these things that makes a household and a city.” (Aristotle’s *Politics*, Book 1, Chapter 2).

Compare Homer’s and Hobbes’s descriptions! (Hobbes, in his eighties, translated the Iliad and the Odyssey. You may use AI to investigate the relation between Hobbes and Homer.

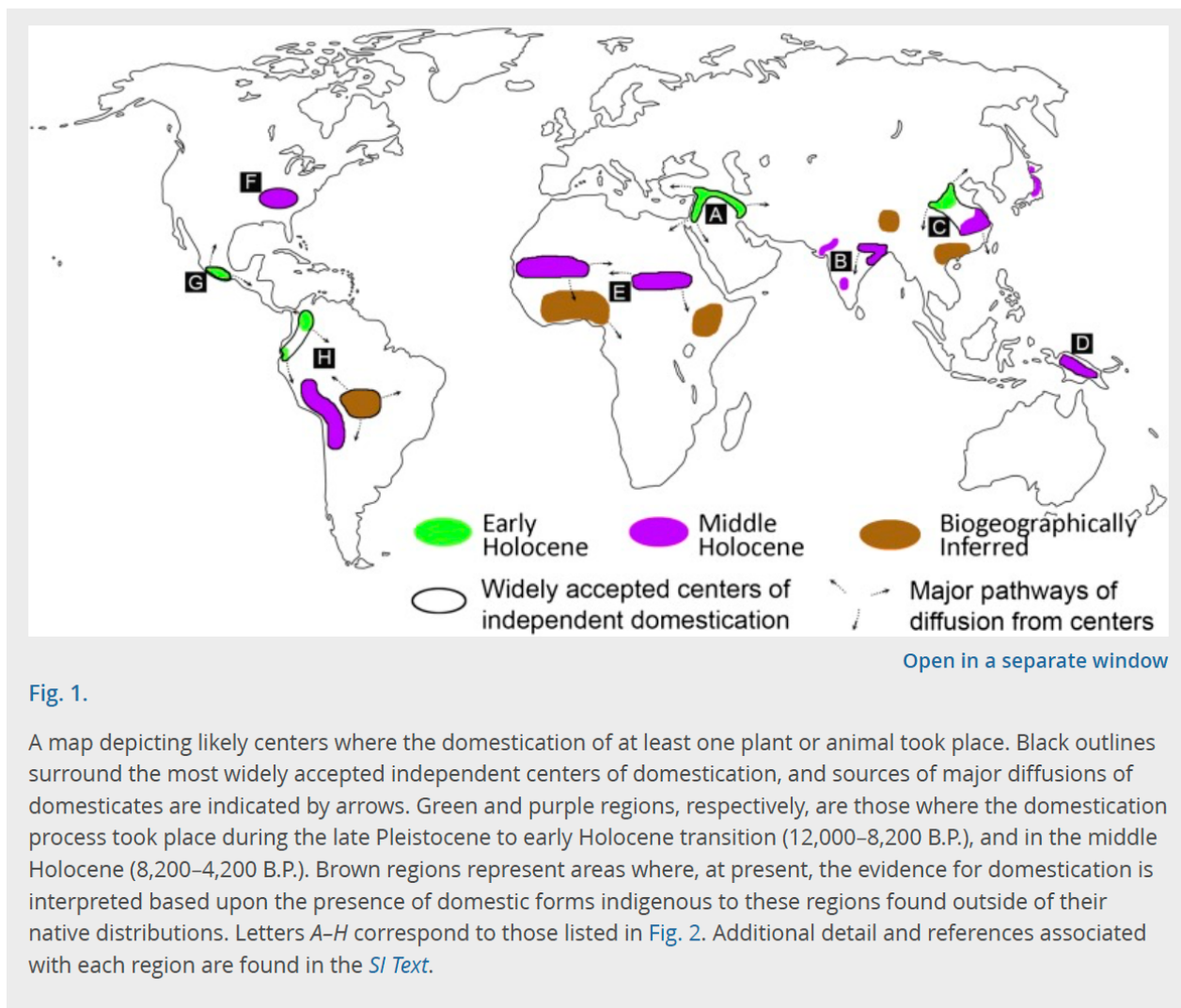
³ The next Milankovitch Ice Age, scheduled for 10,000-50,000, is currently delayed by 50,000 years because of the current human carbon emissions.

⁴ Snir *et al.* (2015). “The Origin of Cultivation and Proto-Weeds, Long Before Neolithic Farming, [DASH](#)

⁵ Larsson, G. et al (2014). “Current perspectives and the future of domestication

“An increasingly rich and diverse corpus of data from molecular and archaeological research generated over the past 15 years now makes it clear that agriculture began independently over a much larger area of the globe than was once thought, and included a diverse range of plant and animal taxa. At least 11 regions of the Old and New World were involved as independent centers of origin, encompassing geographically isolated regions on most continents, but several more have been suggested.”

Larson et al. illustrate their conclusion by the following map.



Agriculture was discovered (more than invented—see below), in different parts of the world, independently. Sometimes. Places that were close geographically followed very different paths in this evolution.

Studies,” *PNAS*.

Following Weiss *et al.* (2006),⁶ one should distinguish three steps in the introduction of agriculture, which is defined as the domestication of plants (and animals):

1. gathering of wild plants,
2. cultivating wild plants,
3. selecting, and cultivating, plants with a higher yield.

They of) “weed plants that adapted to human-induced environmental conditions. Therefore, their coexistence indicates sowing rather than collecting of wild stands.” They summarized their results:

“The beginning of agriculture is framed by both time and stage of plant domestication. Before the onset of the PPNA (~11,500 calendar years before present), humans were involved in “gathering,” and from the PPNB (~10,300 calendar years before present) onward, they cultivated domesticated plants (2). This frame assigns the progression from wild to domesticated species to the short PPNA, ~1200 years. It also agrees with our data indicating Gilgal’s early PPNA transition from “gathering” to “cultivation” and the several hundred years for the “cultivation” to “domestication” process (3).”

Hunter-gatherers completed their diet with wild plants and had a great knowledge of them, but the second phase required settling down. The current evidence is that some hunter-gatherers settled down (sedentism) while conducting their hunting and gathering mode of life. The second stage could last for centuries, as shown by Willcox & Stordeur (2012), or millennia, as in the previous example on the shore of the Sea of Galilee:

“At Jerf el Ahmar in northern Syria the authors have excavated a settlement where the occupants were harvesting and processing barley 1000 years in advance of its domestication. Rows of querns installed in square stone and daub buildings leave no doubt that this was a community dedicated to the systematic production of food from wild cereals. Given the plausible suggestion that barley was being cultivated, the site opens a window onto a long period of pre-domestic agriculture. Rye was also harvested, its chaff used to temper mud walls.”⁷

Upper Mesopotamian Pre-Pottery Neolithic (PPN)⁸ Centers

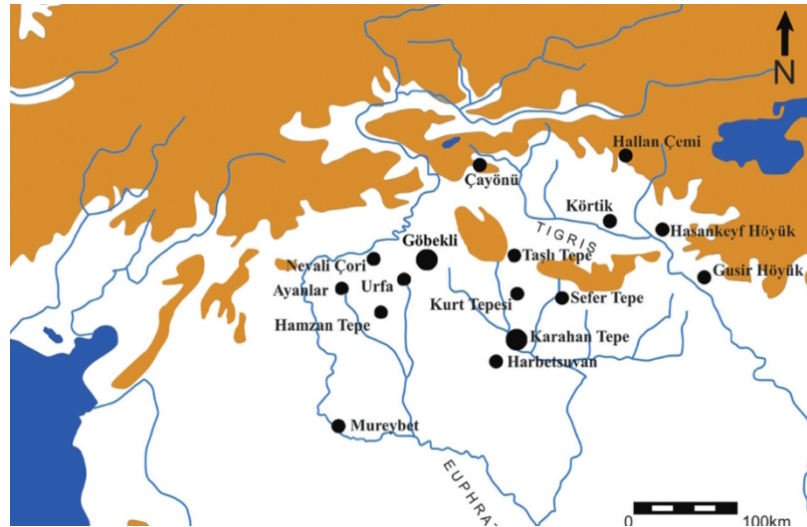
Here we focus on Area A in the previous map, which has the shape of a crescent. The accompanying map shows 16 archaeological sites in the Upper Mesopotamian region. Most of these centers were established by the end of the 10th millennium BC, with the oldest, Körtektepe, occupied between 10,400 and 9,200 BC. These centers share notable similarities. In this introduction to a vast and exploding area of research with many new results, and some contradictions, we need to build a narrative to organize our thoughts. We consider first the most spectacular site, which is also one of the oldest.

⁶ Weiss, Ehud, Mordechai E. Kislev and Anat Hartmann (2006). “Autonomous Cultivation Before Domestication,” *Science*, 312, 1608-1610.

⁷ Willcox & Stordeur (2012). “Large-scale cereal processing before domestication...,” *Antiquity*, 86, 99-114

⁸ The Pre-Pottery Neolithic (PPN) period in Near Eastern archaeology spans roughly from 10,000 to 6,500 BC.

“Upper Mesopotamia, which today includes modern-day southeastern Turkey, northern Syria and northern parts of Iraq, was one of several core zones which saw the emergence of Neolithic lifeways in the tenth and ninth millennia BC. It was from these core areas that subsequent centuries saw the gradual dissemination of the Neolithic into adjacent parts of Anatolia, the Middle East and beyond.” (Clare, 2020).



Phase 1: plant gathering by hunters-Gatherers at Göbekli Tepe

“Over the past two decades, no archaeological site has attracted more international attention than the early Neolithic site of Göbekli Tepe” (Banning, 2023). Clare (2020), one of the two leaders of research at the site, provides a brief summary of recent results. Three layers have been identified, I, II, and III which is the lowest (and oldest, 9500-8800 BC; PPNA) with monumental buildings

Dietrich et al. (2019)⁹ analyzed over 7,000 grinding stones, pestles, and large limestone vats (up to 160-liter capacity), and showed that large amounts of wild cereals (einkorn, barley,



⁹ Dietrich, Laura, *et al.*, 2019. “Cereal processing at Early Neolithic Göbekli Tepe, southeastern Turkey, Research Article, [PLOS ONE](#). Also, Dietrich, L., Heeb, J., Notroff, J., & Schmidt, K. (2020). "Filling the gap: Plant food processing at Göbekli Tepe." *Journal of Archaeological Science: Reports*, 31, 102287.

wheat, rye) were processed, probably during short periods. No storage facility for grain has been found. The scientific method relied on extracting phytoliths (silica particles that accumulate in plant tissues) from surfaces and micro-pores of the grinding stones. The distinct shapes of these phytoliths enable the identification of specific plant species.

Earlier zooarchaeological evidence showing large quantities of wild animal remains (predominantly gazelles, but also aurochs, wild boars and wild sheep) established that the site's builders were hunter-gatherers.¹⁰ Dietrich et al. provided the complementary botanic evidence for the gathering and processing of wild plants.

The conclusion of Dietrich *et al.* is that the heavy processing tools were used for processing gathered wild grains and acorns for immediate communal feasting rather than domestic agricultural storage.

The monuments at Göbekli Tepe, and similar regional centers, cannot be interpreted as “cities”. Few residential buildings have been identified, and there are no natural water sources nearby. Recent findings of carved channels, and of a tank that was carved in the bedrock, suggest a rainwater harvesting system, which likely provided a water for consumption and production of mortar. (Yes, they used mortar).

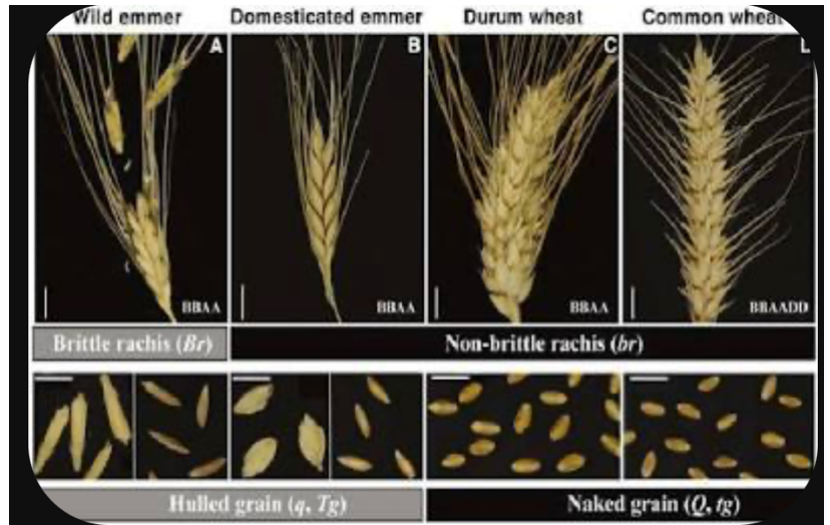
In summary, the evidence indicates that during the Pre-Pottery Neolithic A (PPNA, 9,500-8,500 B), in Upper Mesopotamia, some human groups reinforced social cohesion through large-scale festival. During these gatherings, wild cereals were collectively harvested and processed, and wild animals were hunted and consumed, a strategy likely timed to coincide with seasonal gazelle migrations. No domestication of plants or animals takes place at that stage. These will be gradually discovered in the next period PPNB (8,500-7000 BC).

The discovery of agriculture

G-T shows that some hunter-gatherers collected large amounts of wild plants and processed their seeds and did not domesticate animals. The domestication process of wild plants is based on the selection of plants with genes that have mutated to produce a phenotype that is better suited for human harvesting. One example is the transition to wheat, which unfolded in three key stages:

¹⁰ Peters, Joris and Klaus Schmidt, 2004. Animals in the symbolic world of Pre-Pottery Neolithic Göbekli Tepe, south-eastern Turkey: a preliminary assessment. *Anthropozoologica* 39(1). [179-218](#). The photo of the aurochs engraving is taken from this study.

1. First Hybridization (more than 300,000 years ago): from einkorn to emmer (from one to two grains per spikelet);
2. Domestication & Selection (~10,000 years ago): Early farmers gathered wild emmer and propagated rare natural mutants by serendipitous selection of the *non-brittle rachis* (ears stayed intact for harvesting), and the *soft glumes* (requiring no pounding).
3. Second Hybridization (about 8,500 years ago): the main increase of productivity as farming spread into regions (not in Northern Mesopotamia) where the wild grass called goatgrass.



Private property

How do we find evidence of private property from the archaeological record? In Northern Mesopotamia, the main goods were grain and building. The evidence for private property in grain is the storage technology. “Architecture restricts and organizes interaction, and spatial analysis of the built environment provides insights into social organization, how individuals attempt to perpetuate and reinforce existing social relations, and how community organization changes over time.” (Byrd).“

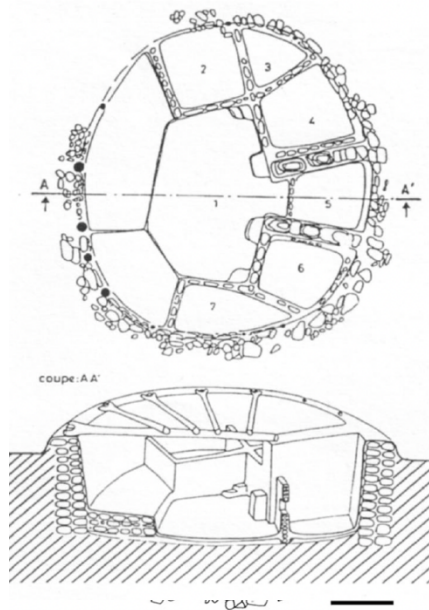


Figure 8. Communal building 30 was semi-subterranean and divided into cells. It was surrounded by habitation structures such as houses 10 and 54. The cells are interpreted as being communal storage structures. The photograph shows the opening into one of the storage structures, used to remove grain.

There is, by and large, an evolution from round buildings in communities with common storage outside of dwellings to square structures (more efficient because of common walls), with inside storage, indicative of private storage and private property.

Willcox and Stordeur conclude:

“ The trends point to an increase in social organization. Large-scale cereal exploitation required labor for preparing land, sowing, weeding, crop protection, storage, harvesting and processing. These tasks would have been organized collectively, implying a social hierarchy. The cereal economy would have been intertwined with the social fabric of village life. Our evidence underpins Trevor Watkins’ hypothesis that during this period there is an increasing “reliance on larger and more cohesive social groups”, and that trends towards cultivation like those we have seen at Jerf el Ahmar “involved greater investment of labor and technology for . . . harvesting and food processing.”