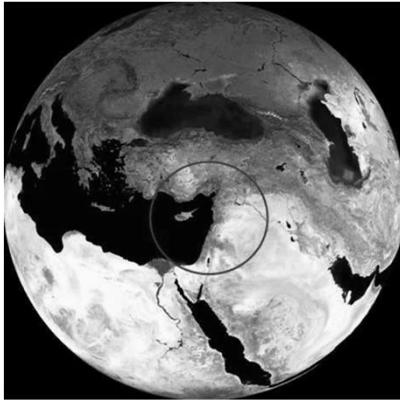


The origins of village farming in West Asia

1

Southwest Asia and Early Agriculture



2

The Fertile Crescent

Extends today from Israel and Jordan in the south, up into Turkey, Syria, and Lebanon in the north, and east into northern Iraq and western Iran

- An area of Mediterranean climate characterized by dry summers and winter rains with enough precipitation to support vegetation ranging from woodlands to open park woodland
- Natural habitats of the wild progenitors of wheat, barley, rye; sheep, and goats.
- South and east of the Fertile Crescent, the open park woodlands give way to steppes and true deserts



3

Development of Agriculture

- Archaeological record clearly shows that the shift to an agricultural way of life in the Middle East was a process
- There was no “agricultural revolution”
- The transition to agriculture can be traced through a number of stages

4

Development of Agriculture

STAGE	PERIOD	DATE (YEARS AGO)
1	Kebaran and Geometric Kebaran	25,000-15,000
2	Natufian	15,000-12,000
3	Early Neolithic	12,000-8,500
4	Late Neolithic	8,500-7,000

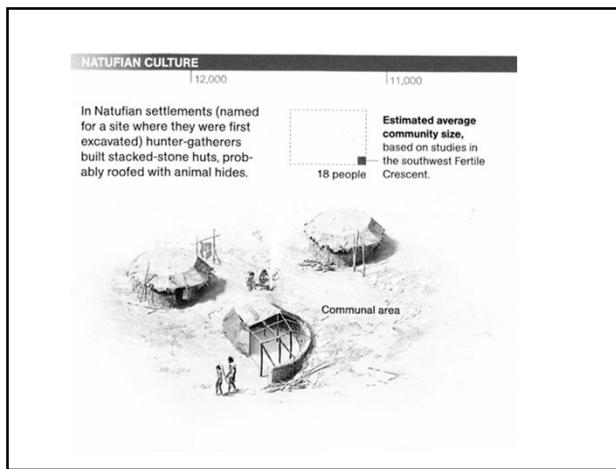
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Kebaran and Geometric Kebaran

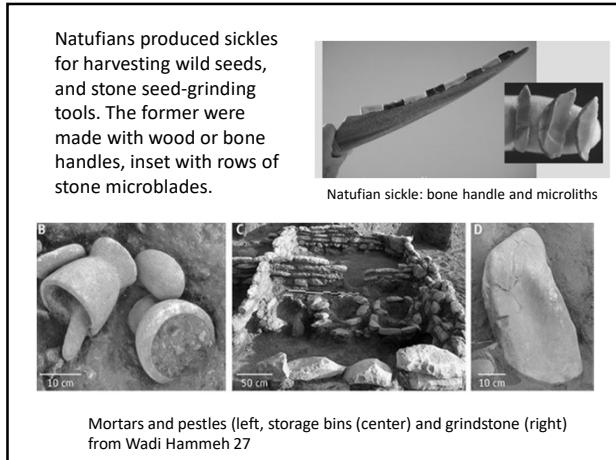
These sites identified by characteristic stone tools — bladelets

- Most sites are remains of small camps made by highly mobile hunter-gatherers
- Burials at these sites are rare
- No evidence of plant or animal domestication during this period
- Plant remains recovered include wild grasses, fruits, nuts, and animals

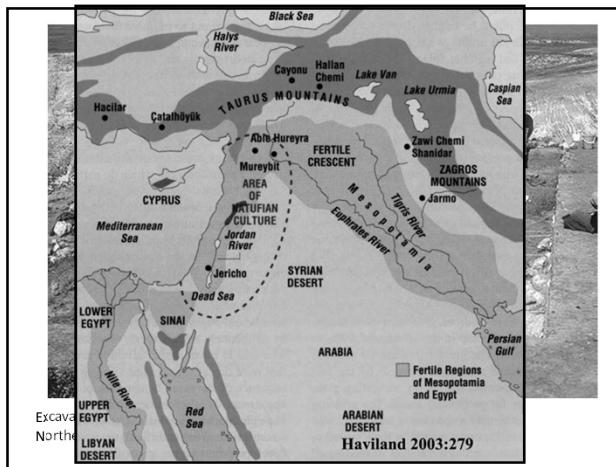
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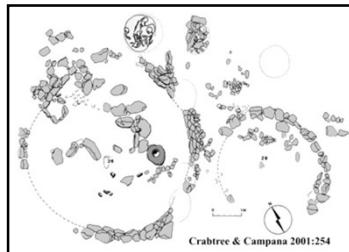


9

Natufian Settlements

People began the transition to village life during this period

- Structures are ovals or open semicircles
- Structures consist of undressed stones piled to form walls up to 1 metre high
- Structure floors covered with refuse—including stone tools and animal bones
- The stone walls are thought to have supported superstructures made of wood and brush
- Not clear what function structures served



A Natufian dwelling from the second phase at Eynan with associated burial pit and heavy equipment.

10

Natufian Burials

Burials are commonly found on Natufian sites

- In some cases, the skull has been removed prior to burial
- Some Natufian burials include shell necklaces and head coverings

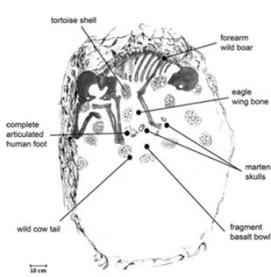


Bone and shell necklace from El Wad



11

Shamanic burial?



- At Hilazon Tachtit, a late Natufian site in Israel, a ritually-charged burial.
- Grave goods accompanying a small, disabled elderly woman include 50 tortoise shells (consumed at a funerary meal), wing tip of a golden eagle, leopard's pelvis, martens' skulls, auroch's tail, boar's leg, severed human foot.

12

Shamanic burial?



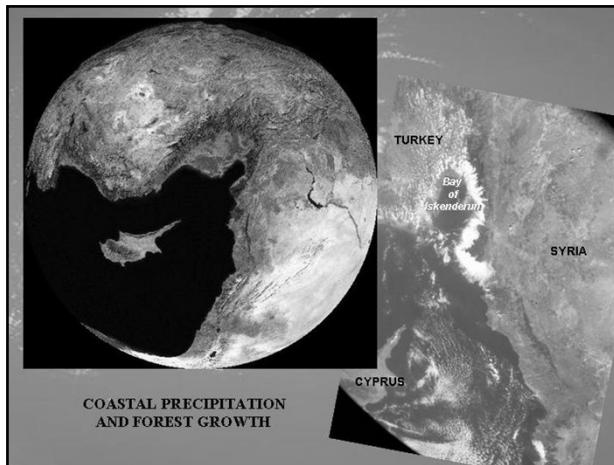
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Natufian Subsistence

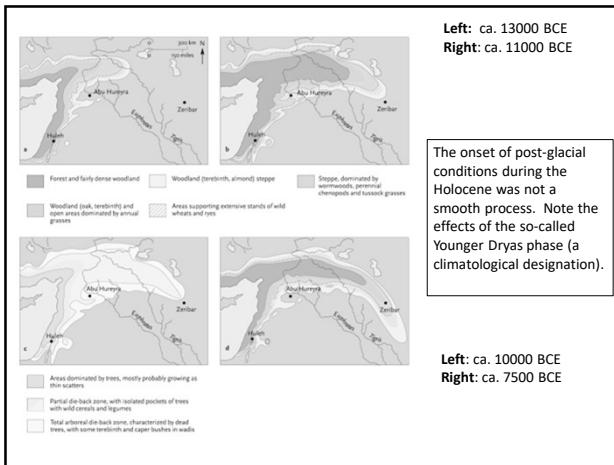
Natufians practised a broad-spectrum subsistence strategy

- They exploited a wide range of wild plants
- Most plant species do not show any evidence of having been domesticated
- Hunting focused on a single species, gazelle
- No herd animals were domesticated
- Burials indicate that dogs were part of human society and being domesticated

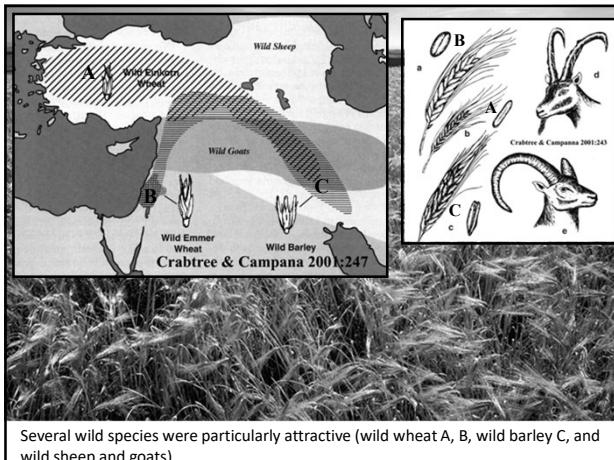
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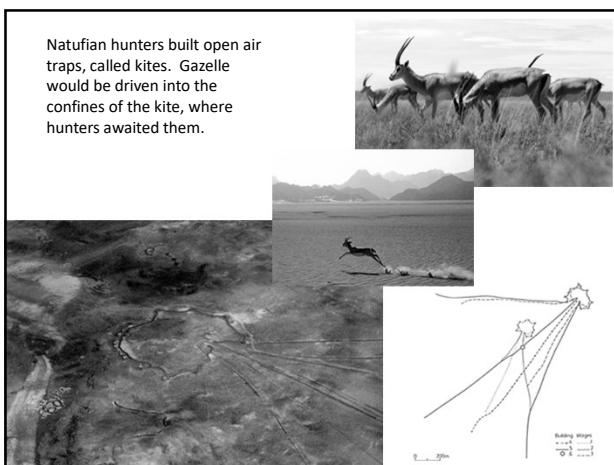
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17



18

1. The Natufians were hunters and gatherers who placed great importance on gathering wild seeds.



2. Wild cereal grains provided a stable surplus that could be used to anticipate seasons of food shortage. This required food storage and protection.

3. With this buffer against starvation, year-round occupation of larger villages was possible or required (more substantial huts and permanent cemeteries).

19

Natufian “hamlets” were placed at the boundaries between two ecological zones (ecotones) where the resources of both were conveniently near at hand.

These home bases were serviced by temporary outlying camps in each ecological zone (e.g., cereals and nuts from one, and communal gazelle hunting in other).

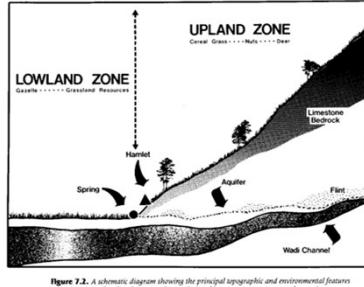
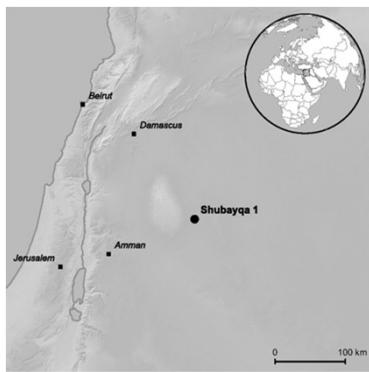


Figure 7.2. A schematic diagram showing the principal geographic and environmental features common to Natufian hamlets. Note the proximity of important resources to such a setting.

20



Map showing the location of Shubayqa 1 in northeastern Jordan

21



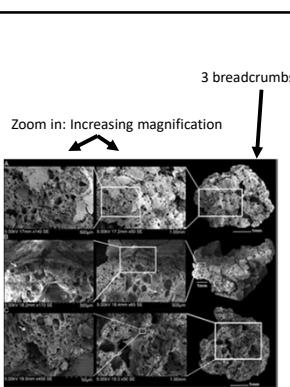
Excavating the Natufian site of Shubayqa 1, which dates to 14,600 to 11,600 BP.

22



The site of Shubayqa 1 showing Structure 1 and one of the fireplaces (the oldest one) where the bread-like remains were discovered.

23



- Tiny crumbs of bread, made from cereal grains and tubers of club-rush, were found in the fireplace.
- These photomicrographs show the bread crumbs' composition.

24



In an experiment, an archaeologist grinds club-rush, like that at Shubayqa 1, to make flour

25

Why go to such lengths?

- The breadcrumb remains show signs of having been sieved first, then heated.
- The lack of an oven suggests that the bread was baked in the ashes of the fire or on a hot stone.
- The crumbs therefore are from a sort of flat, unleavened bread.
- Cereal grains and tubers are best when eaten as a porridge or as bread.
- But bread-making is a more time-consuming.
- This was therefore likely a special treat.

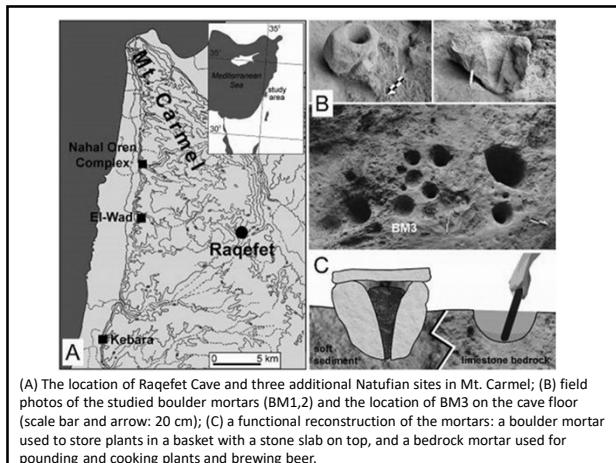
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And, at the same time...



Raqefet Cave in Israel where a 13,000-year-old brewery was discovered

27



28

The Early Neolithic

Early Neolithic is divided into two major periods:

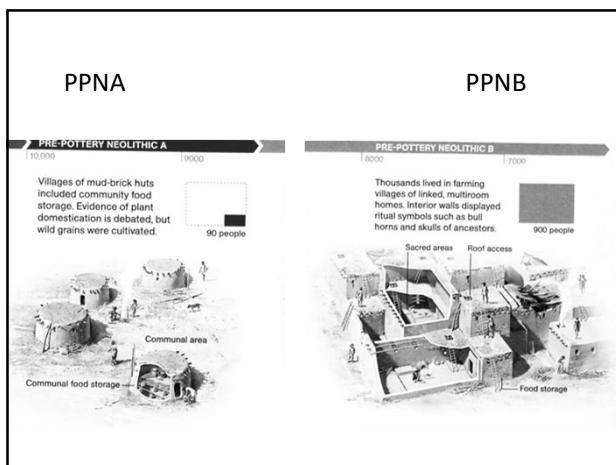
- Pre-Pottery Neolithic A

- Dates between 12,000-10,800 years ago
- Corresponds to end of the Younger Dryas, the cooling episode, ca. 12,900 to 11,700 years ago (BP)

- Pre-Pottery Neolithic B

- Dates between 10,800-8,500 years ago
- Corresponds to a period of improved climate

29



30

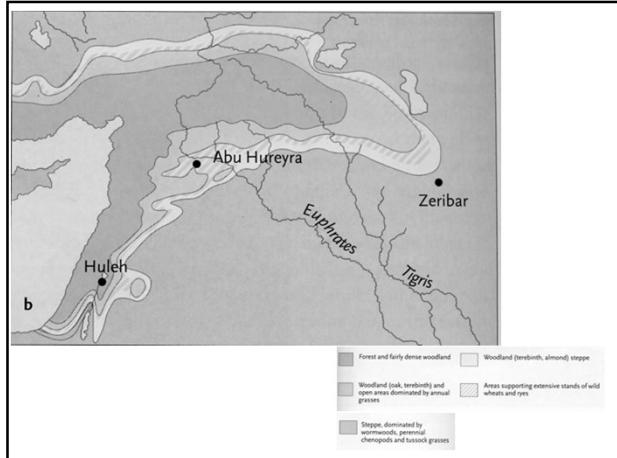
Tell Abu Hureyra



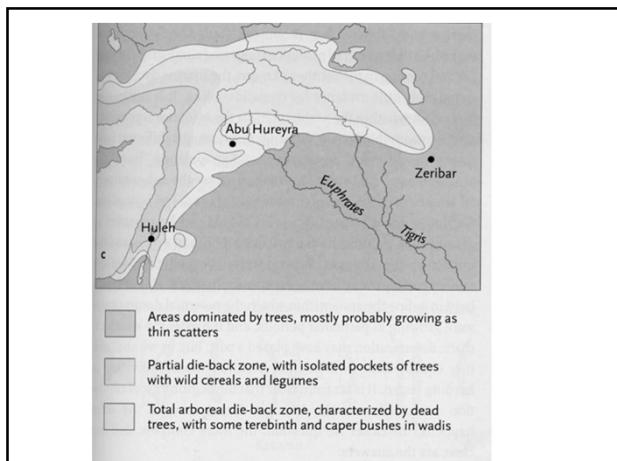
This settlement was established about 11000 BC, just before the onset of the Younger Dryas.

Intensive gathering gave way to the cultivation of domesticated rye, a cereal.

31

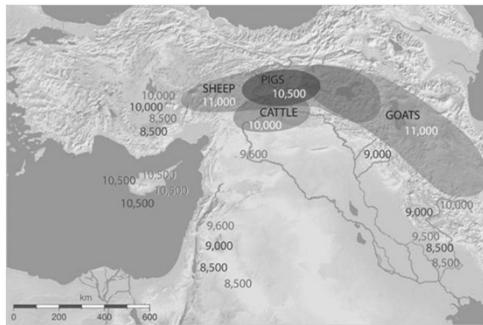


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33

- According to Melinda Zeder (2008), the initial steps toward plant and animal domestication in the Eastern Mediterranean can now be pushed back to the 12th millennium cal B.P.
- Evidence for herd management and crop cultivation appears at least 1,000 years earlier than the morphological changes traditionally used to document domestication.
- Different species seem to have been domesticated in different parts of the Fertile Crescent, with genetic analyses detecting multiple domestic lineages for each species.



34

With the domestication of plants and animals, production of food rather than gathering of wild food becomes the basis of the economy.

In the context of sedentism, population growth, storage of surplus food, etc. we see the development of permanent village life in areas favourable for small-scale horticulture.

This has consequences.

- larger villages need new systems of political organization and control (or, to look at this in another way, they give people the opportunity to dominate others)
- horticulture encourages further population growth
- the new emphasis on domesticates affects overall health (teeth and bones)
- Competition for scarce & valued resources and land between villages.



(Above) Semi-subterranean oval houses of a Middle Eastern Neolithic village. (Below) Artist's view of a PPNB granary at Dra' (Jordan).

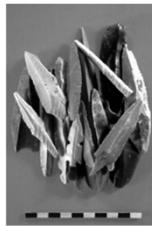


35

Early Neolithic Technology

Early Neolithic is distinct from previous periods because of shift away from tools made on bladelets

- This period's toolkit is made on blades with an emphasis on arrowheads
- Toolkit includes sickles, ground stone axes, and adzes
- Grinding stones for processing grains found in extremely large quantities
- Pre-Pottery B sites exhibit highly developed use of plaster



36

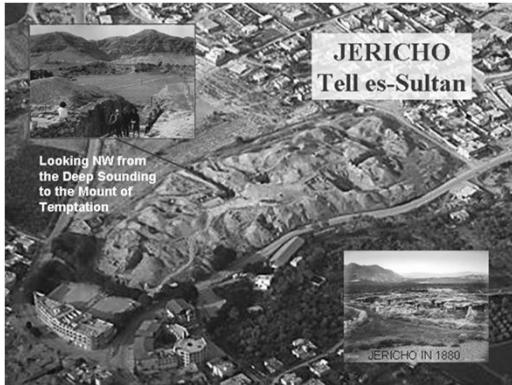
Pre-Pottery A Neolithic

Settlement size increased during this period

- First evidence of communal structures appears
 - Most impressive of these structures is Jericho tower—9 m high, made of undressed stone and mud brick, attached to the inside of a massive wall
- Houses continue to be circular, but settlements larger than Natufian ones

37

Jericho

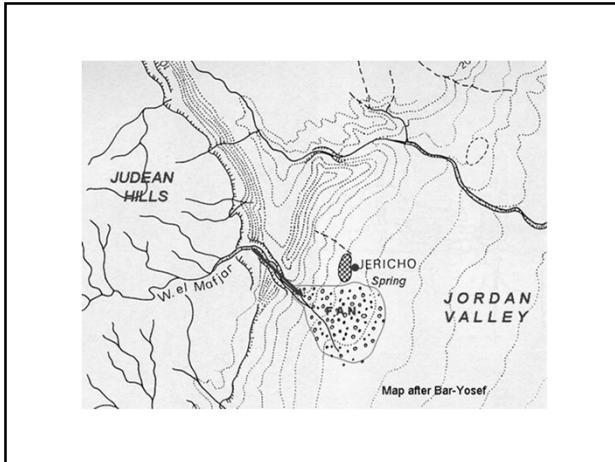


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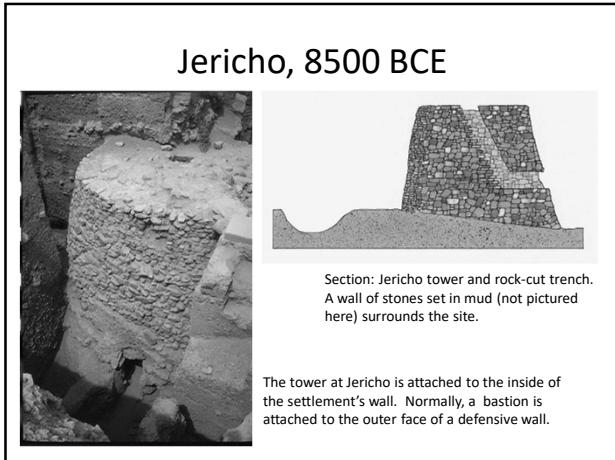


The tell site of Jericho

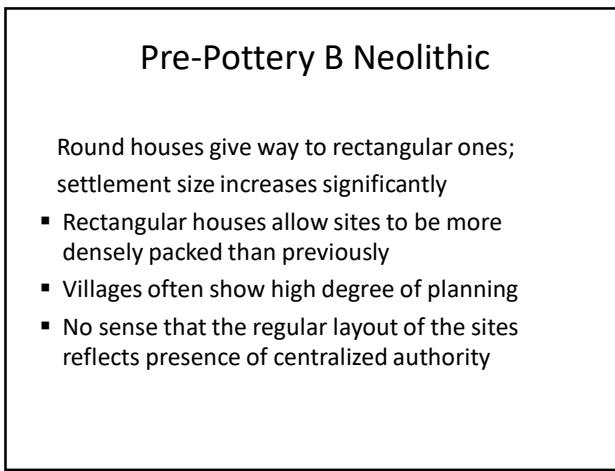
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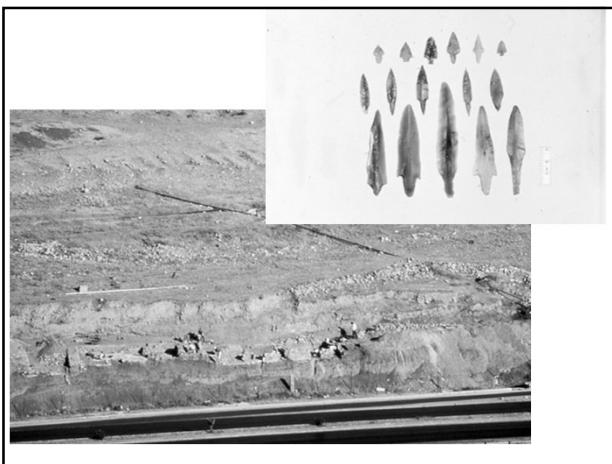


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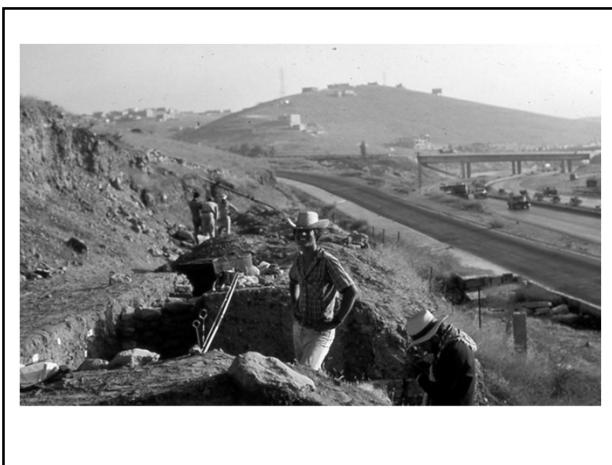
Ain Ghazal, a Prepottery Neolithic Settlement in Jordan,
8th-7th millennium BC



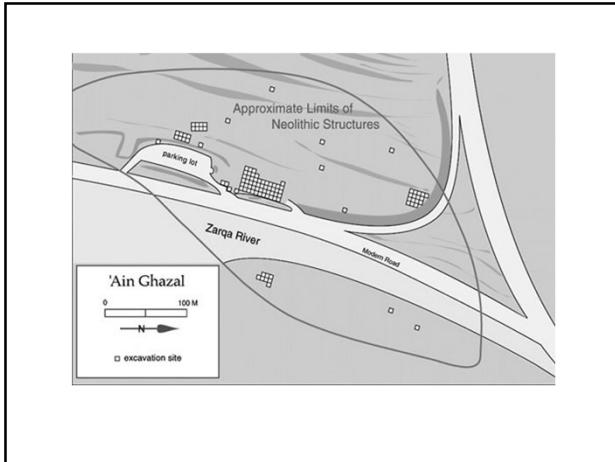
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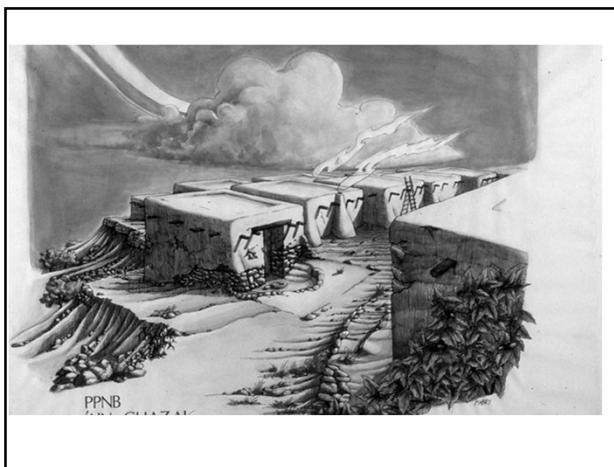


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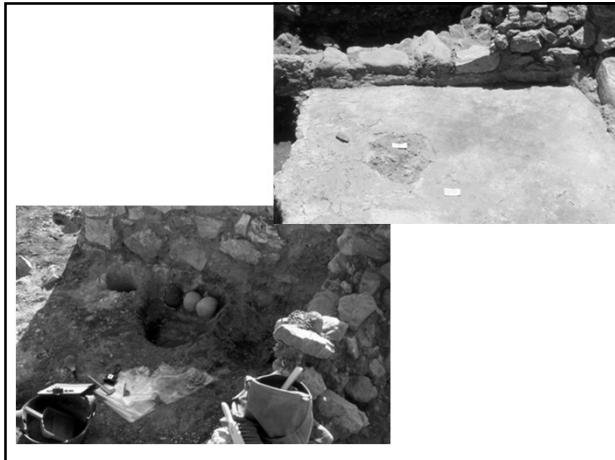


Late 'Ain Ghazal.
This small, circular building at 'Ain Ghazal is not like other structures there. There is a circular hole in the middle of a frequently re-made plaster floor. Under the floor there are carefully constructed channels that may have been used to carry away liquids poured into the central hole.

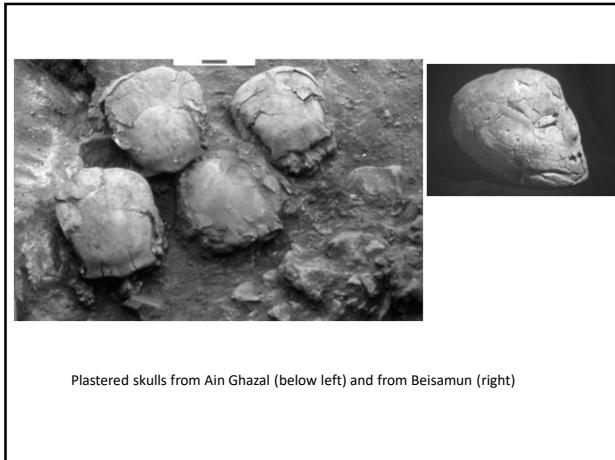
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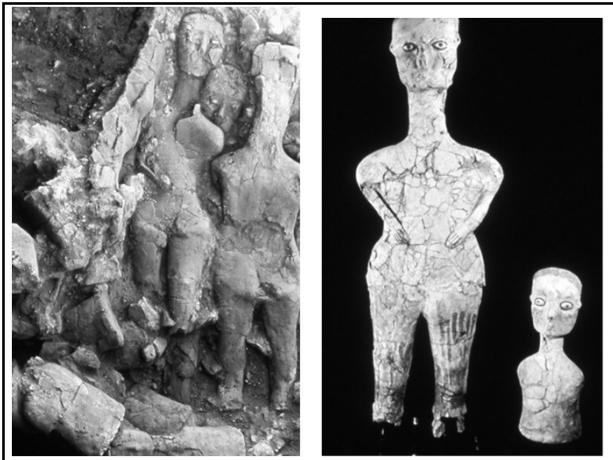


Plastered skulls from Ain Ghazal (below left) and from Beisamun (right)

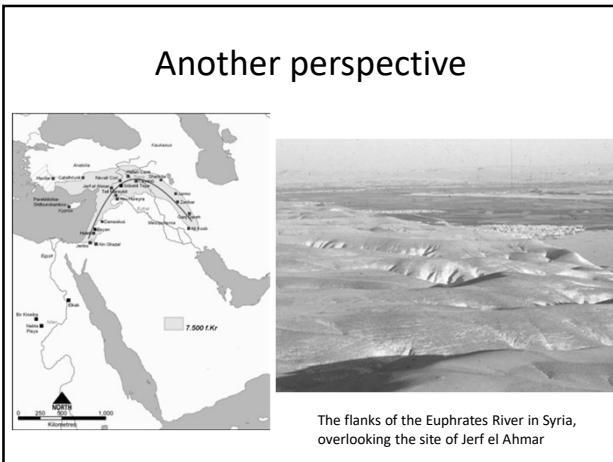
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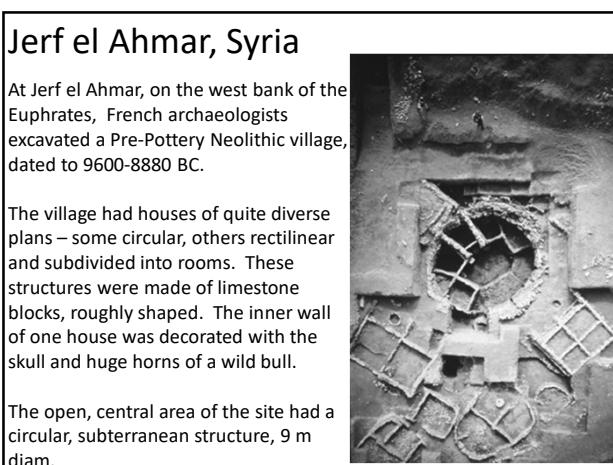
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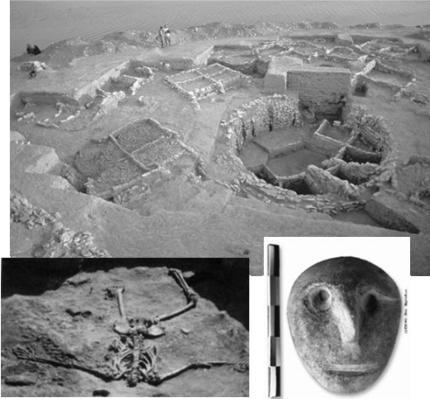
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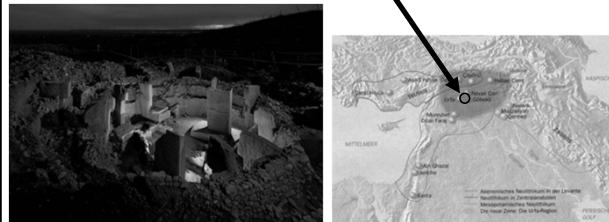
Ritual structure at Jerf el Ahmar

The semi-subterranean structure's floor is 2 m below ground. It was built on several levels, creating low platforms around the edge. Large cells, lacking doors, are interpreted as a communal storage facility. Before this structure was intentionally obliterated, a headless, spread-eagled corpse of a man was placed lying prone. A severed head was placed in one of the postholes. Finally, the building was burned and then filled in with soil (100 m³),



58

Ritual structures of the Pre-Pottery Neolithic: Göbekli Tepe, Turkey



Ritual structures on an Anatolian hilltop, ca. 9600 BCE. Semi-subterranean circular structures with massive, decorated limestone pillars, up to 10 metric tons apiece, were found there; the excavator claims that there were no houses or other evidence of settlement.

59



60



61



62



The stone pillars at Göbekli Tepe bear carved images of boar (above, right), felines (above, left), as well as aurochs, gazelle, snakes, and vultures.

63



This is Pillar 18. Its narrow side is carved with hands, revealing that these stones are highly schematized human forms and that the edge is the front, with the top of the T-shape a head. Below the hands, a belt with a clasp wraps around the body, and a fox skin is suspended below.

64



Hands and belt of Pillar 18 at Gobekli Tepe

65



These are some of the animals carved on the T-shaped monoliths; most of them are dangerous.

66



Geomagnetic surveys show that there are another 15 circular structures at Göbekli Tepe, with perhaps another 200 T-shaped monoliths.

67



68

Table 1. Estimates of the masses of Göbekli pillars and labor requirements for moving them with water or other lubricant over level ground without rollers

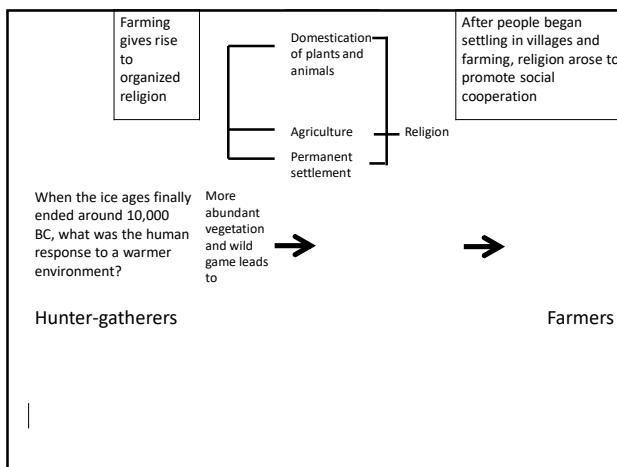
Pillar	Height (m)	Estimated volume (cm³)	Low-mass estimate (kg)	High-mass estimate (kg)	Starting force (N)	Labourers
A.1	3.8	2,062,500	5,000	5,400	6,860	14
B.9*	3.4	2,300,000	5,500	6,000	7,550	15
B.10*	3.6	2,400,000	5,800	6,300	7,960	16
D.45	4.0	1,000,000	2,500	2,700	3,430	7
D.50	5.0	4,218,500	10,100	10,800	13,900	28
L.P1	2.0	307,700	740	800	1,015	2

Note: Moving up a slope of 8° would approximately double the labor requirement. Pillar heights, except where noted, assume burial of the lower quarter of each pillar. The low-mass estimate and starting force assume limestone with a specific gravity of 2.4 g/cm³; the high-mass estimate assumes a specific gravity of 2.6 g/cm³.

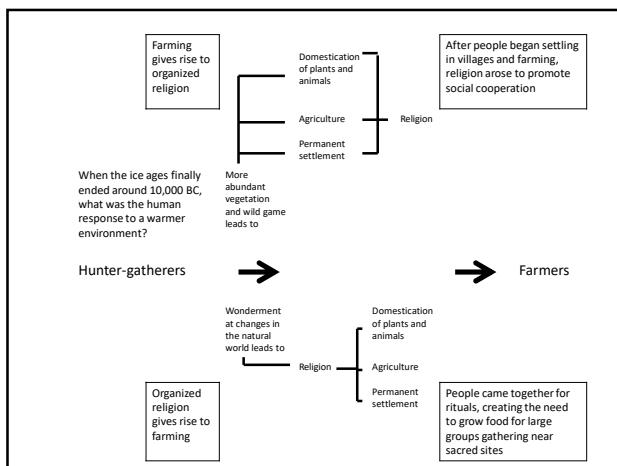
* Values for pillars B.9 and B.10 are for aboveground portions only, so number of labourers should be higher by perhaps 20%.



69



70



71

Early Neolithic Ritual

Many ritual objects were hidden—in pits, under floors, in caves—their functions are unknown

- Most striking hidden objects are plastered skulls
 - Human skulls on which plaster faces have been molded
- Plaster figures have been found in pits
- A cache of ritual objects were found in a cave
 - includes a cap, a bag, beads, bone tools, arrowheads, a painted stone mask, and a human skull with a net pattern on the cranium

Plastered skulls from Jericho

72



A cache of plastered skulls from Tell Aswad, northern Syria. After their "lives" as detached and modeled skulls, these heads were given a fresh burial.

73

Early Neolithic Domestication

Earliest evidence of plant domestication is seen in figs from the Pre-Pottery A
 Farming developed during the Pre-Pottery Neolithic B period
 A wide range of domesticated crops is found including
 – Cereals—emmer wheat, einkorn wheat, barley
 – Pulses—lentils, peas
 – Legumes—bitter vetch, chick peas

74

The Late Neolithic

Characterized by the development of pottery manufacture

- Stone tools, expedient tools made on local materials with minimal energy investment
- Characterized by a limited number of large sites and small dispersed hamlets
- Large sites are not densely packed
- Symbolic artifacts tend to be stylized animal figurines



75

Late Neolithic Subsistence

Importance of hunting continuously declines throughout period

- Evidence for animal domestication includes changes in the shape of goat horns
- Despite symbolic emphasis on bulls, main source of meat was domestic goat
- People still relied on the full range of plants domesticated in the Early Neolithic

76



Ember et al
2002:278

Risks of the Neolithic Lifestyle

Food storage means pests, some of which carry pathogens (mice, rats). Germs find new hosts (humans) and evolve new diseases.

Crowded villages pose problem for fresh water and waste disposal.

Skeletal pathologies suggest horticulturalists generally have poorer health than hunters and gatherers.

New patterns of wear on joints that result from the routines of processing grain.

Less animal protein in diet means higher incidence of anemia, periodic growth arrest.

Reliance upon crops means large sedentary groups are particularly vulnerable to periodic crop failures and famine.

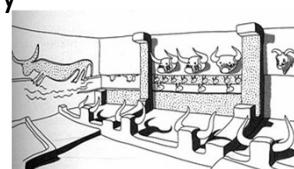
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Çatalhöyük, Turkey

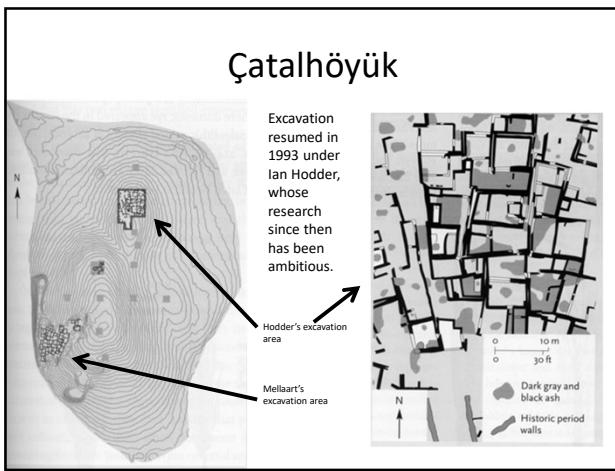
One of the largest, most important Neolithic sites in SW Asia, Çatalhöyük is particularly well-known for the symbolic and cultural explosion that accompanied farming there.

First dug by James Mellaart in 1960s:

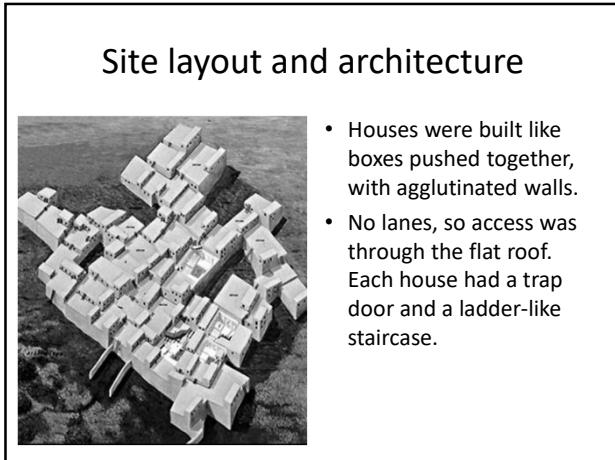
- A large site (13 ha)
- A long-lived site (17 m of stratified occupation debris) 7300 – 6200 BC
- Mellaart thought that Çatalhöyük was a "proto-city"
- He also thought that Çatalhöyük was a cult center for the worship of a great mother goddess who prefigured the ecstatic cult of the Anatolian goddess Cybele, famous in Roman times.



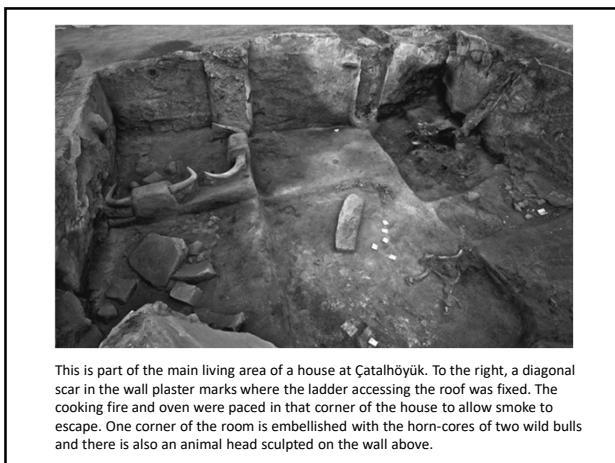

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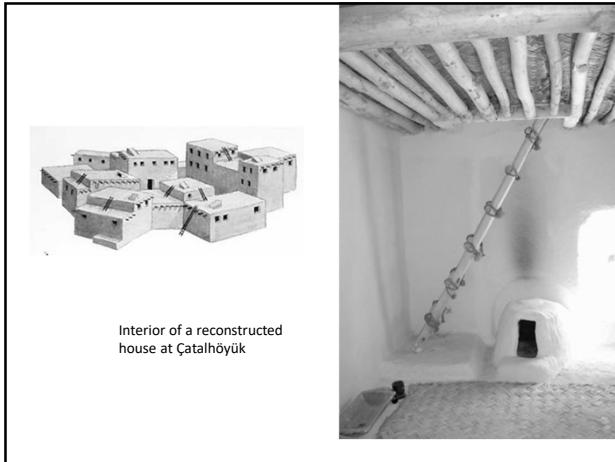
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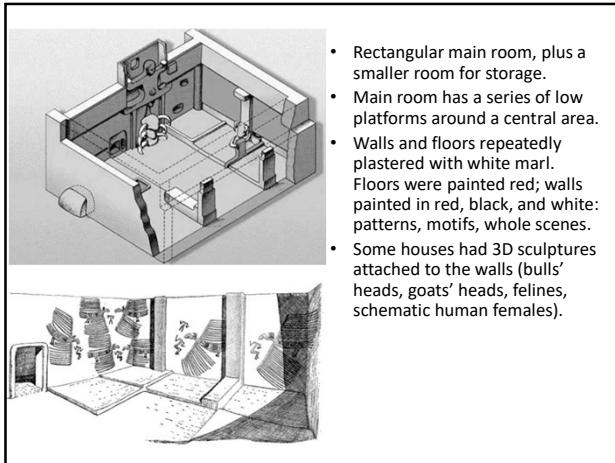
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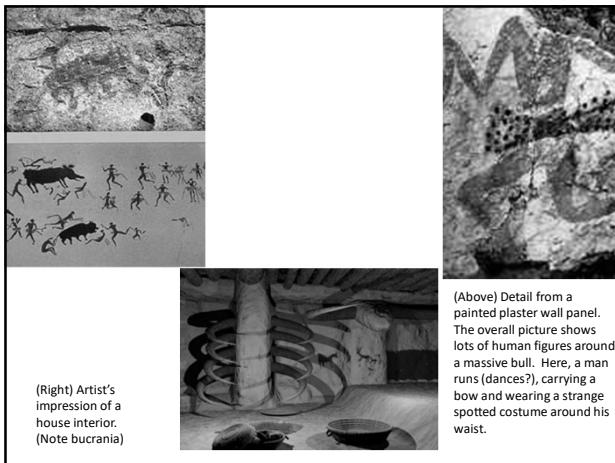
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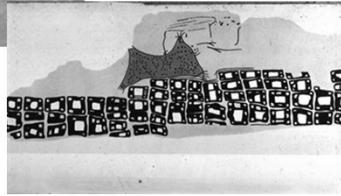


84

Oldest map in the world?



This wall painting at Çatalhöyük may be a map of the settlement.



85

Burials

- Mellaart found many burials beneath house platforms.
- Hodder found that while some houses have no burials, others have as many as 68.
- Since Çatalhöyük houses lasted 70 years, it seems unlikely that a family living in a single-room house could have had such mortality.
Implication: special houses – lineage focus?



86