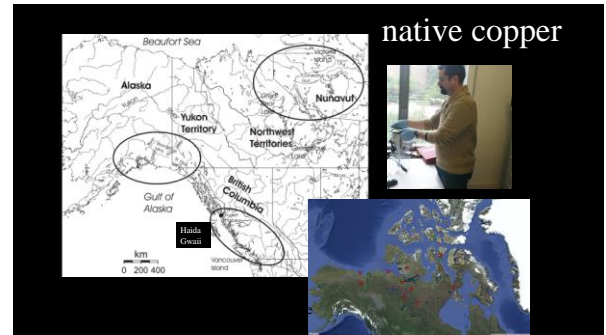
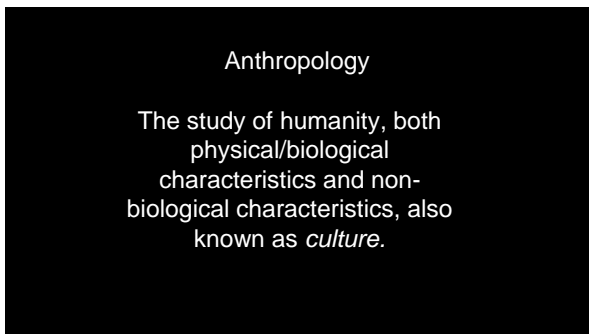




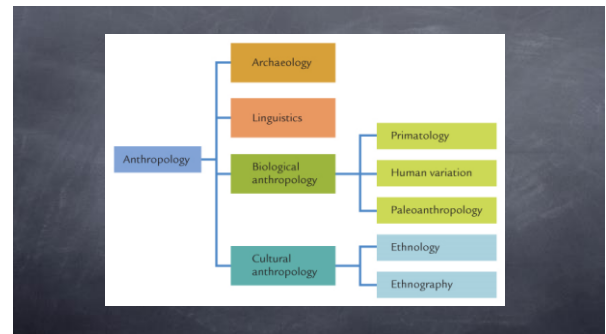
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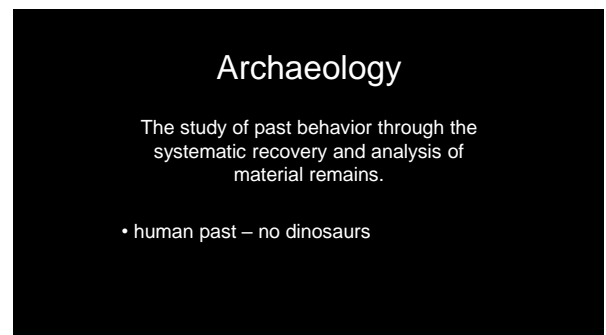
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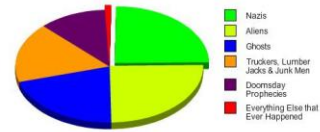
Archaeology



- Prehistory – before written records
- History – study of the past using written records

13

History According To The History Channel

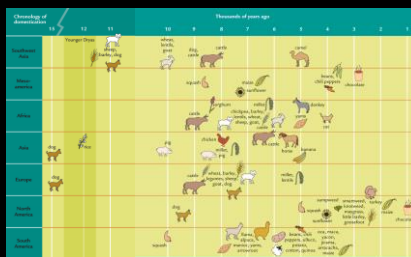


GraphJam.com

14

The Neolithic:

The shift from food collection to food production



15

Braidwood 1953

SYMPOSIUM: DID MAN ONCE LIVE BY BEER ALONE?

This is the second in a series of symposia the object of which is to expedite scholarly intercommunication. Robert Braidwood's query was referred to several colleagues for comments which were sent to Braidwood for rejoinder; then the series was edited as a whole. Similar queries in any field of anthropology, or at the margins, are invited, and the author may suggest names of persons whose comments he would value.

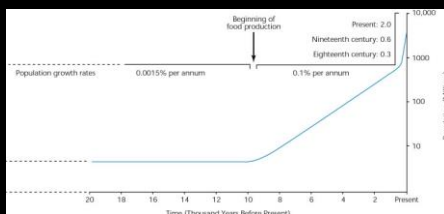
Query by ROBERT J. BRAIDWOOD

It is generally assumed that the appearance of domesticated cereals in the Near East was intimately linked with the use of these grains for the preparation of flour for bread making. Recently Professor J. D. Sauer of the Department of Botany of the University of Wisconsin has queried this generalization in relation to our preliminary notices on Jarmo *et al.* (cf. Braidwood: *Scientific American*, Oct. 1953, pp. 62-66; *The Near East and the Foundations for Civilization*, University of Oregon Press, 1952). Sauer wonders whether the earliest utilization of the domesticated cereals may have been for beer rather than bread. The question would thus appear to be: Could the discovery that a mash of fermented grain yielded a palatable and nutritious beverage have acted as a greater stimulant toward the experimental selection and breeding of the cereals than the discovery of flour and bread making? One would assume that the utilization of wild cereals (along with edible roots and berries) as a source of collected food would have been in existence for millennia before their domestication (in a meaningful sense) took place. Was the subsequent impetus to this domestication bread or beer?

The contemporary archaeological evidence from the area which bears on the point would be, in order of appearance: Natufian of Palestine—sickles

16

Why study Hunter-Gatherers?



17

Political Organization

Elman Service (1962)

Primitive Social Organization

1. Band (Mobile Hunter-Gatherers) Simple
 2. Tribe (Segmentary Societies)
 3. Chiefdom
 4. State
- ↓
Complex

18

Why agriculture?

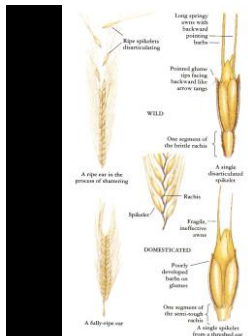
- Demographic pressure
- Environmental change
- Socioeconomic competition

19

Carrying Capacity...

- ...of a geographic region is the maximum population of a particular species that region (habitat, environment) can support.
- When applied to humans, technology must be considered

20



What does domestication look like?

21

Practical technology – “solve practical problems of survival and basic comfort” (Hayden 1998:2).

vs.

Prestige technology – “display wealth, success, and power”, solve a social problem (Hayden 1998:11).

22

Who Adopts?

Aggrandizers (Hayden 1998) &
Cosmopolite innovators/adopts (Rogers 1962)

- both willing to take risks
- both willing to operate outside of their societies' cultural norms and values.
- actions of both are implicated in facilitating technological and social change

23

Archaeometry

Biomolecular Archaeology/Archaeological Chemistry
& Organic Residue Analysis in Archaeology

Patrick E. McGovern & Gretchen R. Hall (2015) Charting a
Future Course for Organic Residue Analysis in Archaeology, J
Archaeol Method Theory

What can be identified?

- Lipids, resins, dyes, and variety of organic compounds

24

Beer Stone – Calcium oxalate (CaC_2O_4)

- precipitate resulting from reaction between proteins (amino acids) and hard water minerals (calcium and magnesium), or also alkaline cleaners, which are caustic.



25

Southwest Asia Cultural Chronology

- Neolithic** = "new stone", refers specifically to the origins of agriculture

- Natufian - Late Epipaleolithic archaeological culture of the Levant, ca. 15,000 to 11,500 BP

- Pre-Pottery Neolithic**

- PPNA ca. 10,500 to 9,500 BP
- PPNB ca. 9,500 to 8200 BP
- PPNC ca. 8200 to 7500 BP

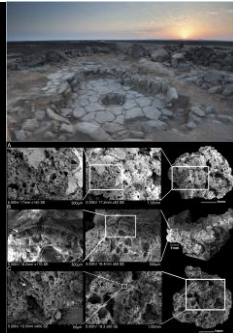


26

Beer or Bread?

Shubayqa 1

- Natufian site
- 14,600-11,600 years BP
- northeastern Jordan

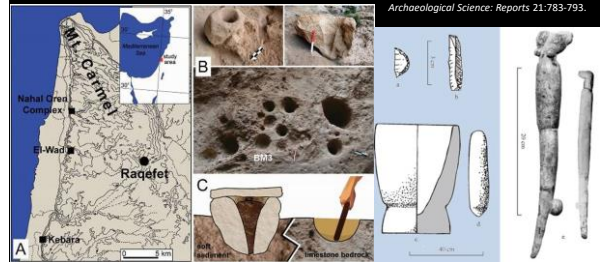


Airrazo-Otaguila et al. 2018 Archaeobotanical evidence reveals the origins of bread 14,400 years ago in northeastern Jordan, *Proceedings of National Academy of Sciences* 115(31): 7925–7930

27

Raqefet Cave, Israel

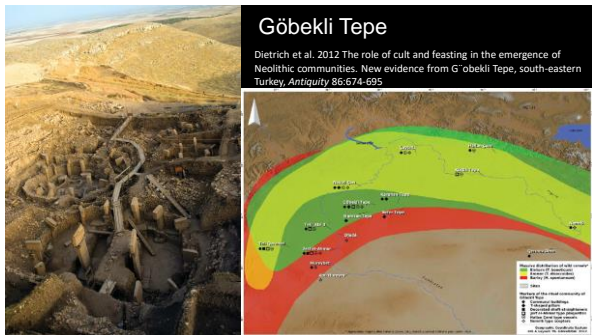
Liu et al. 2018 Fermented beverage and food storage in 13,000 y-old stone mortars at Raqefet Cave, Israel: Investigating Natufian ritual feasting. *Journal of Archaeological Science: Reports* 21:783-793.



28

Göbekli Tepe

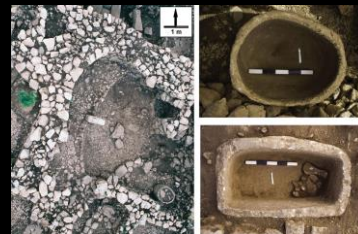
Dietrich et al. 2012 The role of cult and feasting in the emergence of Neolithic communities. New evidence from Göbekli Tepe, south-eastern Turkey, *Antiquity* 86:674-695



29

Göbekli Tepe

Six limestone vessels each with a capacity of up to 160 liters found *in situ*.



30

Chinese Neolithic Grog




Jiahu

- Peiligang Culture
- Occupied by at least 9,000 years ago
- Earliest evidence for cultivated rice
- Neolithic Grog - wild grape, hawthorn, rice, and honey

31

Rice





Broomcorn/Proso Millet



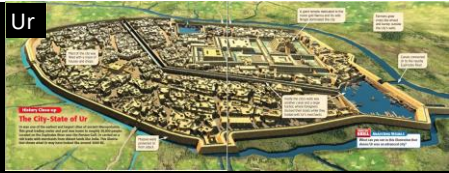

32

Neolithic Cultures – Yangtze River Valley

33

Ur



Sumerian City-States




Nippur





34


ca. 4000 BC seal (impression) from Tepe Gawra in northern Iraq (Hobbes 2003:77)



ca. 2600-2350 BC impression from lapis lazuli cylinder seal

35



Ninkasi – Goddess of beer and brewing

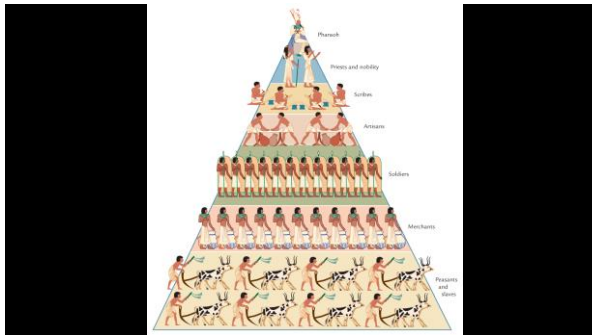
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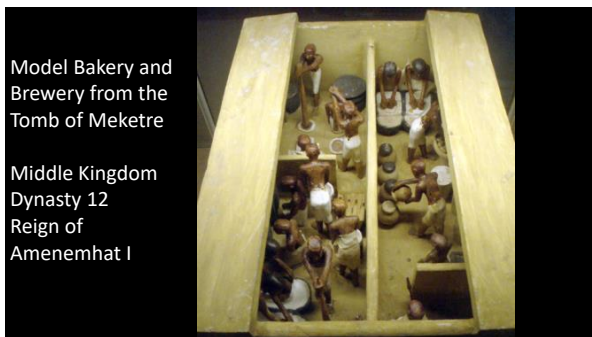
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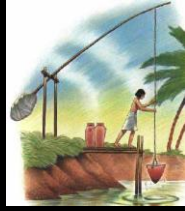
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42

Ancient Egypt & The Nile River

- annual flooding - continuous supply of fertile soils



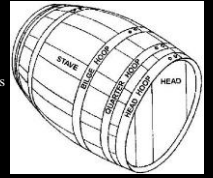
43

Diana Twede (2005) *The Cask Age: the Technology and History of Wooden Barrels*, *Packaging Technology and Science* 18:253-264.



Roman casks being shipped on Trajan's Column (A.D.113)

barrel parts



Celts



44



45

DIANE MERRILL

Beer Cans: A Guide for the Archaeologist

ABSTRACT

Beer cans are potentially useful as dating tools in archaeological excavations. This paper discusses the history of beer cans, their construction, and their use as dating tools. It also provides a guide to the identification and analysis of beer cans in archaeological contexts.

INTRODUCTION

Beer cans (B.C.) provide an excellent example of the use of dating tools in archaeological excavations. This paper discusses the history of beer cans, their construction, and their use as dating tools. It also provides a guide to the identification and analysis of beer cans in archaeological contexts.

Origins

In 1895, a patent for a beer can was granted to the inventor, the Hon. John W. Porter. The patent was for a "Beer Can" and was the first of many patents for beer cans. The patent was for a "Beer Can" and was the first of many patents for beer cans.

Historical documents, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023.

Between 18 and 20 p.c. of the prehistoric period was beer consumption (Hart 1991, p. 1). And despite the fact that beer was the most common drink in the ancient world, it has been largely ignored in archaeological studies.

With the coming of archaeology in 1910, beer drinking was recognized as a significant part of the ancient world's culture.

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46

"Brewer for a Day" at Carillon Brewing Company, Carillon History Park

Dayton, OH
August 12, 2021

<https://www.daytonhistory.org/past/shop-dine/carillon-brewing-co/>

47



48

Mid-19th c.
brewery

- Relies on gravity
- Two fires



49

Uppermost fire and
kettle for mash and
sparge water



50

Mash Tun

Tun is Old
English word
for cask or
barrel



51



52



53



54



55



56



57