

# The Beginnings of Beer in the Ancient World

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&



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# The Ancient World



# The Fertile Crescent

- Cradle of Civilization
- Writing, glass, the wheel, and irrigation
- Diverse Climate
- Pre-pottery Neolithic A and B (8000-6000 BC)
- Wild barley - *Hordeum vulgare f. distichon*
- Origins of agriculture
- Barley first domesticated
- Emmer and einkorn wheat

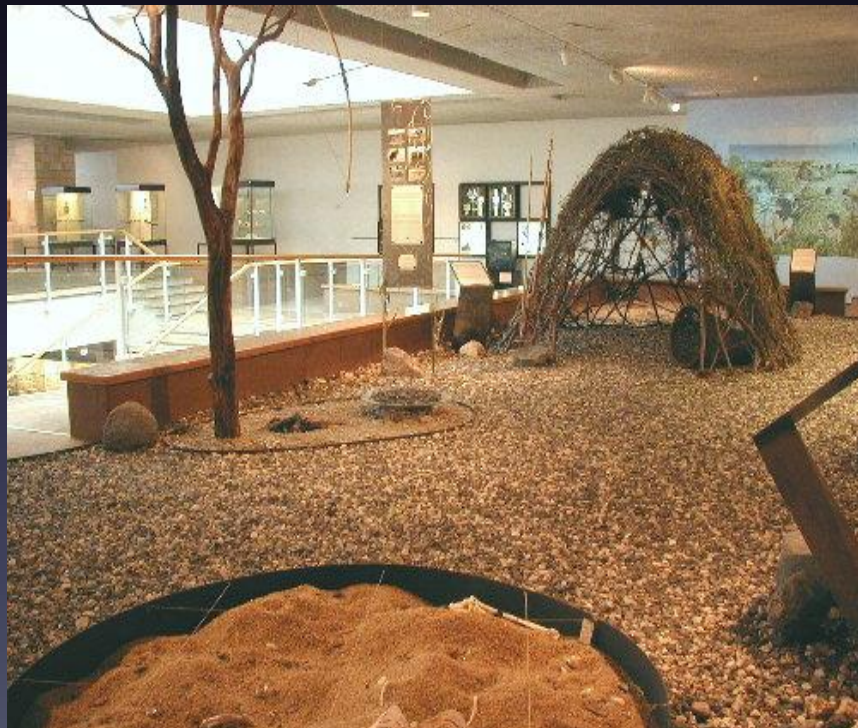




# Epipaleolithic at Ohalo II

Sea of Galilee

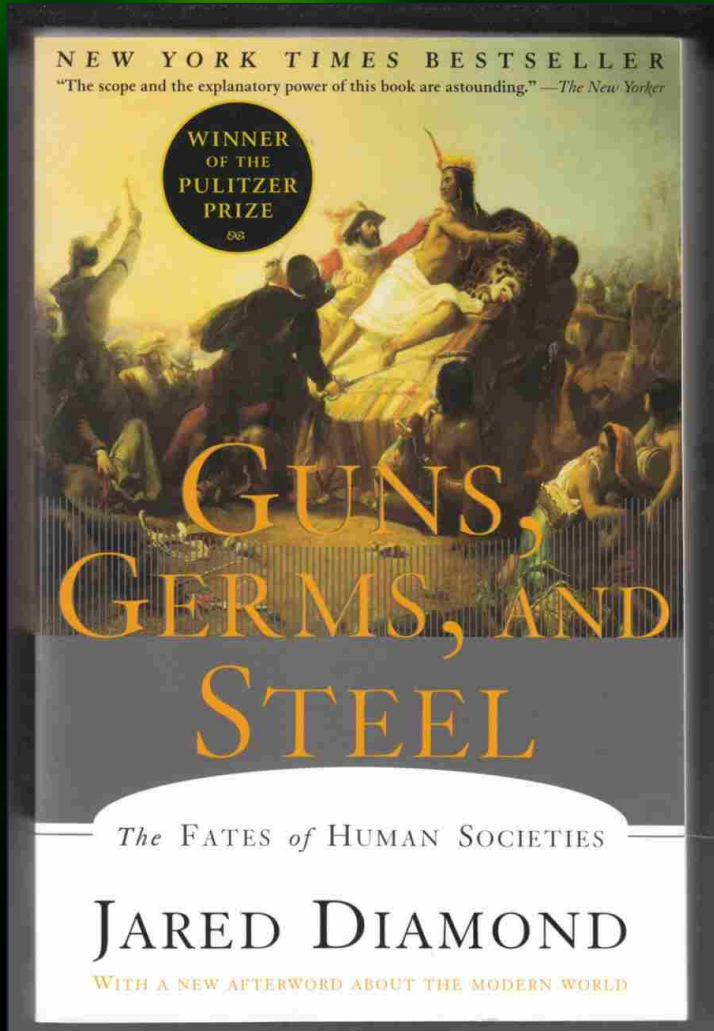
- Earliest evidence of wild barley in archaeological context
- c. 8500 BC
- c. 23,000 BC? c. 12,000 BC?





# Guns, Germs, and Steel

Jared Diamond



...availability of barley, along with other domesticable crops and animals, in southwestern Eurasia significantly contributed to the broad historical patterns that human history has followed over approximately the last 13,000 years; *i.e.*, why Eurasian civilizations, as a whole, have survived and conquered others.

(p. 141)

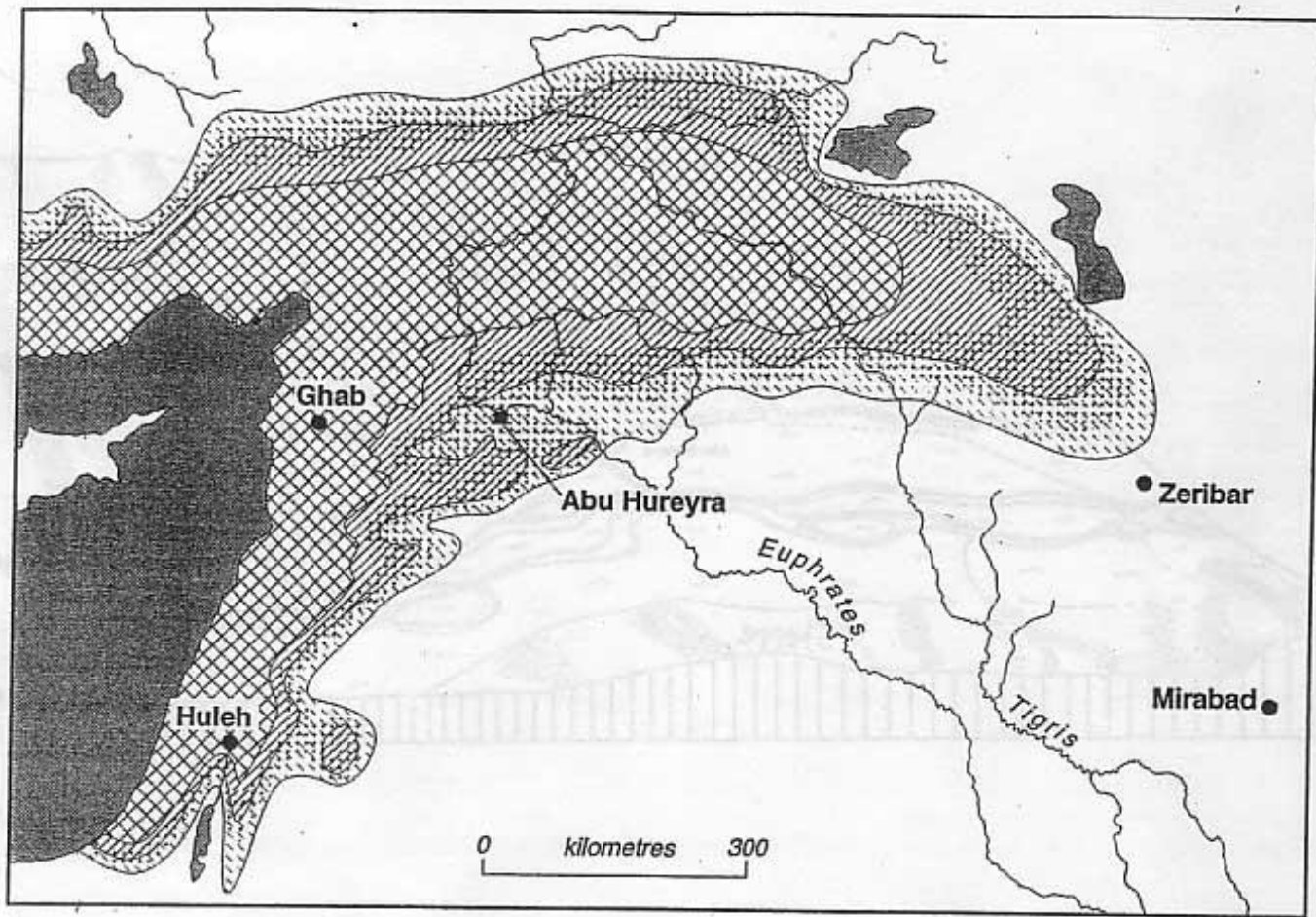




# Domesticated Barley






- Aceramic Neolithic Sites in Near East
- Domestication of Rye – 10,000 BC
- Gathering wild seeds 9,500-8,000 BC
- Domestication of barley – 8,500-5,000 BC
- Pre-Pottery Syria (8,000-5,000 BC)
- Among most nourishing grains cultivated
- Modern nutritionists classify it as one of three balanced starches with rice and potatoes.





- 
 Forest and fairly dense woodland (including montane forest, eu-mediterranean sclerophyllous woodland, & xeric, deciduous oak-Rosaceae woodland).
- 
 Oak-terebinth-Rosaceae park-woodland (a mosaic of woodland and open areas dominated by annual grasses).

- 
 Terebinth-almond woodland-steppe, involving a thin scatter of trees in what were otherwise grass-dominated steppe formations.
- 
 Areas (within the previous two zones) supporting extensive stands of wild wheats and ryes.
- 
 Steppe, dominated by wormwoods, perennial chenopods, and perennial tussock-grasses.



# Barley for Beer

- One of the first alcoholic drinks in the Neolithic Period (c. 6000 BC).
- Barley as currency
- Staple cereal of ancient Egypt
- Residue tests indicate barley beer in Sumeria by 5000 BC
- Sumerian Tablet depicting process c. 4000 BC
- Listed in Egyptian grave goods c. 2650-2575 (Tomb of Hekherebau)
- Oldest recipe, Sumerian poem honoring Ninkasi (1900 BC)



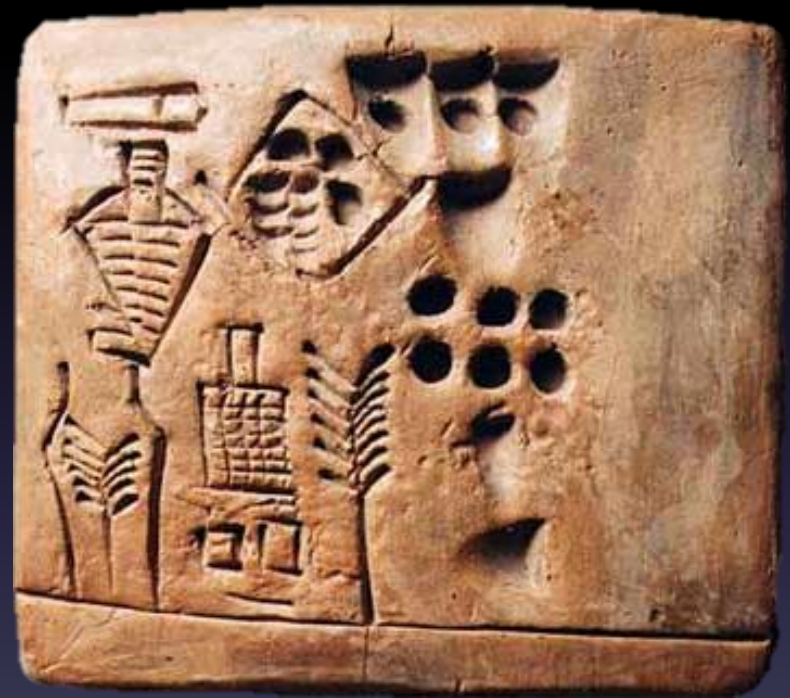
*Funerary stele from el-Amarna (c. 1350 BC)*



# The Sumerian Industry



*Alulu beer receipt – This records a purchase of "best" beer from a brewer, c. 2050 BC from the city of Umma in Ancient Iraq*



*Hymn to Ninkasi mentioning beer recipe from 1900 BC – presumably originally conceived as early as 4000 BC*

# Girsu

(Modern Iraq)

- Sumeria
- Monthly barley ration
  - Adults = 30-40 pints
  - Children = 20 pints
- Cuneiform on clay tablet
- c. 2350 BC



*British Museum, London*



## The Evolution of Man from Primitive to Cultured Reliant on Beer?



"Enkidu, a shaggy, unkempt, almost bestial primitive man, who ate grass and could milk wild animals, wanted to test his strength against Gilgamesh, the demigod-like sovereign. Taking no chances, Gilgamesh sent a (prostitute) to Enkidu to learn of his strengths and weaknesses. Enkidu enjoyed a week with her, during which she taught him of civilization. Enkidu knew not what bread was nor how one ate it. He had also not learned to drink beer. The (prostitute) opened her mouth and spoke to Enkidu: 'Eat the bread now, O Enkidu, as it belongs to life. Drink also beer, as it is the custom of the land.' Enkidu drank seven cups of beer and his heart soared. In this condition he washed himself and became a human being. "

**Benefits of barley mentioned  
25 times in the *Tanakh*.**

- *The Epic of Gilgamesh (18<sup>th</sup> cent. BC)*

# Ancient Etymology of Barley

- *It* = Egyptian for Barley



- *Šma* = Upper Egyptian Barley



(served as a symbol for Upper Egypt)

- *Akiti* = Sumerian term





# Ancient Greece

as early as 1600-1100 BC (Mycenaean Culture)

## Homeric Hymn to Demeter

(lines 206-209)

τῇ δὲ δέπας Μετάνειρα δίδου μελιηδέος  
οἴνου πλήσασ' : ἧ δ' ἀνένευσ' : οὐ γὰρ  
θεμιτόν οἱ ἔφασκε πίνειν οἶνον ἔρυθρόν:  
ἄνωγε δ' ἄρ' ἄλφι καὶ ὕδωρ  
δοῦναι μίξασαν πιέμεν γλήχωνι τερείνῃ.

- Eleusinian Mysteries: *Kykeon* = mixed drink of barley and herbs
- Demeter = “Barley Mother”



*Demeter, enthroned and extending her hand in a benediction toward the kneeling Metaneira, who offers the tribute wheat – a recurring symbol of the Mysteries (Varesse Painter, Red Figure Hydria, c. 340 BC, Apulia)*

# Pliny the Elder



## The Natural History - (1<sup>st</sup> century AD)

- Extensive discussion of the use of barley and other cereals
- Dry the barley and roast them before preparing a porridge
- Produces malt that soon ferments and develops alcohol
- He does add that wheat replaced barley as the “staple”
- Even indicates a knowledge of the difference in 2-Row and 6-Row...



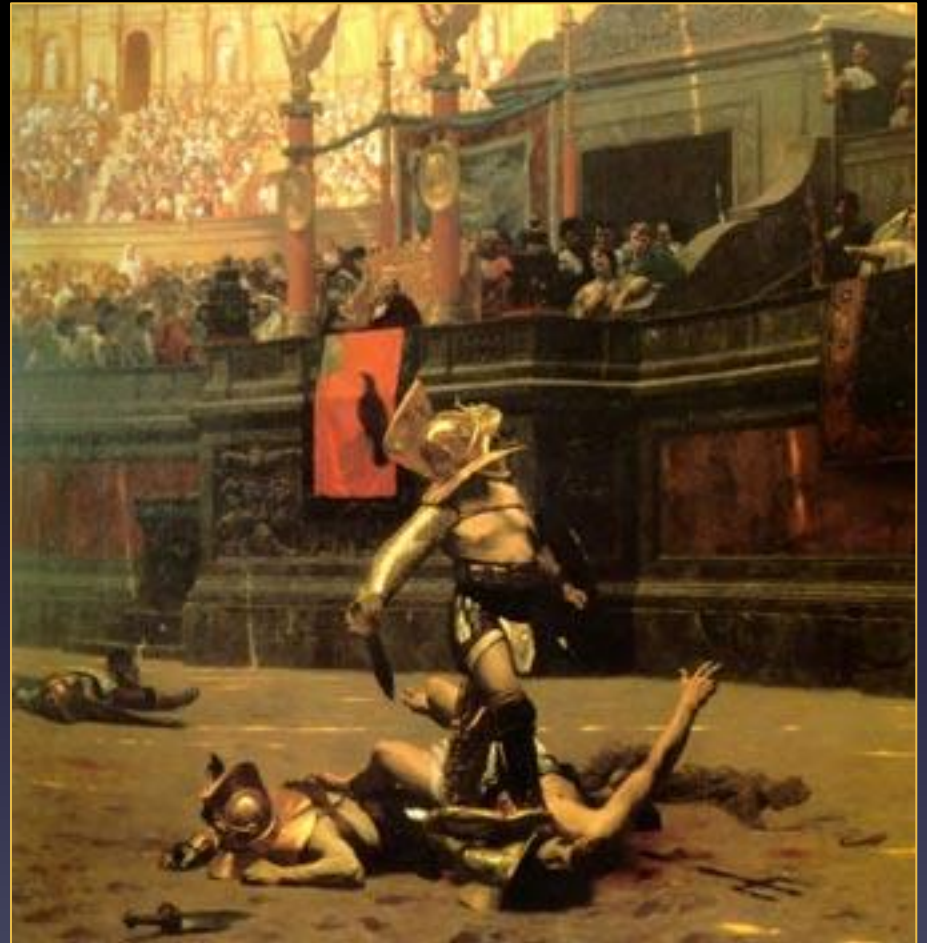
# Hordearii

“barley eaters”

Antiquissimum in cibis hordeum, sicut Atheniensium ritu Menandro auctore apparet et gladiatorum cognomine, qui hordearii vocabantur. polentam quoque Graeci non aliunde praeferunt. pluribus fit haec modis. Graeci perfusum aqua hordeum siccant nocte una ac postero die frigunt, dein molis frangunt.

- Pliny the Elder

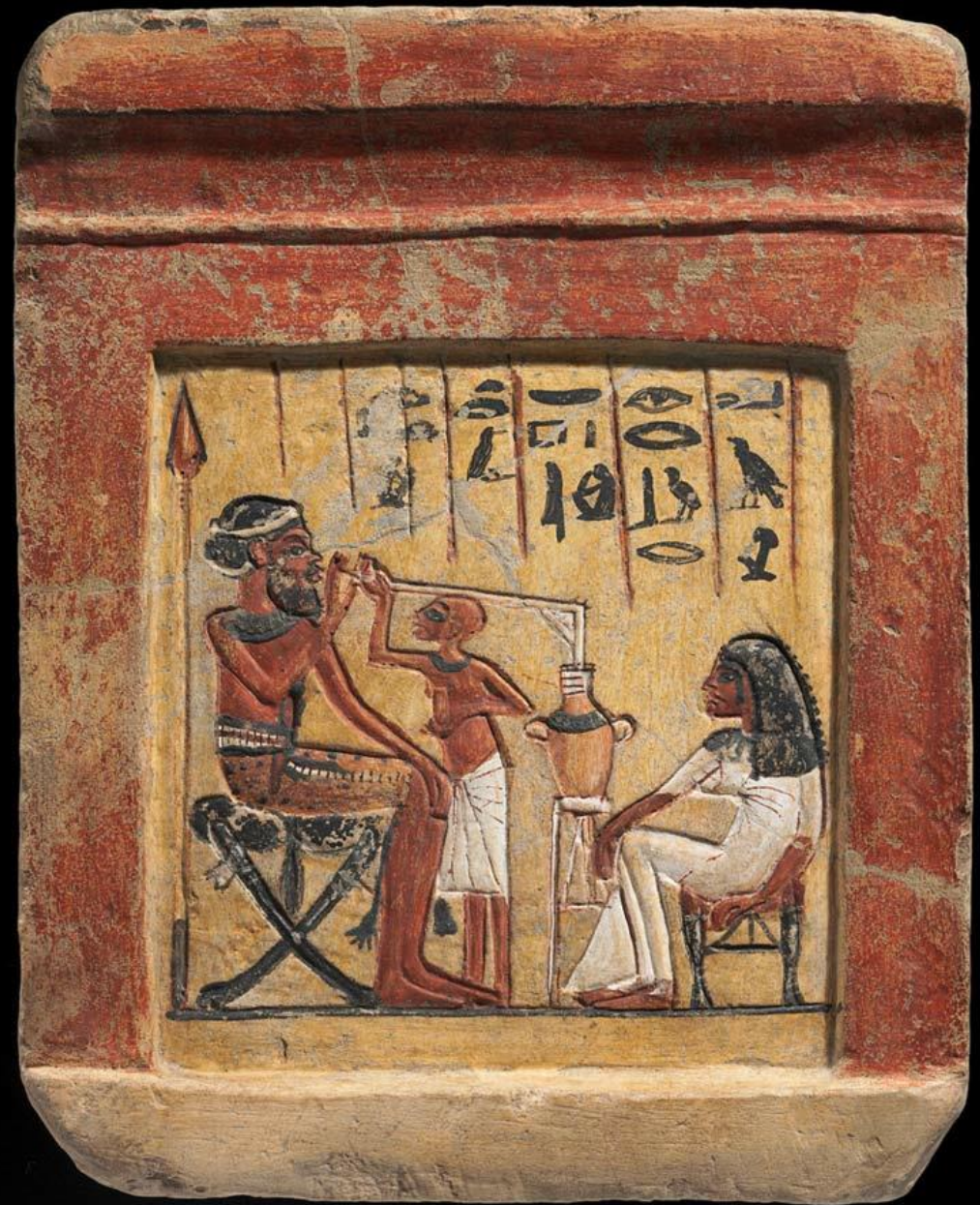
*Historia Naturalis* xiv, 72



*Gladiators given barley with each meal for bursts of strength and energy*

# The Beginnings of Beer in Egypt

...and the rise of the  
brewing industry



*Funerary stele from el-Amarna (c. 1350 BC)*







# The Code of Hammurabi

(Babylon 1772 BC)

## Daily Beer Ration

- Based on social standing
  - Normal worker = 2 liters
  - Civil servants = 3 liters
  - Administrators = 5 liters
  - High priests = 5 liters
- Beer not sold, but bartered...





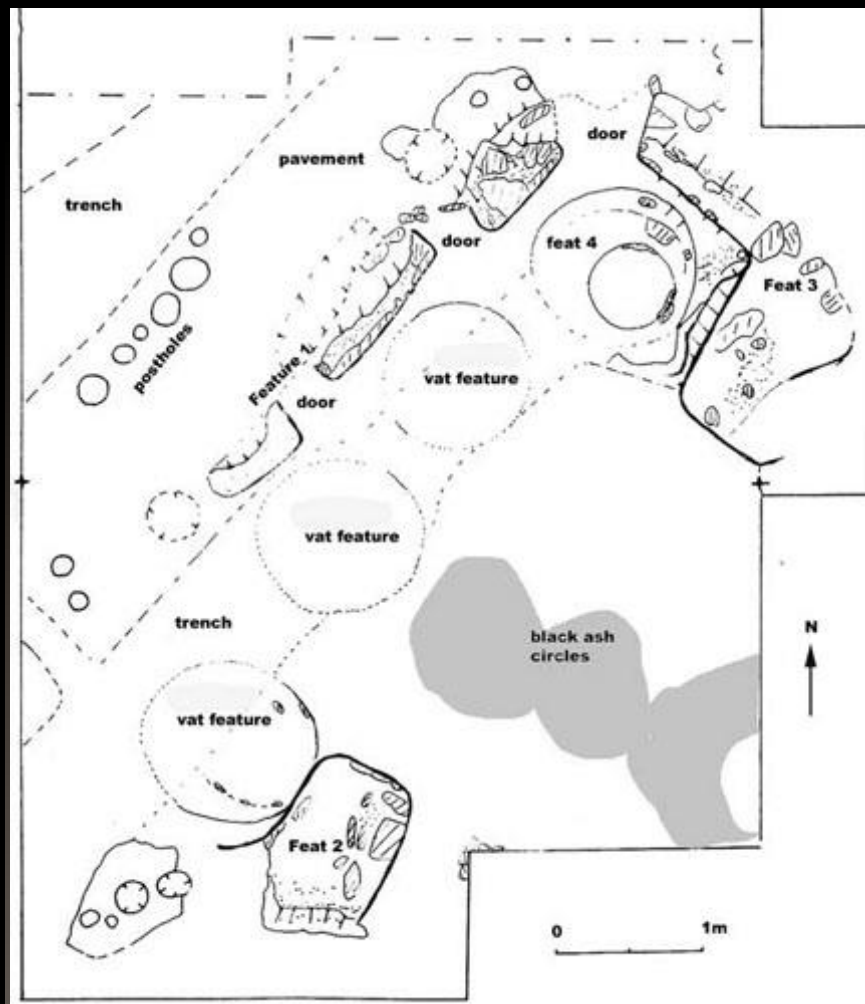
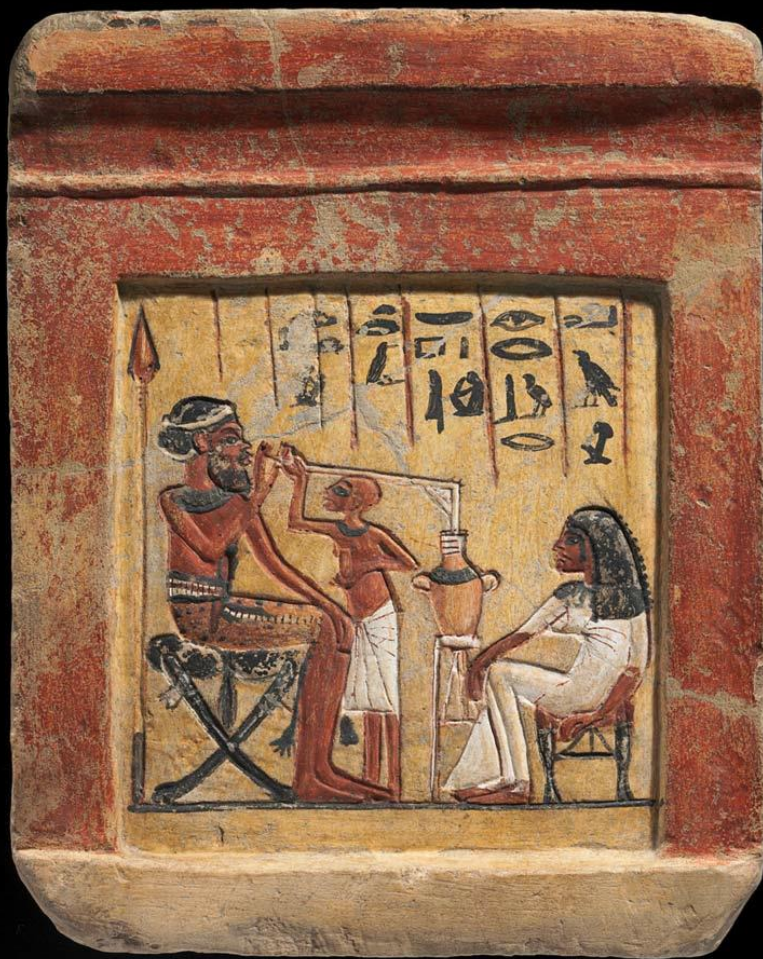
# Why was beer mass produced? When?

(c. 4000 BC)



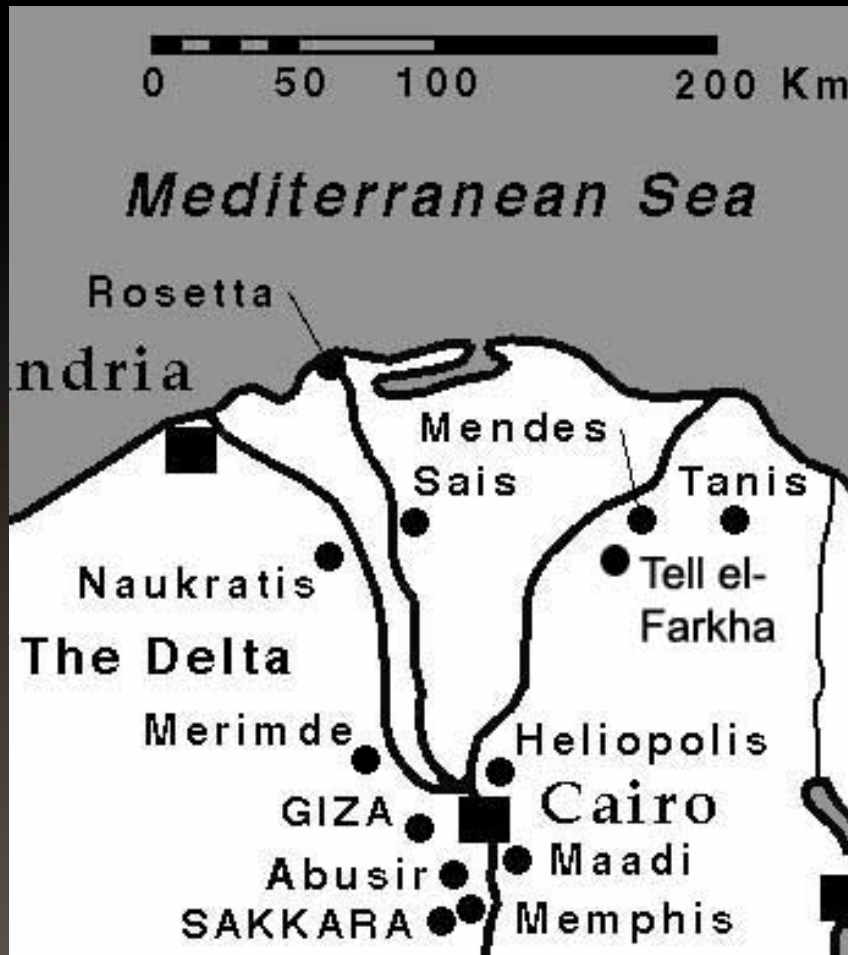
- Part of Daily Diet
  - Nutritional Value
- Part of Religious Practices
- Prescribed to treat various illnesses
- Appropriate gift for a Pharaoh
- Offered as a sacrifice to the gods
- Grave goods
- A form of currency???

# Hierakonpolis (c. 4000 BC)





# Tell el-Farkha: (3600-2600 BC)













**3D Reconstruction  
of Tell el-Farcha  
Brewery  
(c. 3500 BC)**



**12 x 13 feet**



Mediterranean Sea

Gaza

Buto

Mendes

Minshat Abu Omar

Kom el-Hisn

Lower Egypt

Avaris (Tell el Daba)

Tell el-Mukdam

SINAI

•Siwa Oasis

Kom W. • Kom K

Upper Egypt

Bahriya Oasis

•Tell el-Amarna

•Badari

Abydos

RED SEA

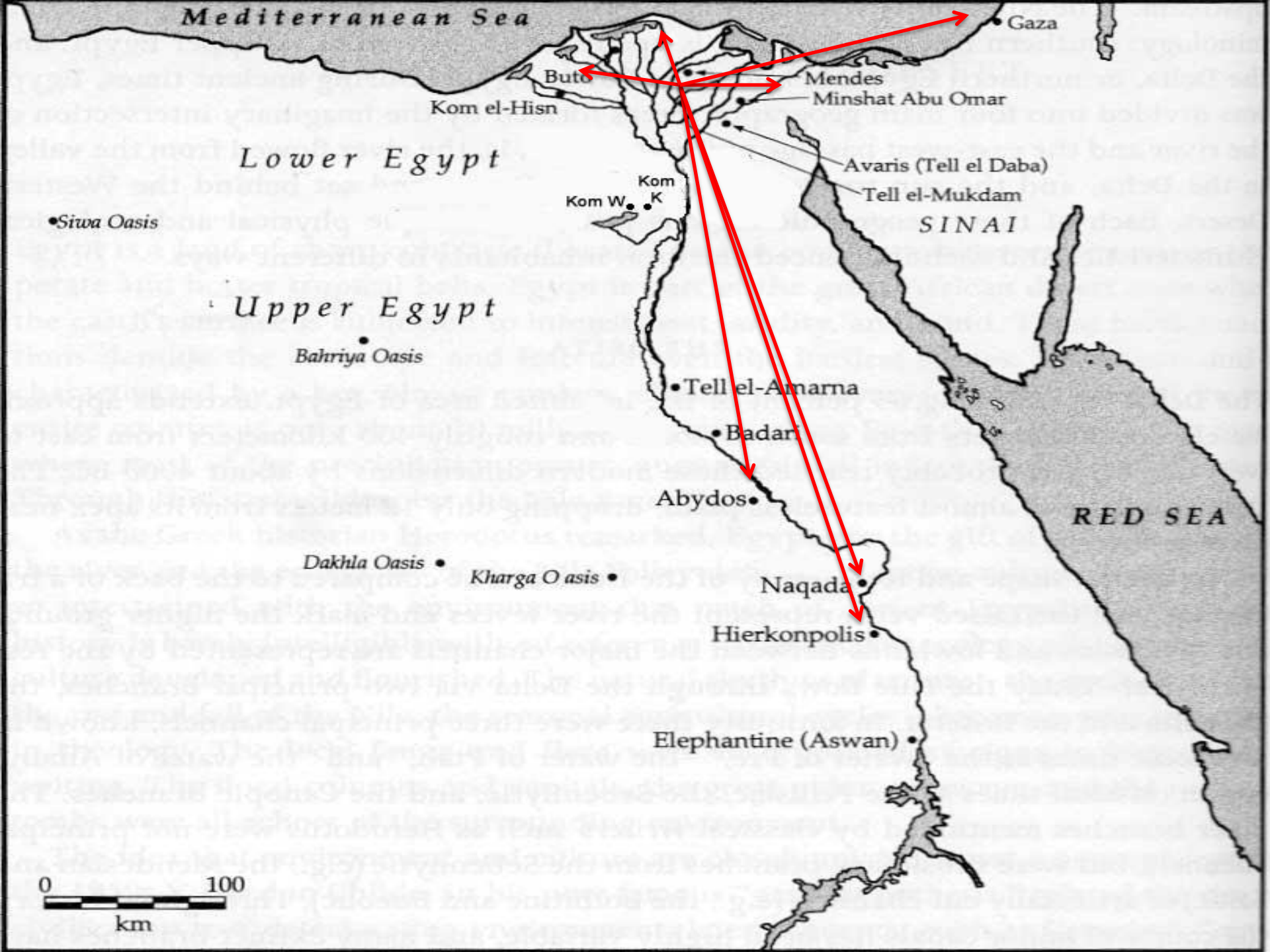
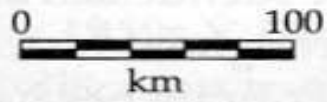
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Kharga O asis •

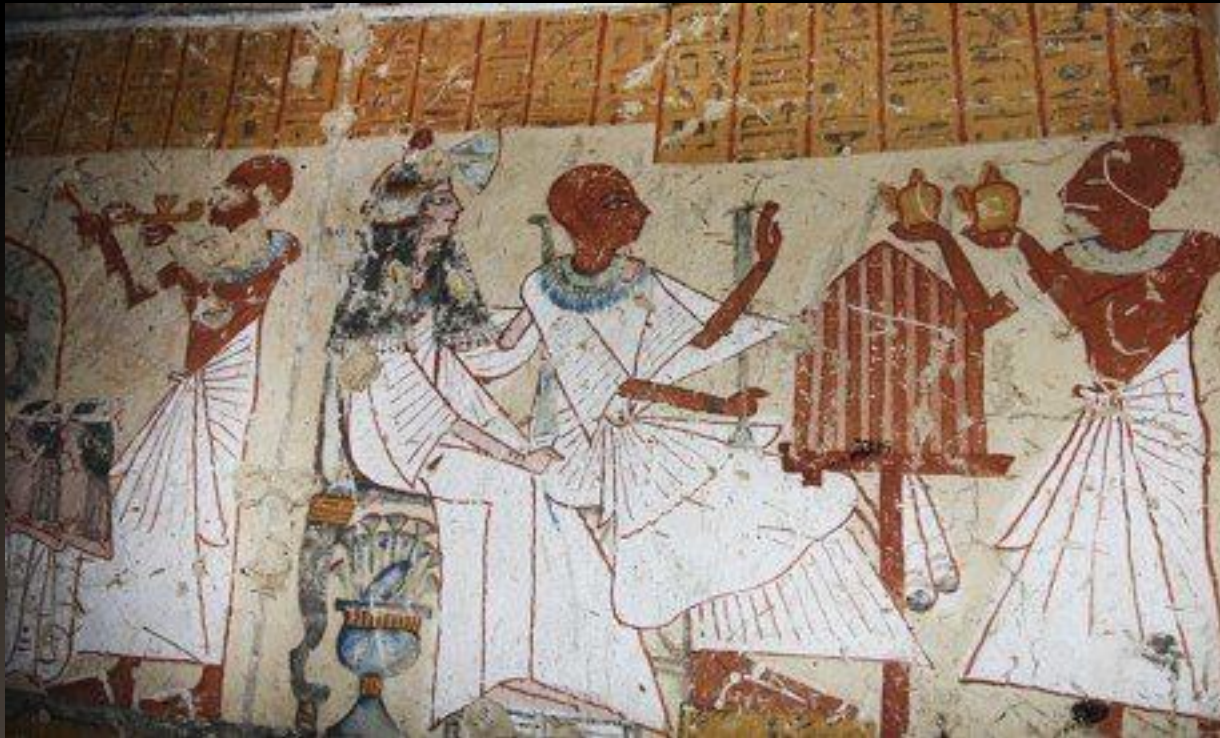
Naqada

Hierkonpolis

Elephantine (Aswan)



# Egyptian Tomb of the Brewer



## Ramesside Period

- Belonged to chief "maker of beer for gods of the dead."
- Found near tomb of statesmen under Amenhotep III, grandfather of Tutankhamun

*3000 year old "Tomb of the Brewer" found at Luxor Jan. 3, 2014.*



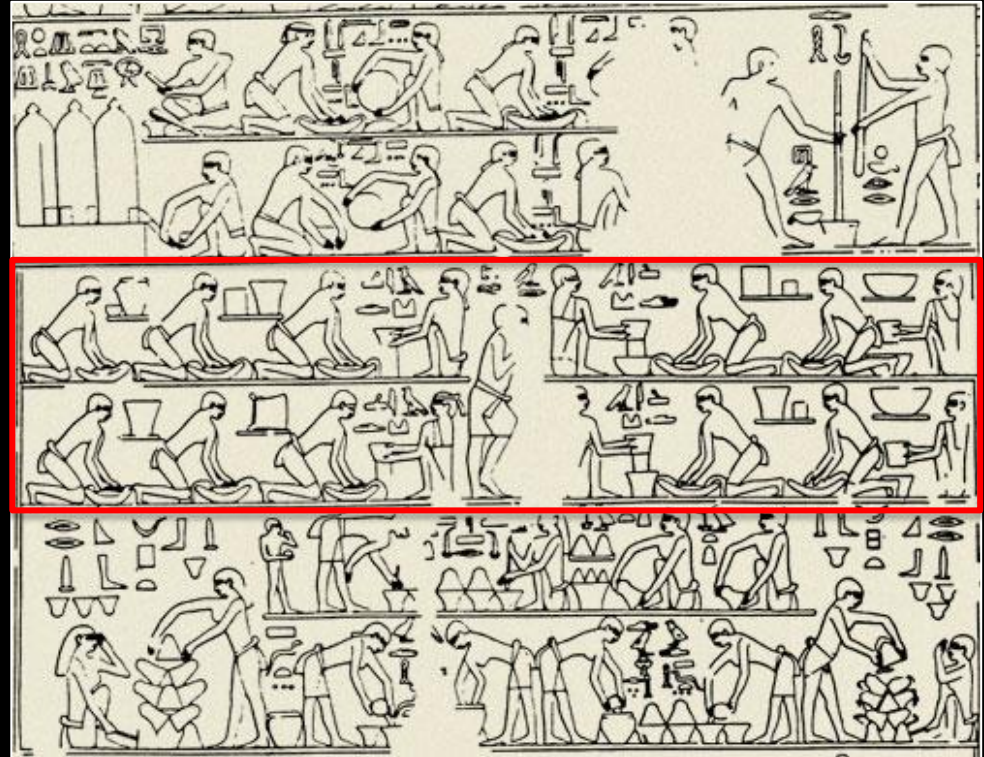
# Tomb of Ty – 5<sup>th</sup> Dynasty

(2465-2323 BC)



# Malting in Egypt & Mesopotamia

- Malt produced in wicker baskets
- Lowered into open wells for steeping, then raised above the water for germination.
- Rate of germination controlled by the height of the basket
- Germination progressed creating heat
- Basket lowered to slow germination and lower temp
- Basket raised higher to accelerate process
- Process stopped by raising basket to the top and agitating the contents
- Sun Dried (naturally of course)
- Malting purely for beverage production



*Beer and/or bread making scene from the Tomb of Ty – middle of the 5<sup>th</sup> Dynasty (c. 2500-2400 BC)*



# ANCIENT KILNING

*The Beginnings of Standardized Malting Practices*



*Neolithic hunter-gatherer  
site at Göbekli Tepe in  
Turkey (c. 9000 BC)*



# Why mass malting and “production”?



*Animal pillar from Göbekli Tepe (c. 9500 BC) in Turkey – considered the world’s oldest place of worship...*

## Social Glue in Parties

- Beer brewing troughs at cultic feasting site in Turkey, Göbekli Tepe (c. 9000 BC)
- Limestone (42 Gallons)
- Cultivation of grain for beer, not bread?
- Prior to domestication, grain production was difficult
- Beer thus reserved for festivals
- Sparked domestication of grain?
- Industrialization of beer = the first true industry?
- Did it spark the rise of civilization via “foreign relations”? Large-scale labor?
- Specialized equipment: Jars for soaking, boiling, and fermentation



# Malting in Cyprus



THE ANCIENT  
MEDITERRANEAN

Copyright 2001 Don Hessong

Drying Kiln after excavation at Cypriot Bronze Age site near Paphos... (1500 BC)





# Experimental Drying Kiln

Reconstruction during excavations conducted by by the University of Manchester (2007-2012)



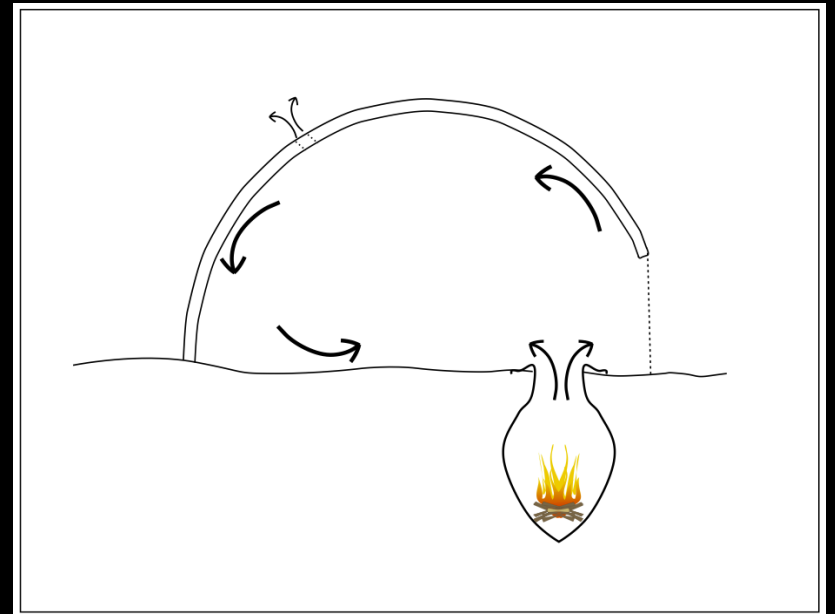
# Evidence from the Paphos Excavations

- The heat localized in the pot
- Dome retro fitted with doors promoting airflow
- Kilning temps of 65° C (perfect for heating and drying grains while preserving enzymes and proteins)



## In the vicinity:

- Kiln on 50 sq. meter courtyard (convenient for social gatherings?)
- Grinding and clay cooking pots
- Juglets for yeast additives and sweeteners
- Fruit adjuncts (grapes and figs)





## **Kissonerga-Skalia Pale Ale**

- Used traditional Egyptian germination techniques (isolated in a ceramic jug)
- Kilned for 24 hours at 60°C
- Hand ground malt
- Mashed at 65-70°C for 90 minutes
- Strained out solids and sparged with equal amount of water
- Boiled wort
- Cooled fermentation vessel in cold water
- Added hand-crushed figs
- Fermented for 6 days
- Drank at about 5% ABV

### **Ingredients**

**1.5 Kg fresh, wild barley 5  
large, wild figs  
(unwashed) Plenty of water**

# Floor Malting Born in Europe – AD 179



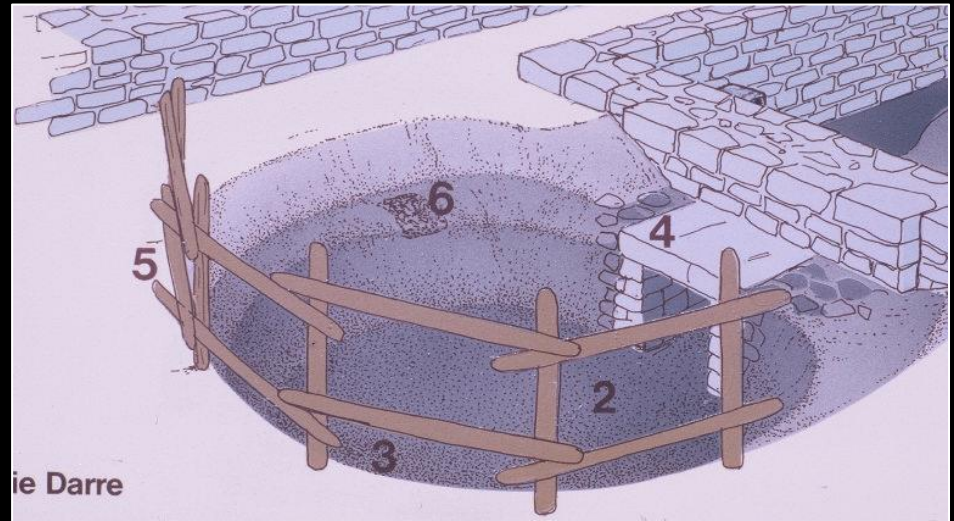
*Roman Ruin in Regensburg, Germany:  
The oldest known Malt House in the  
world (constructed AD 179)*

- Rise of the city-state throughout Europe lead to specialized malting and brewing.
- Industry was growing and so was the demand for malt.
- Eventually necessity to develop “artificial” means of controlling temperature and humidity.
- AD 500: wooden steeping tanks, manmade cisterns, cave malting, and floor malting are common place.



# “Malt Houses” – Roman Regensburg

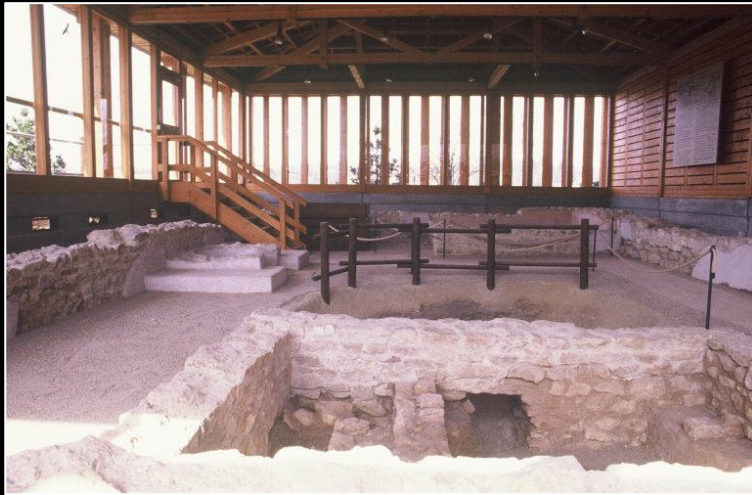
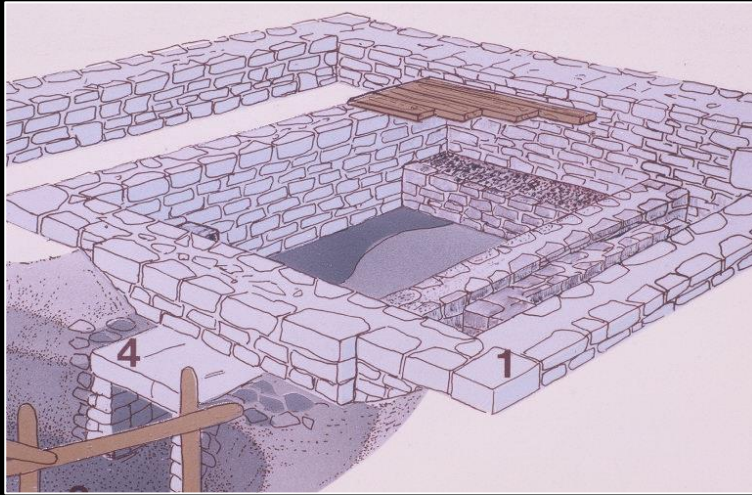
- Gravity fed cold water
- Massive stone walls with stone and mortar floors
- Small windows for ventilation
- Barley fed through openings in the roof into cisterns below for steeping
- Removed and germinated on stone floor
- Hand shoveled to front of room for temp control and to stop fermentation
- Night air used for cooling



*Above: Reconstruction of the furnace for the kilning floor at Regensburg*

*Left: reconstruction of a medieval chimney, much like the one that would have covered the furnace pit at Regensburg*

# “Malt Houses” Continued...



*Top: Reconstruction of the kilning/drying floor at Regensburg. Bottom: View of the 26 x 43 ft. Malt House at Regensburg.*

- Multiple piles at various stages
- Tiled kilns but “modern” techniques
- Perforated floors added allowing combustible gasses to pass through grain
- All venting natural and dependent on weather
- State of grain and completion determined purely by preference and senses of the maltsters.
- Malting only conducted during the 5 coolest months



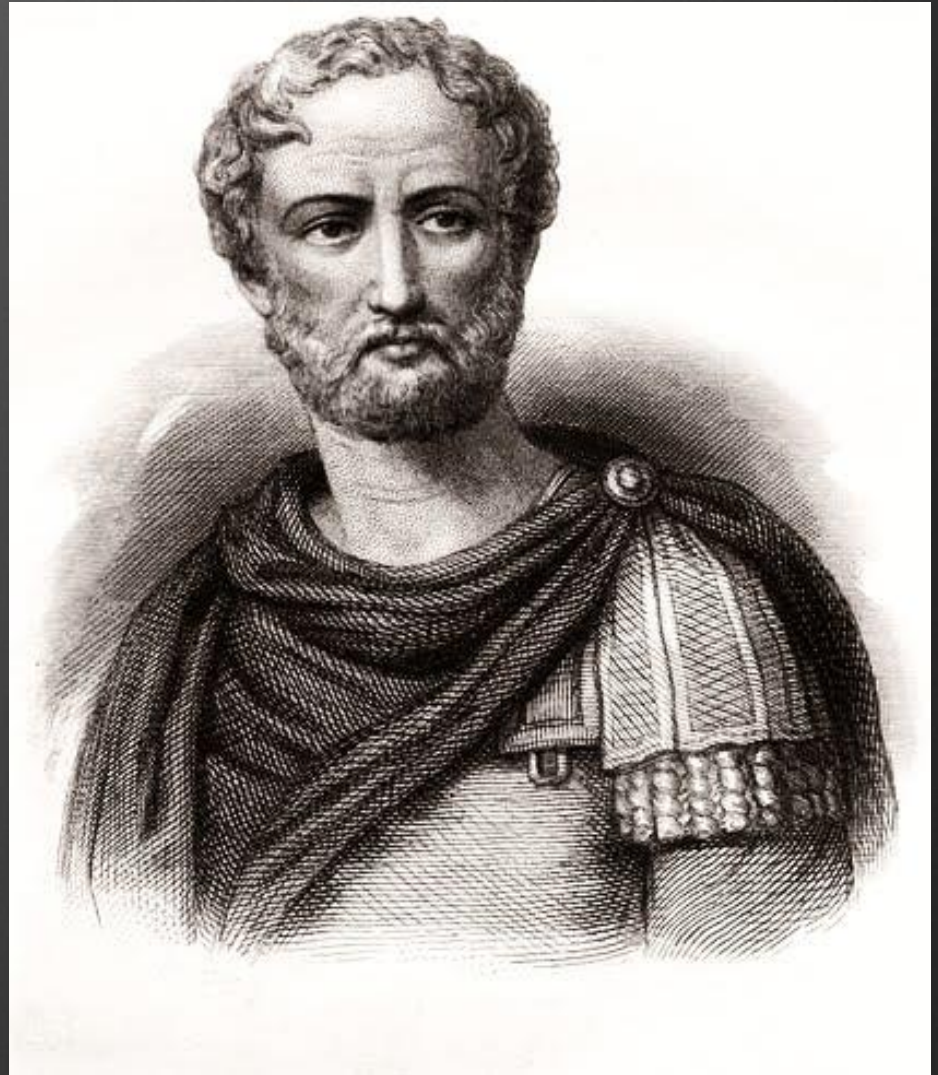
# Pliny the Elder (AD 23-79)

“A particular intoxication...” (*Nat. Hist.* 14.29.149)

## Roman benefits of beer?

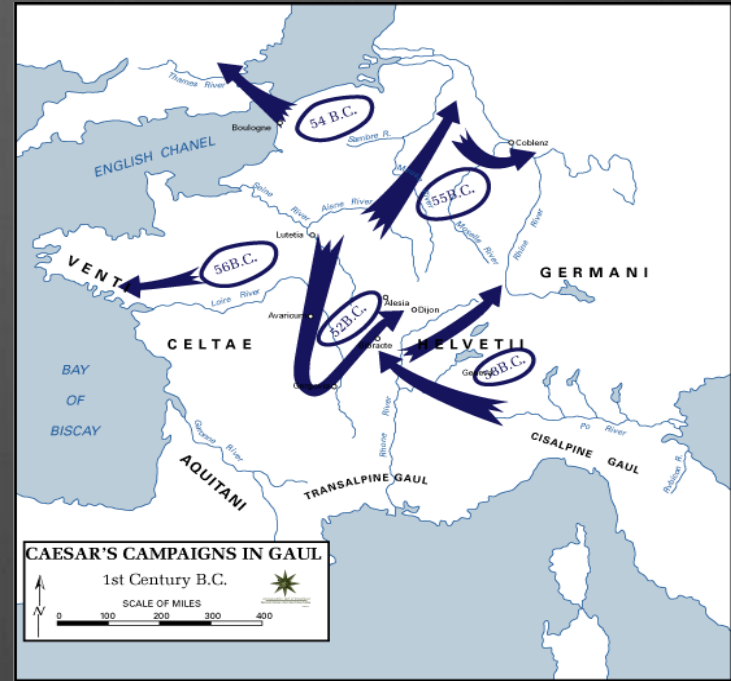
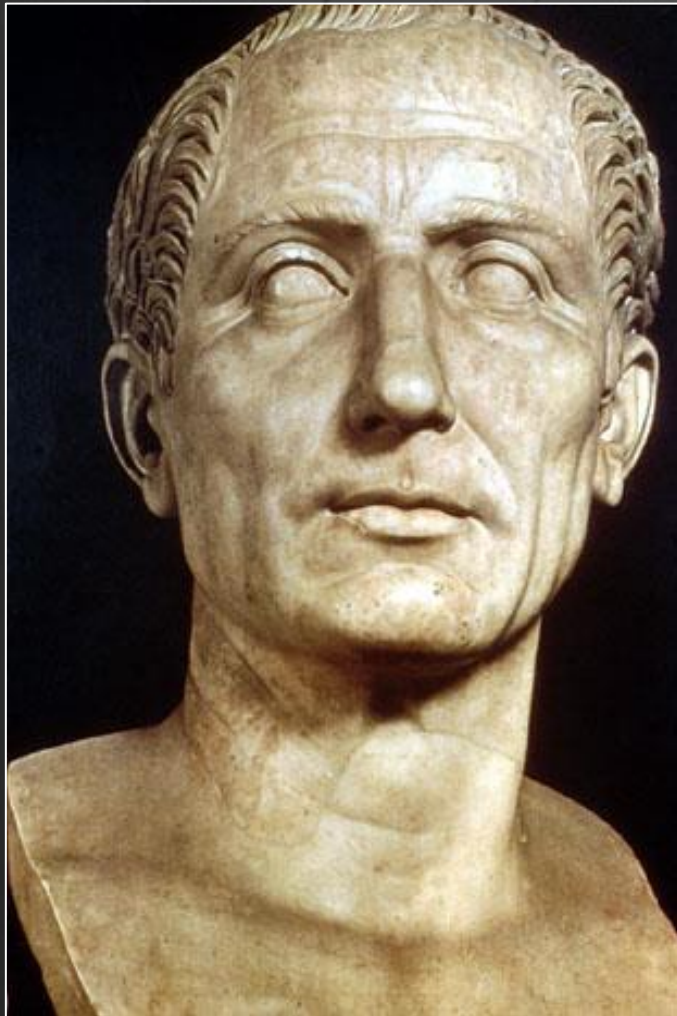
*...lactis potus ossa alit,  
frugum nervos, aqua carnes  
(23.22.37).*

*...quorum omnium spuma  
cutem feminarum in facie  
nutrit (22.82.164).*



# Julius Caesar Crosses the Rubicon – *iacta alea est!*

(Jan. 10, 49 BCE)





# Defending the Frontier (*Limes*)



*Hadrian's Wall – AD 122*

# Beer Rations for Soldiers



AD 100

Decurion Masculus to  
prefect Flavius Cerialis:

*Cervisam commilitones  
non habent quam rogo  
tibi mittere.*

Atrectus the  
*cervesar[ius]?*



# Birth of beer styles and the cost of a pint...

*Diocletian's Tax Reforms and the Cost of Production (AD 284-305)*



*Bust of Diocletian  
r. AD 284-305*

- Different terms for different beers?
  - *Cervesia* = Celtic wheat beer
  - *Camum* = Celtic barley beer
  - *Zythum* = Egyptian beer
  - *Sabaia* = Beer of Illyricum
  
- An Italian *Sextarius* (Pint)
  - Celtic beers = 4 denarii
  - *Zythum* = 2 denarii
  - Cheapest wine = 8 denarii
  
- 1 Denarius = a skilled laborers daily wage.

# Changing Views of Beer Production throughout the Roman Empire



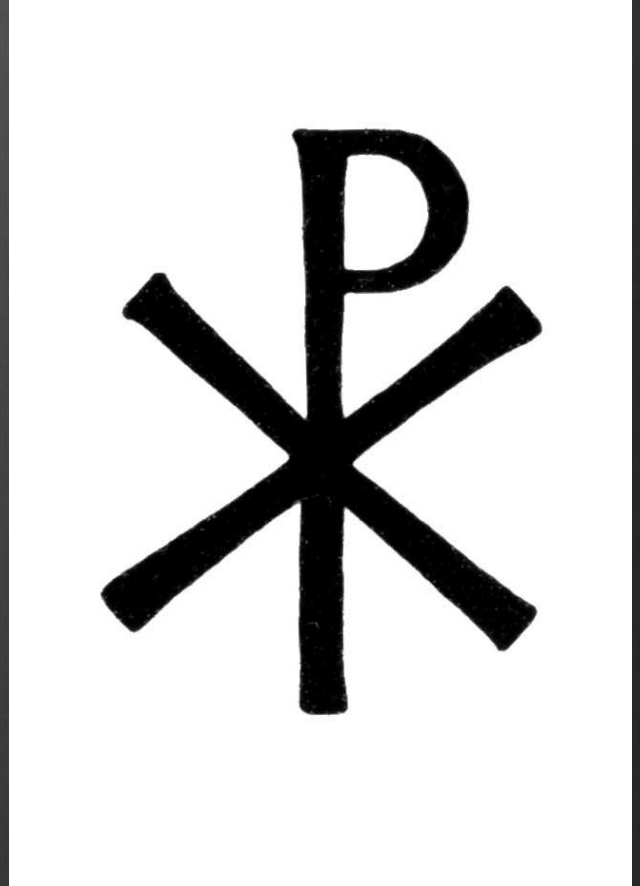
- 1 : Alpes Poenninae
- 2 : Alpes Graiae
- 3 : Alpes Cottiae
- 4 : Alpes Maritimae

PROVINCIAE IMPERII ROMANORUM  
AD 210



# The Damnation of Beer

*Constantine the Great and the Rise of the Roman Church*



(AD 306-337)

# Eusebius

(4<sup>th</sup> century AD)

## ⊗ Dionysus and Beer?

“He [that is Isaiah] says that all the makers, not of the wine from the vine, but of the Egyptian *zūthos* will groan. [Zūthos] was adulterated and made cloudy. The Egyptians used it as a drink before the Lord lived among them.”

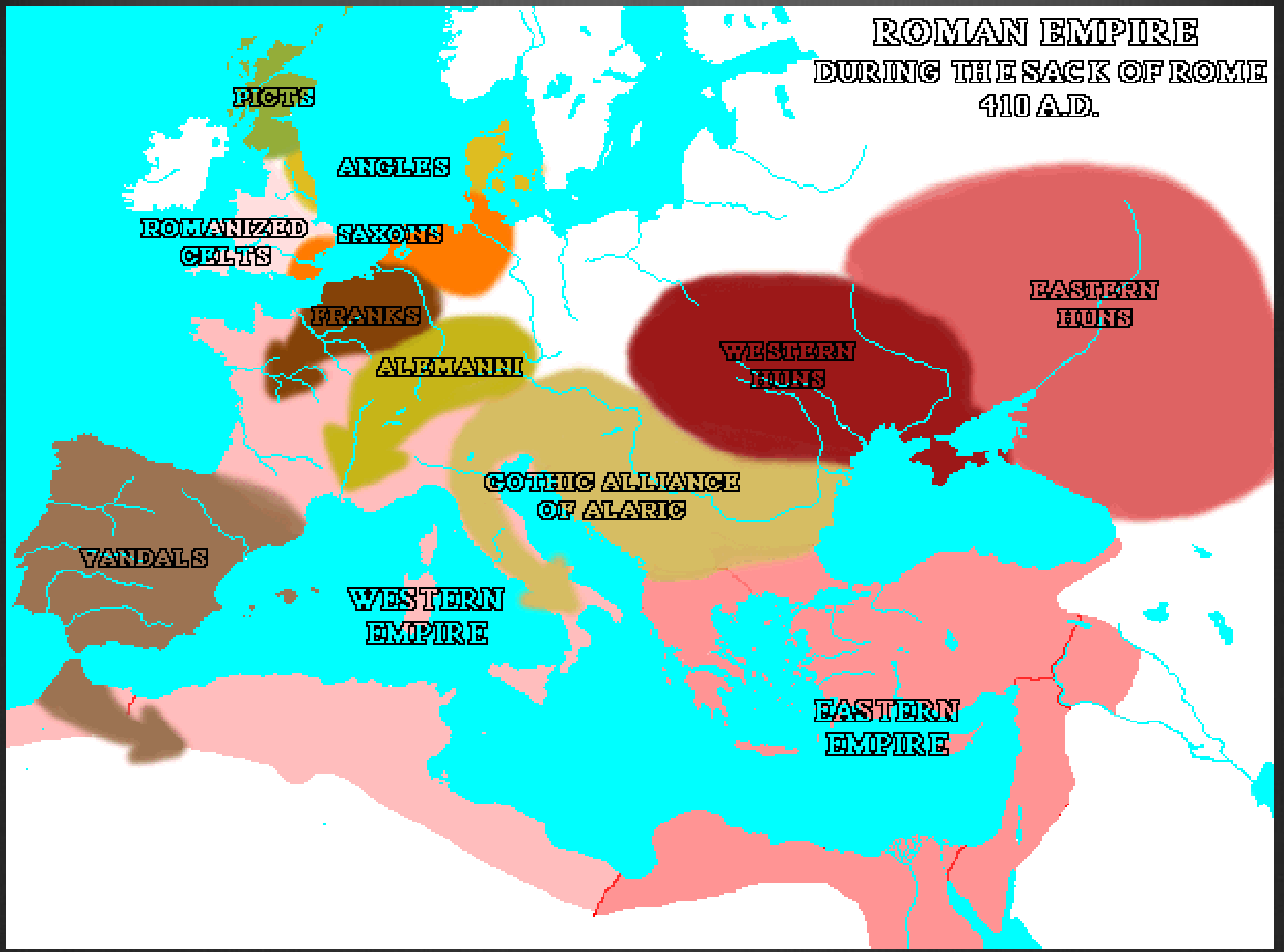
(Euseb., *Comm. In Is.* 1.75)



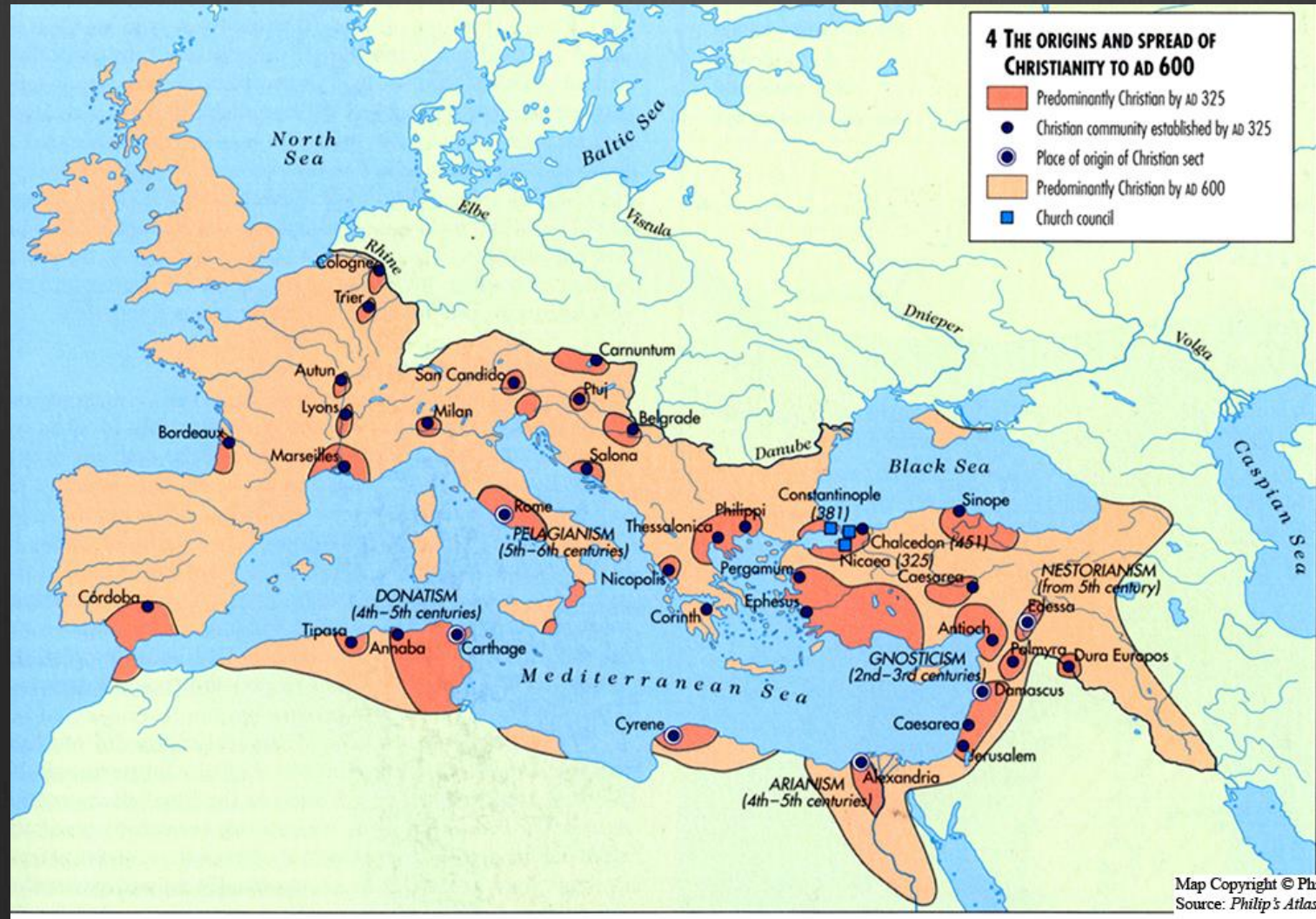
*Roman copy of Greek Statue:  
Dionysus with Caryatid  
(2<sup>nd</sup> century AD)*



# ROMAN EMPIRE DURING THE SACK OF ROME 410 A.D.



# The Rise & Spread of Christianity



Saint Cyril (5<sup>th</sup> cent. AD) - Drinking wine over beer symbolic of Christian conversion



# Why the Damnation of Egyptian Beer?

*Fall of the Republic, Battle of Actium, Antony and Cleopatra*



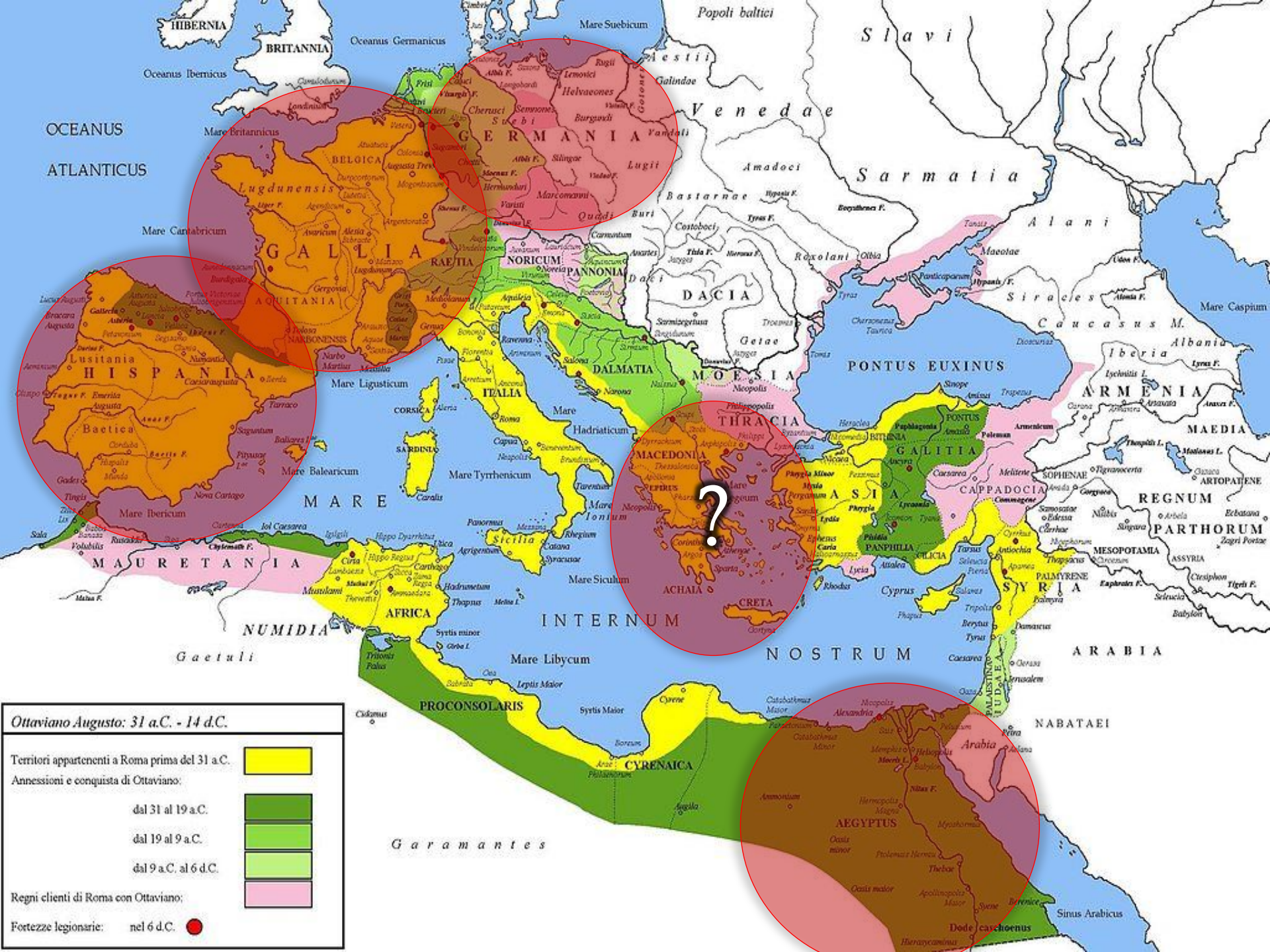
# Traditional View for the Spread of Beer

1. Sumerians taught Egyptians
  1. Egyptians taught Greeks
  1. Greeks taught the Romans
  1. Romans taught the “savage tribes” of Britain
- Pliny and Tacitus attribute the development of the “brewing art” to Celtic and Teutonic people of Britain and Central Europe.



*Publius Cornelius Tacitus (AD 56-117)*





**Ottaviano Augusto: 31 a.C. - 14 d.C.**

Territori appartenenti a Roma prima del 31 a.C.



Annessioni e conquista di Ottaviano:

dal 31 al 19 a.C.



dal 19 al 9 a.C.



dal 9 a.C. al 6 d.C.



Regni clienti di Roma con Ottaviano:



Foeteeze legionarie: nel 6 d.C.

