East Asia Neolithic
- Yangzi vs. Yellow
- S. China: rice-buffalo
  - warm-wet Holocene
  - middle & lower Yangzi
    - Xianrendong 11.2 ka
    - Pengtoushan 8.5-7.8 ka
    - Hemudu 7.5-6.5 ka
- N. China: millet-pig-dog
  - SEA monsoon
  - wild progenitors

- middle Yellow River
  - early Neolithic 9-7 ka
  - mid Neolithic 7-5 ka
  - late Neolithic 5-4 ka
  - ethogenesis = prelude to Chinese Civilization

- Ceramics v. Pottery
- ceramic life history

Zones of domestication in East Asia
North & South China → Yellow & Yangzi River Drainages

- millets, sorghum, mulberry, hemp
- rice-buffalo (pig-dog)

“centers” of domestication
synchronous, independent origins of agriculture

- domestication of rice...
  - wild type = *Oryza sativa*
  - requires...
    - >1000 mm precipitation
    - grown in ~10cm of water
    - “paddy” water is maintained throughout life-cycle

- wild rice found on SE margin of Tibetan Plateau
  - marshes and lake margins
  - warm-wet Holocene expand to middle and upper reaches of the Yangzi River
- early experimentation with extending natural flooding of landscape
  - dams and modified landscape drainage
  - counterpart to use of fire and early experimentation with wheat/barley in SW Asia

- Xianrendong 11.2 ka
  - phytoliths from domestic rice
  - early ceramics
  - rice cultivation tools

- Pengtoushan 8.5-7.8 ka
  - settled village
  - abundant carbonized rice remains
  - ceramics

- Hemudu 7.5-6.5 ka
  - wet site (organic preservation)
  - bone hoes, oars
  - complex wooden architecture
  - mortise & tenon; pile dwellings
  - abundant rice remains
  - pig, water buffalo, dog

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Domestication along desert-loess margins where populations most stressed → spread to semi-arid region

- Northern Limit of SE Asian Monsoon
- arid
- semi-arid
- humid

- Domestication of millet
  - millet = diverse group of grasses
  - *Setaria* spp.
  - *Panicum* spp.
- drought tolerant and well adapted to arid and semi-arid growing conditions

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- Drought tolerant and well adapted to arid and semi-arid growing conditions

- Terminal Pleistocene intensification among desert foragers
  - Xiachuan, N. China 15-12 ka
    - post-Last Glacial Maximum
    - simple hunter-gatherers
    - microblades and high mobility
  - Pigeon Mountain Basin, N. China 12-11 ka
    - Younger Dryas
    - simple hunter-gatherers
    - microblades and hand-held grinding stone

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- hemp
Neolithic Sites in N. China

Cishan

Banpo

Peiligang

Early Neolithic in North China

- Peiligang culture 8.3-7.1 ka
- Cishan (site) 8ka
  - mature millet-pig-dog complex
  - pit houses
  - large storage pits
  - serrated sickles

Middle Neolithic in North China

Banpo Village, Shaanxi (left)
storage pits and defensive ditch (?)

- Yangshao culture 6.8-4.7ka
  - Banpo Village 6-5 ka
    - mature millet-pig-dog
    - storage pits
    - defensive/symbolic ditch
    - kilns & cemetery
    - matrilineal clans

Ethnogenesis = formation or emergence of a recognizable ethnic group

early Yangshao ➔ recognizable functional forms

steamer from Banpo, Yangshao, middle Neolithic, 6-5 ka
Ethnogenesis …
late Yangshao and the origins of Chinese characters

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- late Neolithic
  - Longshan 5-4ka
    - rammed-earth walled towns
    - systematic warfare
    - use of copper
    - black “high-fired” ceramics
    - direct precursor of Xia Dynasty

- ceramics = technologies where artifacts are modeled or molded from clay and then made durable by firing
- pottery = clay containers formed by hand, made on a mold or thrown on a wheel; often decorated and then fired

- spindle whorl
- pottery
- figurines

- pottery
- figurines
**Procurement**
- collecting the proper material (must have high clay content)
- clay mineral = plastic sediment resulting from weathering of rock; particle size < 0.002 mm
- clay deposit = soils with >35% clay particles

**Processing**
- kneading to remove bubbles and increase plasticity (= ability to be molded)
- tempering = adding non-plastic materials to reduce shrinkage (and breakage) during firing
  - sand, shell, grass, ground ceramic fragments

**Manufacturing**
- hand-formed, molded, wheel-thrown
- slips = smoothing the surface with application of a “slip” of clay solution

**Foot trampling clay to remove bubbles**
- Nabuel, Tunisia

**Shrinkage crack on a ceramic vessel**

**Manufacturing**
- decoration = painting, appliqué, incision, cutting, impressing

**impression (punctuation) decorations**

**painted Zuni jar**

**appliqué Jomon, Japan**

**firing = using high heat to convert plastic clay into non-plastic ceramic**
- loss of water – up to 600°C
- oxidation of carbon and iron – up to 900 °C
- vitrification (transformation of clay to glass-like material) – >1000 °C
  - waterproofing

**“bonfire” firing in Rajasthan, India**

**simple “open top” kiln**