• 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

• millets, sorghum, mulberry, hemp
  – middle Yellow River
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• Ceramics v. Pottery
  – ceramic life history

• Dentif polyspinosa
• Oryza sativa
  • wild type = Oryza sativa
  • requires...
    – >1000 mm precipitation
    – grown in ~10cm of water
    – “paddy” water is maintained throughout life-cycle
  • wild rice found along SE margins 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

• Zhang et al. 2008

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

“centers” of domestication
synchronous, independent origins of agriculture
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• Millets, sorghum, mulberry, hemp
• Middle Yellow River
  – early Neolithic 9-7 ka
  – mid Neolithic 7-5 ka
  – ethnogenesis = late Neolithic 5-4 ka
  – prelude to Chinese Civilization
• Ceramics v. Pottery
  – ceramic life history

• 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
    • mortice & tenon; pile dwellings
  – abundant rice remains
  – pig, water buffalo, dog

Domestication along desert-loess margins where populations most stressed → spread to semi-arid region
• domestication of millet
  – millet = diverse group of grasses
  – *Setaria* spp.
  – *Panicum* spp.
  – 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
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

- 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
- late Neolithic
  - Longshan 5-4ka
    - rammed-earth walled towns
    - systematic warfare
    - use of copper
    - black “high-fired” ceramics
  - direct precursor of Xia Dynasty
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- Ceramics v. Pottery
  - ceramic life history

- 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

- 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

Hand forming a vessel neck
Chinautla, Guatemala

Wheel throwing a pot

Hand forming a vessel neck
Chinautla, Guatemala

Wheel throwing a pot

• Manufacturing
  – decoration = painting, appliqué, incision, cutting, impressing

impression (punctuation) decorations

painted Zuni jar

appliqué
Jomon, Japan

• Manufacturing
  – 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