speech → unbounded
social memory
- mnemonics
archaeology & literacy
- symbols ↔ ideas
- pictographs; figurines; physical mnemonics
- extended exploration
- symbols ↔ sound
- explosion of combinatorial complexity
literacy & the state
- Sumer: economic power
  - 9 ka: tokens; 5.1 ka: cuneiform tablets
  - China: ideological power
    - 6-5 ka: ceramics; 4 ka: oracle bones, bronzes
  - Maya: political power
    - 2.6 ka: Olmec glyphs; 2.4 ka Maya Glyphs
arch preservation
- Shang & Dynastic Egypt
power & impact of literacy
- traditions/customs → laws/regulations
- social memory → institutional memory

the spoken word
- finite number of sound structures, infinite number of utterances!
- mapping sounds to ideas...
  - phonemes: limited array of sounds
  - lexemes: limited array of rules for forming words
  - syntax: limited array of rules for forming sentences
  - pragmatics: limited array of rules for how sentences can be deployed in conversation

speech & social memory
- speech is...
  - dynamic → constant change over course of utterance
  - “living” → subject to error & revision
  - ephemeral → is gone once utterance has ended

- social memory =
  - the social act of remembering
  - group-based information storage where speech is the critical element in transmission of information
  - HOW ARE THINGS REMEMBERED & REPEATED AFTER THE UTTERANCE IS GONE?

- mnemonics = techniques that aide memory
  - ordered phrases & acronyms
    - Kingdom, Phylum, Class, Order, Family, Genus, Species → King Paul Called Out For Gus and Sam
  - rhyme, metaphor & simile
    - Thirty days hath September...
    - “that man is a fox” v. “that man is sly as a fox”

- physical objects as mnemonic devices...
Inka Quipu census, military, transactional counts

Ornaments “recording” life events

1:1 mapping of symbols to ideas
- very long period of exploration...physical mnemonics?

1:1 mapping of symbols to sounds
- finite number of graphical/symbolic structures, infinite number of textual representations!!!
speech → unbounded
social memory
- mnemonics
archaeology & literacy
- symbols ↔ ideas
  - pictographs; figurines; physical mnemonics
  - extended exploration
  - sound
    - explosion of combinatorial complexity
literacy & the state
- Sumer: economic power
  - 9 ka: tokens; 5.1 ka: cuneiform tablets
  - China: ideological power
    - 6-5 ka: ceramics; 4 ka: oracle bones, bronzes
  - Maya: political power
    - 2.6 ka: Olmec glyphs; 2.4 ka Maya Glyphs
arch preservation
- Shang & Dynastic Egypt
power & impact of literacy
- traditions/customs → laws/regulations
  - social memory → institutional memory

power & state formation
- Marx
  - why do people relinquish the means of production?
  - economic power = control the “means of production”
  - ideological power = control the means of producing, distributing and consuming powerful cultural/political symbols
  - political power = control of the means to make war

origins of writing in Sumeria
- tokens, 9 ka, 16 basic geometric shapes
  - size & shape: counters for economic goods
- by 6 ka → > 300 shapes
  - infinite combinatorial complexity?
- clay envelopes (bullae) + tokens + impressions, 5.5 ka
- envelopes + impressions of tokens, 5.2 ka
origins of writing in Sumeria

- clay tablets + cuneiform ("wedge-shaped") impressions, 5.1 ka
- abstracted representations of token impressions
- initially logographic (symbols represent whole ideas)
- but increasingly phonographic (symbols represent speech sounds)

Impetus for development of writing technology was economic power. After 5 ka, rapid diversification of subjects.

Epic of Gilgamesh (ca. 2750-2500 BC) in cuneiform

WHY?

China: Yangshao Period ceramic marks, 7-5 ka

- pictographs: symbols representing natural objects (e.g., sun, moon)
- numerals (possibly)
- craftsmen’s marks
- mnemonic knots
- direct connection with Chinese characters controversial

late Longshan & Early Shang 5-4 ka

- oracle bones & scapulimancy
  - buffalo scapula, tortoise plastrons
  - “hot poker” applied to lower surface forms web-like cracks on upper surface
  - cracks interpreted to answer questions
    - weather, military campaigns, harvests, pregnancies
  - bones inscribed with prognostication
  - divination rituals tightly controlled by literate elite
  - IDEOLOGICAL POWER
  - 1-900-PALM-RDR?
Shang characters were primarily logographic
by Eastern Han Dynasty (25-220 AD) see shift to
two-part characters:
- signific: giving a “ballpark” meaning
- phonetic: giving a “ballpark” sound
phonetic component lends
infinite combinatorial complexity
(but not as flexible) as alphabetic system
same trajectory as cuneiform?

earliest known Mesoamerican glyph → Olmec
- San Andres, Tabasco, Mexico, 650 BC (2650 BP)
- indicates early association between words for calendrical dates and political elites
evidence that glyphs were spoken
“King 3 Ajaw” = “Ruler born on the third day of the sacred month Ajaw (260 day sacred Mesoamerican calendar)

Maya: 2400-1800 BP (400 BC – 200 AD)
- pictorial glyphs → idea, word, syllable, sound, or some combination
- heads of human, monster or Gods
- detailed control of genealogies
  - what you have to do if base a state on kinship…
- record major events in rule of leaders, inter-group warfare, the sacrifice of prisoners
- not religious focus!
- POLITICAL POWER

speech → unbounded
social memory
- mnemonics
archaeology & literacy
- symbols ↔ ideas
  - pictographs; figurines; physical mnemonics
  - extended exploration
- symbols ↔ sound
  - explosion of combinatorial complexity
literacy & the state
- Sumer: economic power
  - 9 ka: tokens; 5.1 ka: cuneiform tablets
- China: ideological power
  - 6-5 ka: ceramics; 4 ka: oracle bones, bronzes
  - Maya: political power
    - 2.6 ka: Olmec glyphs; 2.4 ka Maya Glyphs
arch preservation
- Shang & Dynastic Egypt
power & impact of literacy
- traditions/customs → laws/regulations
- social memory → institutional memory
appearance of writing and archaeological preservation

China

Preservation @ Abydos Egypt

5200 BP

hieroglyphic-like symbols carved on ivory tags
attached to containers holding linen and oil

- speech → unbounded
- social memory
- mnemonics
- archaeology & literacy
  - symbols ↔ ideas
    - pictographs; figurines; physical mnemonics
    - extended exploration
  - symbols ↔ sound
    - explosion of combinatorial complexity
- literacy & the state
  - Sumer: economic power
    - 9 ka: tokens; 5.1 ka: cuneiform tablets
  - China: ideological power
    - 6-5 ka: ceramics; 4 ka: oracle bones, bronzes
  - Maya: political power
    - 2.6 ka: Olmec glyphs; 2.4 ka Maya Glyphs
- arch preservation
  - Shang & Dynastic Egypt
- power & impact of literacy
  - traditions/customs → laws/regulations
  - social memory → institutional memory