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
- 7000 BC tokens; 3100 BC:
cuneiform tablets
China: ideological power
- 4-3000 BC: ceramics;
  2000 BC: oracle bones,
bronzes
Maya: political power
- 600 BC: Olmec glyphs;
  400 BC 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?

speech & social memory

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...
ornaments “recording” life events

Inka Quipu census, military, transactional counts

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mapping of symbols to ideas
- very long period of exploration...physical mnemonics?
- some based on social convention, others are empirical

but physical mnemonics...
- do not have the properties of spoken language
- finite number of symbols → finite number of ideas
1:1 mapping of symbols to sounds

- finite number of graphical/symbolic structures, infinite number of textual representations!!

Assamese vowels

Assamese consonants

writing systems $\leftrightarrow$ state formation

- 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

Marx

why do people relinquish the means of production?

origins of writing in Sumeria

- tokens, 7000 BC, 16 basic geometric shapes
  - size & shape: counters for economic goods
- by 3000 BC > 300 shapes
- infinite combinatorial complexity?

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Marx


**origins of writing in Sumeria**

- envelopes (bullae) + tokens + impressions, 3500 BC
- envelopes + impressions of tokens, 3200 BC

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**origins of writing in Sumeria**

- clay tablets + cuneiform (“wedge-shaped”) impressions, 3100 BC
  - abstracted representations of token impressions
  - initially logographic (symbols represent whole ideas)
  - but increasingly phonographic (symbols represent speech sounds)

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**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?**

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**China: Yangshao ceramic marks, 5-3000 BC**

- 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 3-2000 BC
- 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 something close to infinite combinatorial complexity
- (but not as flexible) as alphabetic system

- earliest known Mesoamerican glyph ➔ Olmec
  - San Andres, Tabasco, Mexico, 650 BC
  - indicates early association between words for calendrical dates and political elites

- Maya: 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

*Evidence that glyphs were spoken*

“King 3 Ajaw” = “Ruler born on the third day of the sacred month Ajaw (260 day sacred Mesoamerican calendar)
appearance of writing and archaeological preservation
China

Preservation @ Abydos Egypt
3200 BC

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

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