## The full extent of our past

<table>
<thead>
<tr>
<th>Human Origins</th>
<th>Spread of Anatomically Modern Humans</th>
<th>Origins of Agriculture</th>
<th>Rise of Complex Civilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 mya</td>
<td>40,000 BP</td>
<td>10,000 BP</td>
<td>5000 BP</td>
</tr>
</tbody>
</table>
- archaeology =
  - explanation of past human behavior using physical remains
- antiquarianism =
  - exploitation of human past for personal gain
- foundations I:
  - James Usher
    - “Young Earth”
  - Charles Lyell
    - Uniformitarianism =
      - “Old Earth”
- foundations II:
  - John Ray
    - “fixity of life”
  - Carl Linnaeus
    - intermediate forms
  - Boucher de Perthes
    - controversy over the “pre-Adamites”
  - Thomsen & Worsaae
    - regular stages
- biological/cultural uniformitarianism?
Empirical foundations
change & time

How and Why?
Charles Darwin (1809–1882)

Darwin’s three postulates
1. “struggle for existence”
2. variation and natural selection
3. inheritance

Unanswered questions
  genetics =
  mutation =

What about behavior?
  culture =
  cultural variation =
  innovation =

adaptation =
  biological adaptation
  cultural adaptation

cultural
uniformitarianism
- archaeology & adaptation
- physical objects & behavior
- contexts
  - systemic context =
  - archaeological context =
  - transformational processes
    - primary context =
    - secondary context =
- archaeological data
  - artifact =

- feature =
- ecofact =
- site =
- region =
- life-history models
- archaeological research
  - finding sites
  - recovering data
    - excavation
  - reconstruction
  - explanation
chronometry =
relative v. absolute time

relative dating
  - stratigraphy & law of superposition
  - cross-dating

absolute dating
  - units & age range
  - accuracy, precision, resolution…
  - calendrics =
  - radiometric techniques
    - radioactivity & half life

radiocarbon ($^{14}$C)
  - materials dated =
  - atmospheric eq =

Potassium-Argon
  - materials dated =
  - “dating gap”
    - Luminescence methods

Paleomagnetism

direct v. indirect dates
association
practicalities
  - time & money
- the ape-human divide?
- Miocene 23.5 - 5.2 ma
  - early 23.5 – 7 ma
  - late 7 – 5.2 ma
- Pliocene 5.2 - 1.6 ma
- Pleistocene 1.6-0.01 ma
  - early Miocene
    - arboreal habitats
    - apes = arboreal adaptations
  - late Miocene
    - grassland savannas
    - terrestrial bipeds =
- Hominoidea Hominidae
- bipedal locomotion
  - benefits of bipedalism
  - skeletal features of bipedalism
- Basal hominids 6-4 mya
- Primitive Australo-pithecines
  - 4-3 mya
- Derived Australo-pithecines
  - 3-1 mya
  - Derived =
- Early Homo 2.5 – 1.6 mya
- biology v. behavior
- earliest arch sites
  - 2.6-1.8 mya
  - Gona; W. Turkana; Koobi Fora; Olduvai Gorge
- site types
  - stone technology only
  - stone & bones
  - animal bones only
- early interpretations
  - home-base hypothesis
- stone technology
  - unmodified: raw material
  - modified: hammer; core; flake; tool
- stone transport
- animal bones
  - cut, percussion & tooth marks
- carnivore competition
- scavenging v. hunting
- is it culture?
- expensive tissue
- *H. erectus* 1.8–0.4 ma
  - Africa = *H. ergaster*
  - Asia = *H. erectus*
  - Europe = *H. antecessor*
- key sites
  - Nariokotome 1.6 mya; Java, 1.6-1.8 mya; Dmanisi 1.75 mya; Erk-el-Akhmar 1.7-2.0 mya; Longgupo 2.0 mya (?)
- Migration v. Dispersal
  - climate & dispersal
- Saharan Pump
- biology & dispersal
  - long-distance walker
- behavior & dispersal
  - Acheulian 1.8–0.15 mya
  - Movius Line 1.3-0.02 mya
- controlled use of fire
  - Swartkrans, 1.7 mya
  - Zhoukoudian (?) 500-200 ka
- cooperation & hunting
  - Torralba & Ambrona 400 – 200 ka
- evolutionary cascade
- regional populations
  - **Africa**: Kabwe, Herto
  - **Europe**: Sima de los Huesos, Petralona
  - **Asia**: Jinnuishan, Dali, Flores

- **archaic* Homo sapiens**
  - larger brains 1300 cc
  - more rounded skulls
  - archaic = primitive

- **Biological species =**
- **Morphological species =**
- **Neanderthals >100–32 ka**
  - Western Europe & West Asia
  - robust, big-brained hominid
  - cold adapted

- **Neanderthal behavior**

- **seasonal landscape use**

- **Middle Paleolithic 200–32 ka**
  - Mousterian
  - Standardization
  - Levallois core technology
  - geographic variants of Mousterian
    - Norms vs. Adaptation?

- “survival of the unfit”
  - La Chapelle-Aux-Saints 35 ka

- **Neanderthal burial**
  - La Ferrassie 35 ka
  - Dederiyeh, Syria <75 ka

- **Ritual Cannibalism!**
  - Krapina 30.7 ka

- **H. sapiens neanderthalensis**
- cultural or acultural?
- Neanderthal fate?
  - “gone” by 32-28 ka
- anatomically modern humans (AMH)
- multiregional model
  - gene flow
- replacement model
  - no gene flow
- mtDNA
  - African origin
  - genetic clock
- model predictions...
  - dates; transitional frms
- coexistence; abrupt behavioral shift
- early AMH fossils
  - Africa, West Asia, East Asia, Europe
- transitional or hybrids?
- coexistence in W. Asia
- shifts in behavior
- weak replacement model
Upper Paleolithic adaptive advantage?
- language, symbolic thought & social organization
- R.G. Klein’s model

Evolution of language
- behavior & cognition
- biological/physical remains

Early Homo
- brain asymmetries
- handedness

H. erectus

Hand-axe symmetry

Language =
- phonetic inventory
- phoneme-idea mapping

Symbolic behavior
- signal v. symbol
- utilitarian v. non...
- ocher use 77 ka
- ornaments 45-55 ka
- mobilary art 25 ka
- parietal art 31 ka

Symbols in Paleolithic life
Mojokerto & Sangiran

Sunda v Sahul shelves
  - glacial sea levels
  - Wallace Trench
    - biogeographic barrier

Colonization of Sahul
  - dispersal prerequisites
  - rafting or watercraft?
    - Flores 900 & 18 ka!

AMH in Sunda
  - Niah & Lene Hara Caves 40-35 ka

AMH in Sahul
  - New Guinea 40-25 ka
    - Bobangana (Huon) 40ka
  - Australia <50 ka
    - Mulakunaja II 60 ka (?)
    - Lake Mungo 50-40 ka
    - Devil’s Lair 32-38 ka
  - coastal then interior
    - Purritjara 22-12 ka
  - Wallandra v Mungo
    - mtDNA!

People in the Pacific
  - dispersal or migration?
- Buffon’s degeneration
  - changing adaptations
  - “domination” of nature
- New World dispersal
- Last Glacial
  - LGM & Holocene
- Bering Land Bridge
  - sea level & megafauna
- arctic adaptations
  - Mamontovaya Kurya; Dyuktaí
  - microblades & structures
- Alaska (East Beringia)
  - Denali 10.7 ka
  - Nenana 11.8 ka
- Biology/Language
- Ice Free Corridor v. Coastal Route
- Early Sites
  - Meadowcroft
  - Monteverde
- Clovis 11.7-10.5 ka
- Megafauna Extinctions
  - Anthropogenic Landscape
Post Midterm Material
all terrestrial environments colonized by 10ka
  filling the “ecological barrel”
climate and environment
  Last Glacial (OIS 2)
    ended ~15.7 ka
  Bølling-Allerød Interstadial
    14.7 – 12.95 ka
  Younger Dryas
    rapid return glacial conditions
    12.95 – 11.65 ka
  Holocene ~10 ka to present
    sea levels rise, changes in vegetation, megafaunal extinctions
impact on human populations
  population growth, intensification, increase social complexity
  “simple” hunter-gatherers
    large hunting territories, freedom of movement, mobility is answer to risk
  population growth
    carrying capacity (K)
    restricted mobility/territory size
      population options limited
      circumscription =
  intensification =
    extraction, processing, storage
      microlithization =
    diet breadth
  “complex” hunter-gatherers
    sedentary, surplus resources, political control
    Upper Paleolithic-early Holocene Scandinavia; Jomon, Japan; NW and California Coast; Natufian, Israel/Syria
12 ka to 2 ka transition

food producing communities

synchronous origins

theory of origins
  ■ “solitary genius”
  ■ Childe’s “oasis”
  ■ population pressure
  ■ climate change
  ■ social theories
  ■ “readiness” v. accident

domestication =
  ■ a species modified in

...whole or in part by human activity
  ■ $e$, $h$, $\lambda$

selection revisited

co-evolution
  ■ who benefits?

transformation of plant/animal life

transformation of human life
  ■ health consequences...
  ■ population growth = very successful!
many “centers”
Fertile Crescent
Founder Domesticates
- cereals: Emmer, Einkorn, barley
- pulses: lentils, peas
- dogs, sheep, goats
IDing domesticates
- large seed size (e)
- semi-touch rachis (h)
- quantity of seeds (λ)
- small body size (h)
- excess males (h, λ)

SW Asian sequence
- Kebaran 14.5-12.5 ka
  - simple hunter-gatherers
- Natufian 13-9.7 ka
  - complex hunter-gatherers
  - Abu Hureyra 11-13 ka
- PPNA 10.3-9.5 ka
  - mature agriculture
  - Jerico, Netiv Hagdud, Ganj Dareh
- PPNB 9.5-8 ka
  - proto-cities?
  - Çatalhöyük (10.5-8.5 ka)
Domestication in the Americas

Mesoamerica
- cucurbits: Guilá Naquitz, Oaxaca 10-8 ka
- Mesoamerican TRINITY
  - teosinte: San Andres 7.1 ka
- Tehuacán Valley
  - Coxcatlán Rock Shelter (Phase) 7 – 5.4 ka
  - maize-beans-squash grown widely by 4.5-4 ka & settled villages common
- Andes 10 ka; 5-4 ka
  - cucurbits; camelids-quinoa-potatoes; cotton

American Southwest
- turkeys
- TRINITY earliest 4-3.5 ka
  - supplemental to hunting-gathering
- eastern North America
  - local domesticates: goosefoot, marsh elder, gourds (oily seeds)
  - earliest maize ca. 1.7 ka
  - maize agriculture 1000 AD
  - Cahokia 900-1200 AD
    - maize-beans-squash: cultural SUPERNOVA

Old & New Worlds
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
  - 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
- complex societies
  - Urbanism =
  - State =
  - social complexity =
  - energy limited
- archaeology of CS’s
  - traits of cities & states
  - can cities exist without states, or vice versa?
- city/state formation
  - multivariate models
- “Urban Revolution”
- systems theory
- single mechanisms
  - irrigation; trade; warfare
- social theories
  - why give up autonomy?
- Marx & power
  - economic =
  - ideological =
  - political =
- Levant & Anatolia
  - Jerrico & Çatalhöyük
- N. Mesopotamia
  - Hassunan 8-7.2 ka
  - Samarran < 7.5 ka
    - small-scale irrigation
    - T-shaped buildings
  - Halafian 7.5-6.7 ka
    - copper & “tholoi”
    - gradual coalescence?
- S. Mesopotamia = Sumeria
  - Ubaid 6.5-6 ka
    - Eridu Ziggurat 5.7 ka
- Uruk Period 6-5.2 ka
  - rapid urbanization
  - city-states: Uruk, Eridu, Ur…
  - bronze technologies
- Sumerian world system
  - city-states =
    - formal trade networks
    - competitive instincts?
    - ethnic co-residence
- conquest <5.1 ka
  - Akkadians & Assyrians
- speech $\rightarrow$ unbounded
- social memory
  - mnemonics
- archaeology & literacy
  - symbols $\leftrightarrow$ ideas
    - pictographs; figurines; physical mnemonics
    - extended exploration
  - symbols $\leftrightarrow$ 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 $\rightarrow$
    - laws/regulations
  - social memory $\rightarrow$
    - institutional memory
Hobbes v Rousseau
warfare =
- organized purposeful actual/potential lethal force
- homicide v. war
archaeology of war
- defensive & aggressive markers
- settlement systems
  - fortifications; palisades; lookouts; aggressive/defensive positions; line-of-site connections; DMZ
- burials
  - mass graves; warrior graves; sex/age bias in skeletal populations; traumas

sites
- burned communities; deliberate destruction

technology
- specialized projectiles; swards; clubs; shields; armor; military transport (e.g., chariots)

iconography/history
- depictions/descriptions of war

negative evidence

purpose/causes of war
- elimination of people: competition
  - effects of aggregation
- acquisition of resources/territory
  - surpluses; opportunity costs; protection racket
- acquisition of prestige
Mesoamerica
- Preclassic; Classic; Postclassic Periods

Highland
- massive urbanization
- Valley of Mexico: Teotihuacan
- Oaxaca: Monte Albán

Lowland
- moderate urbanization (?)
- Maya general issues…
  - idyllic view v. brash reality
  - why the change?

Preclassic Maya
- El Mirador (late Preclassic)

Classic Maya AD 200 - 850
- Tikal, Calakmul, Copán, Palenque
  - early super powers

Peruvian North Coast
- pacific valley drainage system

Moche AD 200-700
- Huaca de la Luna / del Sol
- Lords of Sipán

Highland Andes
- altiplano
- Tiwanaku
- collapse of civilizations
  - defining collapse
    - population dispersal…
    - population dislocation and urban abandonment…
  - state collapse…
  - cultural collapse…
- the BIG theoretical issues
  - levels of organization…
  - is system collapse common?
- internal vs. external
- social vs. ecological
- proximate vs. ultimate causes
  - proximate = how…
  - ultimate = why…
- rate of collapse
- Classic Maya collapse
  - evidence…
  - major regional climatic change
  - subsistence demographic stresses
  - socio-economic differentiation stresses
- Norse Greenland failure
  - evidence…
  - environmental stresses
  - socio-cultural rigidity
- Easter Island: no longer a mystery
  - evidence…
  - new environment, old subsistence patterns
- The Fall of Rome
  - transition or collapse?
  - military
  - socio-economic and socio-political differentiation
  - barbarians
archaeology =
archaeology & the public
  - why study the past?
  - what does the past mean to us?
  - what does the past mean to others?
  - whose past is it?

McGimsey’s prediction
public interest = destruction?
  - looters & illicit excavators
  - tourism
  - excavation

meaning of the past
  - archaeology of identity
  - a two-way street...
  - Critical Theory...
    - the one-way street
    - subjective interpretations

- public disenfranchisement
  - Kossina: right & wrong do exist

archaeology’s “prime directive”
  - accuracy and authenticity

who owns the past?
  - the difficult questions...
  - repatriation =
    - North American Solution
      - acquiescence, compromise & collaboration
    - NAGPRA

what it means to us
  - responsibility to the past...