

ANTH 2280 CLASS NOTES

Week 2 History

- **Species** (basic definition) - a population of organisms that can mate and produce fertile offspring
- **Speciation** – the processes that lead to the emergence of a new species

History of Thought

- **Great Chain of Being**
 - Higher and lower organisms
 - Degree of similarity to humans
- **John Ray**
 - Species – a group of morphologically similar organisms with a common ancestor (Ray's definition) Now also see a species as capable of producing fertile offspring
 - **Genus** – a collection of similar species
- **Carolus "Carl" Linnaeus and early homology**
 - Grouping based on similarities to each other
 - **Homology** = when taxa share traits because of a common ancestor
 - Binomial nomenclature
 - Introduced Primates and the name Homo sapiens
- **James Hutton**
 - Theory of the Earth (1788)
 - **Uniformitarianism** = How the earth changes and shit over time because of continuous and uniform action.
- **Jean-Baptiste Lamarck**
 - **Inheritance of acquired characteristics:** Offspring acquire the traits developed by their parents and ancestors
- **Transmutation Hypothesis discussion**
 - Species have their origins in older, similar species
 - Term taken from alchemy
- **Charles Darwin**
 - Natural selection
 - **Descent with modification** rather than catastrophic change
- Thomas Malthus and carrying capacity
- **Gregor Mendel**
 - **Alleles** as units of heredity – genetic variants of a trait inherited from each parent
 - **Mendelian trait** – controlled by simple pair of alleles that are either dominant or recessive
 - **Gene** – a DNA sequence with coding for the construction of proteins
 - **Genotype** – the alleles an individual has for a given gene
 - **Phenotype** – the observable expression of genes
- **Positionally** – many factors shape our identity and how we experience life in society
- **Intersectionality** – no single factor of our identity can be used to explain our experiences in society
- Samuel Morton
 - **Creationist polygenism** – human races represent separately created species
- Herbert Spencer and Social Darwinism
 - **Survival of the fittest**

- **Scientific Racism:** Use of pseudoscientific evidence or misinterpretation of scientific evidence to support or legitimize racial hierarchy and inequality
- **Eugenics** – beliefs and practices aimed at controlled, selective breeding of human populations to improve heritable traits
- **Genetic Determinism** - The belief that our genes determine physical, behavioural, and psychological traits
- **Unilineal** - there is a set sequence of stages that all groups will pass through at some point, although the pace of progress through these stages will vary greatly.

Class Notes

1. Introduction to Biological Anthropology:

- Biological anthropology is a field of study that explores the biological aspects of human evolution and variation.
- It focuses on understanding human evolution, primatology, human variation, and the interaction between biology and culture.

2. The Scientific Method in Biological Anthropology:

- Scientific inquiry in biological anthropology involves asking questions, forming hypotheses, collecting data, and drawing conclusions.
- Researchers use empirical evidence, experimentation, and observation to test hypotheses.

3. Evolution and Natural Selection:

- Biological anthropology emphasizes the concept of evolution, which is the change in species over time.
- Natural selection is a key mechanism driving evolution, where individuals with advantageous traits are more likely to survive and reproduce.

4. Human Evolution:

- The study of human evolution explores the lineage of human ancestors, including the divergence from common ancestors with other primates.
- Key figures in human evolution, such as Australopithecus and Homo species, are examined.

5. Human Variation:

- Human populations exhibit various forms of biological diversity, including differences in genetics, morphology, and behavior.
- Factors like genetics, environment, and culture contribute to human variation.

6. Primates and Primate Behavior:

- Primatology involves the study of primates, including their behavior, social structures, and ecological adaptations.
- Primates share common traits, such as grasping hands, forward-facing eyes, and complex social systems.

7. Human Adaptations:

- Humans have evolved a range of adaptations to various environments, including the development of tools, cultural practices, and physiological changes.

8. The Impact of Culture:

- Culture plays a significant role in shaping human behaviour, including food preferences, communication, and social organization.
- Biological anthropology recognizes the interplay between biology and culture in human evolution.

9. Ethical Considerations:

- Researchers in biological anthropology must adhere to ethical guidelines, especially when studying human populations.
- Respect for human dignity, informed consent, and the protection of vulnerable groups are essential ethical principles.

10. Conclusion:

- Biological anthropology is a multidisciplinary field that explores human evolution, variation, and the interaction between biology and culture.

- It employs the scientific method to investigate key aspects of the human species and its origins. These key points provide an overview of the major themes and topics covered in the chapter on biological anthropology.

Week 3: Primates and the First Hominins

Kwang Hyun Ko's paper "Origins of Bipedalism" examines theories of human bipedalism evolution, including savanna-based, postural feeding, and provisioning models. The author argues bipedalism developed gradually through natural selection, driven by factors like tree foraging and terrestrial lifestyle. The paper emphasizes the complex nature of human bipedalism evolution and its unique adaptation among great apes.

1. Introduction to Bipedalism: Bipedalism is a significant adaptation in human evolution, marked by various skeletal changes.

2. Questions About Bipedalism: The paper addresses two fundamental questions regarding bipedalism:

- Why were the earliest hominins partially bipedal?
- Why did hominins become increasingly bipedal over time, replacing their less bipedal ancestors?

3. Evolutionary Process: The author emphasizes that bipedalism evolved over time through trial and error, driven by natural selection, rather than a single cause-and-effect relationship.

4. Prominent Theories: The paper reviews several prominent theories related to bipedalism, including:

- The savanna-based theory, which suggests that early hominins adapted to walking upright on the savannah.
- The postural feeding hypothesis, proposing that bipedalism evolved as a feeding posture, particularly while reaching for food.
- The provisioning model, which suggests that bipedalism was advantageous for carrying food and supporting pair-bonding.

5. Complexity of Bipedal Evolution: The author highlights the complexity of bipedal evolution and the likelihood of multiple factors contributing to its development.

6. Comparison to Other Great Apes: The paper discusses the evolutionary relationship between humans and other great apes, emphasizing that humans are the only bipedal species among them.

7. Elimination of Ambiguous Traits: The author suggests that early hominins with ambiguous bipedal traits were gradually replaced through natural selection.

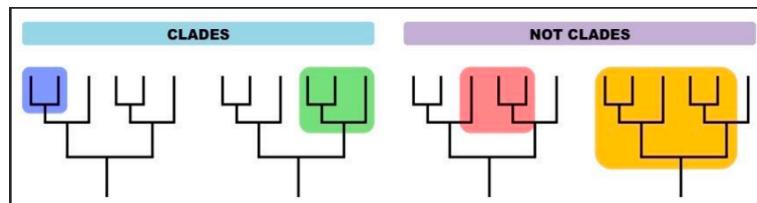
8. Biological Analogy: The paper draws a biological analogy between the evolution of bipedalism in humans and the development of the giraffe's long neck, emphasizing unique adaptations in each species.

9. Conclusion: The paper concludes by emphasizing the need for a comprehensive understanding of bipedalism's evolution and the various factors that may have contributed to it.

These key points provide an overview of the main themes and arguments presented in the paper regarding the origins and evolution of bipedalism in human ancestors.

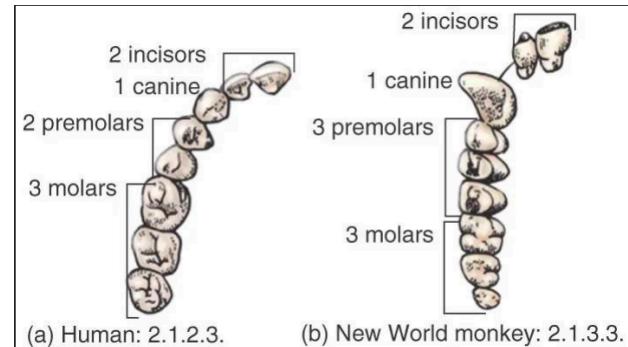
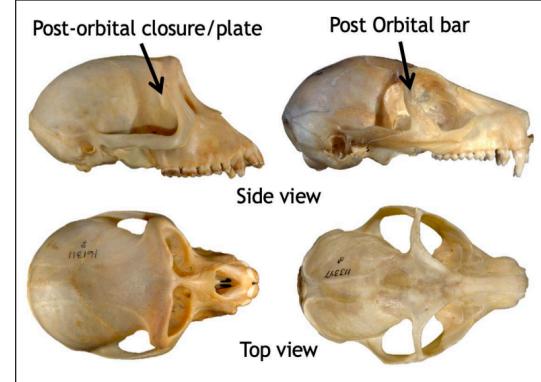
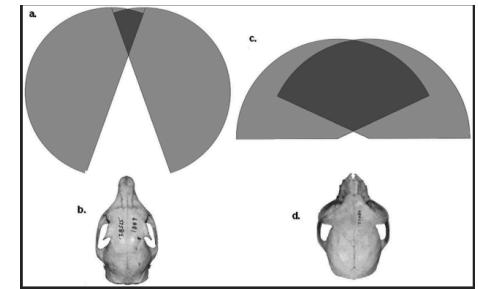
Slide Notes (cladistics, dental arcade, species)

- **Cladistics**
 - **Clade** – grouping of organisms based on traits and genetic similarity

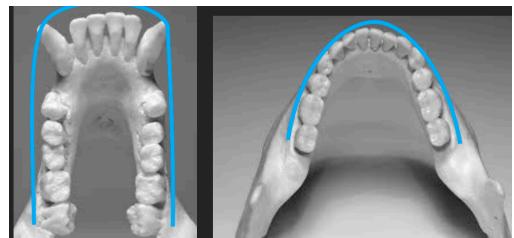
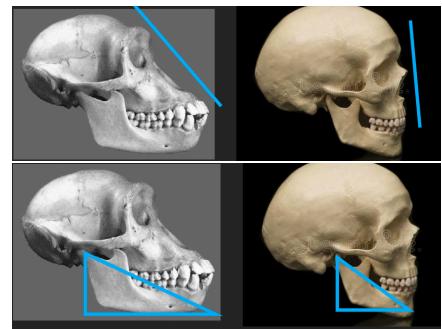
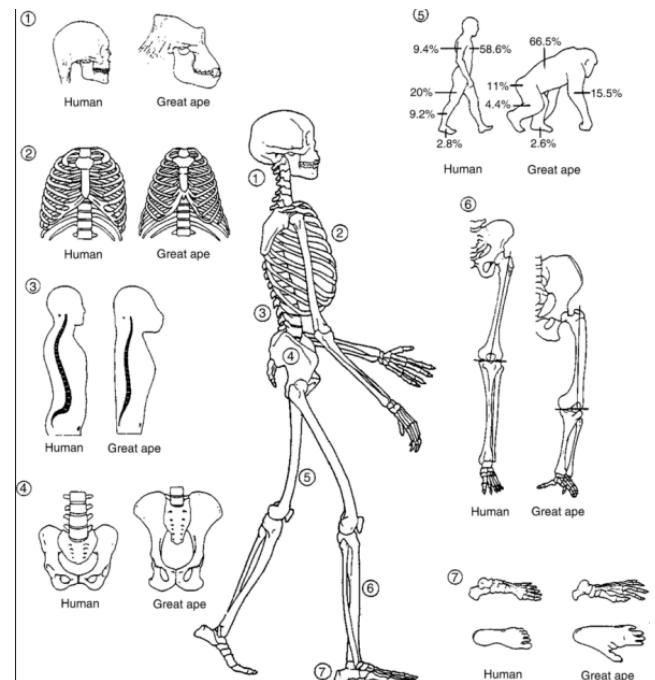


- **Evaluating traits**

- **Ancestral** – inherited from distant ancestors
- **Derived** – recently modified and differs from ancestors
- **Generalized** – useful for a wide range of conditions
- **Specialized** – modified for a specific purpose
- **Shared Primal Traits**
 - Vision
 - Forward facing eyes
 - Binocular vision
 - Convergent fields
 - Convergent visual fields
 - Postorbital Bar/plate
 - Better vision resulted in smaller noses and a worse sense of smell
 - **Evolutionary trade-off** – greater energy into one trait means less energy for another
 - Brain
 - Large brain-to-body ratio
 - Hands and Feet
 - 5 fingers (Pentadactyly)
 - A thumb that can be placed opposite the fingers of the same hand(Opposable digits)
 - Flat nails
 - Sensitive tactile pads
- Miocene Expansion = (23-5 mill years ago) Mammals really came into this shit (made their appearance)
- Derived Primate Traits
 - **Teeth**
 - **Heterodont** – multiple types of teeth for different purposes
 - **Dental formula** – the number of each tooth type in one quadrant
 - **2:1:2:3 (OUR DENTAL FORMULA)**
→ **2:1:3:3(Other apes)**
 - **Locomotion**
 - Clinging and leaping – longer legs than arms, long digits, small bodies
 - **Brachiation** – longer arms than legs, flexible shoulders and wrists, no tail
 - Semi-brachiation – arms and legs similar, flexible shoulders, prehensile tail
 - **Quadrupedalism** – legs and arms similar length, tail for balance
- Primate Classification
 - **Hominoidea**
 - apes and humans
 - Africa and Asia
 - Largest bodies of living primates
 - Longest life histories of living primates
 - Dental formula 2:1:2:3
 - Y-5 molars
 - Flexible shoulders and long collarbones
 - Wide, shallow rib cage
 - No tail
- **Analogy** – look at similar traits in different species to understand human features



- **hominins**
 - Humans and our closest ancestors
 - Species after the split from chimpanzees
 - **habitual bipedalism** = Walking on two legs to move around
- Bipedalism
 - **Post-cranial features**
 - Spine
 - Ribcage
 - Femur
 - Foot
 - Pelvis (We have a short rotated iliac blade vs elongated and flat in a chimp)
 - humans: Short+wide
 - Chimp: long+narrow
 - **Cranial Features:** Humans have big foramen magnum (Hole at the bottom of skull)
 - **Cranial capacity:** Humans have a better brain-to-body ratio
- Smaller Teeth and Jaws
 - Reduced prognathism
 - **Prognathism** = degree to which the jaw projects forward and affects face angle • Steep angle from forehead to jaw (flat face)
 - Smaller Mandible (jaw bone)
 - - **Dental Arcade:** the shape of a row of teeth in a mandible or maxilla
- Early Hominins
 - Great Rift Valley of East Africa
 - Formed approx 35 mill years ago
- Sahelanthropus tchadensis
 - Around 7-5 mill years ago
- Orrorin tugenensis
 - 6.2 - 5.8 mill years ago
- - **Ardipithecus ramidus**
 - 5.8-4.4 million years ago
 - “Ground ape at the root”
- - **Sahelanthropus Tchadensis:** Earliest hominin (as far as we know)
- - **Orrorin Tugenesis:** Oldest man in the Tugen region
- - **Ardipithecus ramidus:** ground ape at the root, one of oldest known hominins
- **Side note **** All hominins are hominids, but not all hominids are hominins. Hominins (the tribe Hominini) are all modern and extinct humans and their immediate ancestors. Hominids (the genus Hominidae) are all hominins and great apes (including gorillas, chimpanzees, and orangutans), and all their immediate ancestors. **



Week 3 Reading Notes

This text discusses various theories and perspectives on the evolution of bipedalism in humans. It highlights the trial-and-error nature of biological evolution and the multiple factors that may have contributed to

bipedalism. The postural feeding hypothesis suggests that early hominins partially adopted bipedal postures while reaching for food in trees. Different theories, such as the savanna-based, threat, and thermoregulatory models, are examined in terms of their role in natural selection. The provisioning model suggests bipedalism was advantageous for pair bonding and food transport. The text also discusses the evolutionary relationship between humans and other primates and emphasizes that multiple factors likely influenced the evolution of bipedalism. It concludes by comparing the unique adaptation of bipedalism in humans to other species, such as the giraffe's long neck and the okapi's short neck.

Week 4 Early Homo

- **Early Hominin Radiation**
 - Radiation = rapid increase in the number of species with a common ancestor
 - An explosion in species diversity
 - Three genera of hominins
- **Australopithecus**
 - A genus with at least 6 known species
 - 4.2 – 1.8 million years ago
 - “Australia” = southern
 - Abbreviated as Au.
 - Found mostly in East and South Africa
 - In the Rift Valley region
 - Dated with volcanic layers
 - Common Traits
 - Relatively small cranial capacity (450 – 500 cc.)
 - Large jaw but smaller canines
 - U-shaped dental arcade
 - Retain ape-like traits
- ***Australopithecus afarensis***

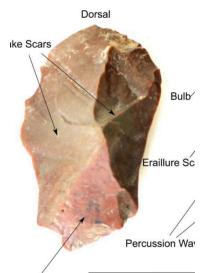


- **LUCY BELONGED TO THIS SPECIES**
- 3.9 to 2.9 million years ago
 - Mainly found in Tanzania, Kenya, and Ethiopia
 - First fossils found in 1930s
- Recognized as a species in 1978
 - Increase in cranial capacity, but still less than 500 cc
 - Habitually bipedal, but still partly in trees
 - Family structure at Locality AL-333?
- Leatoli
 - Tanzania

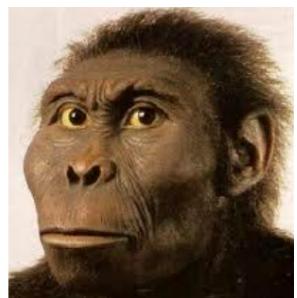
- Showed human like footprints
- 3-3.8 mill years ago
- **Dikka Child**
 - Suggests infants were more arboreal than adults
 - Young Au.Afarensis
 - 3.32 million years ago
- Wide range of physical size variation suggests sexual dimorphism
 - May be ancestor to Homo
 - Also suggested as ancestor to Paranthropus
- **Australopithecus africanus**
 - 3.3 - 2.1 mill years ago
 - South Africa
 - Found in 1924
 - Proposed to be a new species in 1925, accepted in 1940
 - Taung Child
 - Presented in 1925 by Raymond dart
 - Got killed by an eagle
- **Paranthropus**
 - Robust australopithecines —> robust features, heavy muscled, large teeth (megadont)
 - 2.7 – 1 million years ago
 - Other Common traits
 - Height range 3'7" to 4'6"
 - Weight 70 to 110 lb
 - Cranial capacity around 500 c
 -
- **Paranthropus boisei**
 - Sagittal crest
 - 2.4 to 1.4 million years ago
 - Sites across East Africa
 - First found in 1955
 - Identified as new species in 1959
 - Important lessons from P. boisei in 1975
 - Paranthropus and Homo co-existed for 1.1 million years
 - Multiple hominin species overlapped
 - Human ancestors do not form a single evolutionary line
- - **Paranthropus**: Parallel evolution alongside early homo species
- - Lucy was very important because her skeleton was 40% complete (quite a bit), which helped make many discoveries (Bipedalism before stone tools and large brains (also helped identify a new species → afarensis))
- - **Au Africanus**: The initial recognition of Australopithecus africanus came from the discovery of the Taung Child skull by Raymond Dart in 1924 in South Africa. The Taung Child was a juvenile specimen that exhibited both ape-like and human-like characteristics, such as a small braincase but with teeth resembling those of early humans. Also BIPEDALISM
- - **Paranthropus** species, including Paranthropus robustus and Paranthropus boisei, exhibited unique skull and dental features. They had robust skulls with large, grinding teeth and powerful jaws, suggesting specialized adaptations for a diet that likely included tough, fibrous plant foods.



- Technology = the practical application of knowledge, as well as the tangible and intangible products of this application
 - Tools are commonly seen as technology
- Making Tools
 - Cores – larger portions of stone that are used to produce flakes
 - Core tools make flakes but are also used as a separate tool
 - Prepared core – a core that has been intentionally shaped to produce a specific type of flake
 - **Flakes** – flat, sharp piece detached from core
 - Evidence of manufacture
 - Different techniques significant
 - Sequence significant
 - **Knapping** – the act of making stone tools through various **percussion** and **pressure** techniques
 - **Step 1:** Material selection and procurement
 - **Step 2:** Initial shaping through hard hammer percussion
 - May also use bipolar techniques or indirect percussion
 - **Step 3 (optional):** Refined shaping with soft hammer percussion
 - **Step 4 (optional):** Refined shaping with pressure flaking
 - Results in what is known as retouch (small fragments removed from edges)
 - **Step 5 (optional):** Repurpose or resharpen • Can change the final shape of a tool significantly
- Artifact Side History
 - Chaîne opératoire
 - Series of decisions
 - Decisions are significant
 - Two trends seen in technology through time: Increased refinement and diversity
- Interpreting Stone Tools
 - Contextual information – stratigraphy (defined layers of sediment)
 - Law of Superposition
 - Principle of Association
- Stone Tools in Human Evolution
 - **Earliest from Lower Paleolithic or Early Stone Age**
 - Oldowan industry
 - Acheulian industry
 - **Industry vs. culture**
 - **Industry** = period defined by stone tool production methods and artifact types
 - **Type** – a group of artifacts with shared attributes that can be distinguished from other artifacts
 - **Typology** – a classification framework based on observable or measurable attributes
 - Attributes are defined traits that can be used to classify artifacts and build interpretations about function and/or meaning
 - Identify an industry through diagnostic types
 - Artifacts that are common or unique to a particular period and region
- Who made them?
 - Lomekwi 3 site



- Lake Turkana, northern Kenya
- 3.3 million years ago
- Signs of knapping
- **Kenyanthropus platyops**
 - 3.5 million years ago
 - Turkana, Kenya
 - “flat-faced”
 - Found in 1999 by Meave Leakey
 - Skull structure different enough to be new genus
 - Lived at same time as *Au. afarensis*



Stone tools were significant for several reasons in the context of human evolution and cultural development:

- Early Technological Advancements: The production and use of stone tools mark a significant leap in early human technological advancements. The ability to intentionally shape and modify stones for specific purposes represents a key milestone in the evolution of human technology.
- Cultural Evolution: The development and use of stone tools are associated with the emergence of distinct cultural behaviors among early humans. The manufacturing and use of tools required planning, organization, and the transmission of knowledge, contributing to the development of cultural traditions within human communities.
- Adaptation and Survival: Stone tools provided early humans with practical solutions for survival.
- Cognitive Development: The creation of stone tools required cognitive abilities such as planning, problem-solving, and spatial awareness.
- Biological Evolution: The use of tools could have influenced the course of human biological evolution.
- Evidence of Human Presence: Stone tools provide important archaeological evidence of early human presence in specific regions.
- Chronological Markers (stratigraphy): Stone tools serve as chronological markers in archaeological studies.



- - **Oldowan Chopper:** Despite their simplicity, these tools were versatile and useful for a range of tasks, such as cutting, slicing, and chopping meat or plant material, as well as processing wood or breaking bones for marrow extraction.
- - **Chaine Operatoire:** Series of decisions to be made which are all significant in their own ways
- The Iomekwi 3 site had a lot of evidence of tools known as Oldowan choppers which were made by *Australopithecus Afarensis* and *Kenyanthropus Platypus*
- - **Kenyanthropus Platypus:** flat faced and skull structure was enough for it to be considered new genus

WEEK 7: Oldowan Industry

The Genus Homo

- Adding to the identification problem
 - Incomplete fossils
 - Diversity of features
 - Mosaic pattern in evolution

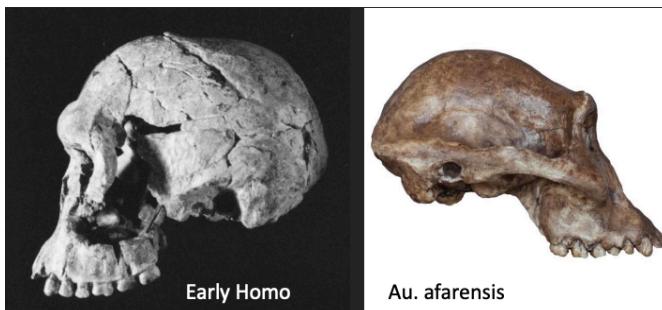
Setting or early homo

- Pleistocene epoch (2.6 million – 11,000 years ago) • AKA “Ice Age”
 - Interglacial – warm/wet climate
 - Glacial – cold/dry climate
- Climate cycles affected the landscapes hominins moved across
 - Challenges and new opportunities for hominins
 - Specialization vs. behavioural flexibility
 - Changing behaviours according to the environment instead of changing physically.



Early Homo

- *Homo habilis*
 - 2.5 – 1.7 million years ago
 - Possibly 2.8 million years if the Ledi-Geraru mandible is *Homo*
 - Hand bones suggest **precision grip** (Had very fine controls of what fingers could do and more range of motion in the wrist which allowed them to grab better)
 - Named *Homo habilis* = “handy” or “skilled” human
 - Long considered an ancestor to all other *Homo* species
 - Increased cranial capacity and association with tools emphasized



- Do *Homo habilis* fossils represent a single species?
 - Split species into ***Homo rudolfensis*** (larger than *habilis*)
 - Larger average cranial capacity
 - Larger teeth and jaws
 - Broader face
 - Sexual dimorphism (males and females are different)
 - Regional adaptation (Species adapt to best suit the place they are in)
 - Developmental plasticity
 - Lumpers vs. splitters debate



Oldowan Industry

- 2.5 – 1.6 million years ago
 - Named after Olduvai Gorge, first found in Tanzania
- Flake and cobble tools
 - Diagnostic type is the Oldowan chopper
 - Use hard hammer percussion
 - Type of core tool
- Early Homo tool use in daily activity
 - Evidence of butchery
- Hunters or scavengers?
 - Animal bones with cut marks also have gnawing and cracking (from animals that were better predators)
- Comparison to chimpanzees suggests...
 - Early hominins were capable of hunting
 - Could hunt small animals without tools
- The appearance of lithic technology signals a dietary shift
 - More animal protein
 - Processed plant foods
 - Greater calorie intake
- - **Homo habilis: considered ancestors to all other homo species**
- - **Oldowan industry:** example of proteins, butchery, Oldowan choppers, scavenging and a little bit of hunting



WEEK 8: Homo Erectus

Homo Erectus

- Loss of body hair?
 - Aquatic ape theory → Spent a lot of time in the water for things like food and ended up losing hair bodies (not concrete)
 - Proposed by Alister Hardy in 1960
 - Increased communication and signalling
 - Reduction in parasites
 - Cooling through sweating
 - Possibly began 3 million years ago
- 1.8 million years ago – 110,000 years ago
 - End of hominin radiation (around 1.4 million years ago)
 - Fossils first identified in Asia in 1891
- Earliest fossils from East Africa
 - 1.8 million years ago
 - Koobi Fora, Lake Turkana
- Nariokotome Boy
 - 1.5 million years old
 - Omo River, Kenya
 - "Turkana Boy"

Hominin Dispersal

- Dispersal event = a single species significantly expanding its geographic range, often involving new ecological niches
- Relatively fast
- Movement of population not individuals
- Multiple dispersals
 - Early migration around 1.8 million years ago
- Indonesia

- First found in 1891 by Eugene Dubois
 - Named his discovery Pithecanthropus erectus
 - “Java man”
 - Oldest: 1.8 – 1.3 million years ago based on Sangiran sites in Java
 - Youngest: 117,000 – 43,000 years ago based on Ngandong sites in Java
- Western Eurasia
 - 1.86 – 1.75 million years ago
 - Dmanisi, Republic of Georgia
- China
 - Around 1.6 million years ago
 - • Nihewan Basin, Hebei
 - Eurasian Acheulian spreads into East Asia
 - Bose site around 800,000 years ago
 - 700,000 – 400,000 years ago at Zhoukoudian, Beijing
- Europe
 - Mandible dated to about 1.2 million years old in Atapuerca, Spain
 - More fossils around 800,000 years old from the Gran Dolina site
 - Fossilized footprints found in Happisburgh, Norfolk in 2013 • Around 950,000 – 850,000 years old
 - Eurasian Acheulian (ca. 500,000 years ago)

Acheulian Industry

- About 1.7 million – 200,000 years ago
 - The diagnostic type is the Acheulian hand axe
 - Also see flake tools, scrapers, and cleavers
- Introduces bifacial flaking to produce a biface tool
- More complicated than the Oldowan industry
- Increased standardization
 - More consistent production methods and results
 - Soft hammer percussion
- Better evidence of hunting by H. erectus
 - But also evidence of woodworking
 - Tanzanian and Zambian phytolith studies
 - Wooden spears from Schoningen, Germany (400,000 years ago)
- Olorgesaille, Kenya
 - Many tools associated with large animals around 900,000 years ago
 - Site is a palimpsest – an archaeological surface or feature developed over time through separate occupations

Evidence of Lifeways

- Higher caloric intake and its relation to brain and body size
 - Evolutionary trade-off
 - Expensive tissue hypothesis (Aiello & Wheeler, 1995) – bigger brain, smaller digestive tract
- Controlled use of fire and cooking
- Issues with distinguishing hominin-controlled and natural burning
- Oldest proposed case is 1.5 million years old from Koobi Fora, Kenya
- - **Homo erectus**: Homo erectus is widely acknowledged as the first hominin species to fully belong to the genus Homo. Its appearance marks a crucial milestone in human evolution, showcasing distinct features that differentiate it from earlier hominin forms.
- - **Homo erectus** displayed physical adaptations such as increased brain size (averaging around 900 cc), changes in body proportions (longer legs, taller stature), and potential loss of body hair. These

adaptations might indicate enhanced endurance, better thermoregulation, and the potential for improved long-distance movement.

- **Homo erectus** is considered an ancestor to later Homo species, possibly including Homo sapiens
- **The Acheulian Industry** holds considerable significance in understanding the technological advancement and behavioral complexity of early hominins, particularly Homo erectus. Some key points regarding the significance of the Acheulian Industry include:

Technological Advancement: Acheulian tools, especially the handaxe

- **The presence of Acheulian tools**, along with associated evidence of hunting large game and butchery, suggests that Homo erectus had a more effective means of procuring food.
 - More food meant bigger bodies and brains

WEEK 9: Homo Floresiensis and Homo Naledi

Homo floresiensis

- Lived around 100,000 – 50,000 years ago
 - Found on the Island of Flores, Indonesia
 - Tropical forests with high biodiversity
 - Smallest known hominin
- **Why are they so small?**
 - Modern humans with a disease or growth disorder
 - Insular dwarfism – an evolutionary process that results in a reduction of size due to long-term isolation in a small environment, such as an island
 - Reduced size before reaching Flores:
 - **Homo luzonensis (AKA Ubag) around 700,000 years ago**

Why is Homo Naledi Controversial?

- Emphasis on hype over context
- Published evidence has yet to convince experts in the field that burial pits were present
- Mortuary
- behaviour vs. funerary behaviour
- - **Homo Floresiensis: Very small, called the hobbit, smallest known hominin species, insular dwarfism: basically due to being isolated in island for too long the species grew shorter**
- - **Homo Naledi: Significant for having a brain far smaller than that of any other homo, very controversial species**

Week 10: Neanderthals and aDNA

Homo neanderthalensis

- Fossils first discovered in Neander Valley, Germany
- Species name proposed in 1856 by William King
- **Camp sites - sheltered locations where resources are brought for processing and consumption • Often in caves • Deep deposits • Evidence of fire**
- **How did Neanderthals go extinct?** • Both species lived in Southwest Asia between 120,000 – 80,000 years ago
- **Homo neanderthalensis:** archaic Homo Sapiens, had increased blood flow and nasal passage to adapt to the cold
- **Mousterian Industry:** Made tools using flaking