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Unessay Process Documentation

The process of working on this project started with the procurement of 3D models. Some of the models that were used here had a waiting period to be given access to them, so I made sure to start early so that I knew I would have enough to make a full museum tour. After that, I wrote out notes and a script for each room, with each room covering an important time in human evolution. Some rooms cover the major happenings in a particular epoch, whereas some focus on a genus or subset of a genus as time goes on. After that, I built the virtual environment that everything went in, recorded the audio, and that was basically it. The game was built in the Unity game engine, which I have some experience with because of my senior design project. I used a lot of pre-made and free-to-use assets to speed up development time, and created prefabs for elements that are reoccurring within the game. After that, I recorded a video walkthrough of the game and posted it on YouTube as an unlisted video. Below are the notes that I took during the development process.

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# Intro

Welcome to my museum. Growing up, everyone hears that humans evolved from monkeys or apes, but in reality it’s much more complicated than that. Humans, monkeys, and apes all belong to an order called the primates, and evolved from a common ancestor that they shared several millions of years ago. This virtual museum will walk you through our shared evolutionary history by focusing on gradual changes in the fossil record that occurred over millions of years.

# Ancestral Primates - Paleocene

The first evidence of ancestral primates occurs 65 million years ago, during the Paleocene epoch with the evolution of Plesiadapiformes. Like the primates that would come after them, they are adapted for an arboreal lifestyle, though they lack most of the features that all true primates share.

* Paleocene epoch
* Plesiadapiforms **No 3d models**
  + Arboreal adaptation
  + Not 100% primates

# First Primates - Eocene

The first true primates emerged in the Eocene epoch, which began 56 million years ago. This includes the adapids, which are ancestors to the strepsirhines, which include lemurs and lorises, as well as the omomyoids, which are ancestral to haplorhines, and include monkeys, apes, and humans. These primate groups primarily lived in North America and Europe, and share many features that are still present in modern day primates, such as having a large brain, finger nails, and a handful of distinctive skull features. Other primate groups existed at this time, but the adapids and omomyoids were the major groups.

* Adapoids, Omomyoids **No 3d models**
* Show a tree on the wall, branch form Plesiadapiformes to:
  + Adapids, lead to strepsirhines
  + Omomyoids, lead to haplorhines

# Oligocene Epoch

As the continents continued to shift during the Oligocene epoch, which began 34 million years ago, the Earth’s climate cooled dramatically, leading to mass extinctions of tropical weather-adapted primates in North America and Europe. As a result, the main source of primate fossils during this epoch was a site in Egypt called the Fayum Depression, and the two main families of primates found there were Parapithecidae and Proplipithecidae. Parapithecidae is believed to be ancestral to the New World Monkeys living in the Americas, and Propliopithecidae is believed to be ancestral to Old World Monkeys, apes, and humans.

* Parapithecidae
  + New World Monkey Platyrrhini ancestor
  + 2-1-3-3
  + No bony ear tube
* Propliopithecidae, Aegyptopithecus
  + 2-1-2-3
  + Cercopithecoid (OW monkeys) and hominoid (ape/human)
  + First Y-5, exhibited in hominoidea

# Miocene Epoch

Due to a warming of the Earth’s climate in the Miocene epoch around 23 million years ago, there was a rapid expansion of primitive apes throughout Africa, Asia, and Europe. These Miocene hominoids were smaller than their modernday counterparts, and exhibited a mixture of monkey-like and apelike features. During this time, there were approximately 30 genera of living apes, compared to only four or five today.

* **Proconsul**
* **Sivapithecus**
  + Asia - India, Pakistan
  + 15 mya
  + Not a human ancestor
* Gigantopithecus
  + Asia
  + Contemporary with Homo erectus
  + Really big
* Dryopithecus
  + European
  + Size of large monkey or golden retriever

# First bipeds - 6-7 MYA

Around 6 million years ago, the evolutionary lines of apes and humans split, resulting in a divergence of characteristics between the two. Throughout the rest of this museum, the fossils on display will start looking markedly more human as time goes on.

* Sahelanthropus tchadensis
  + 7-6 mya
  + Chad, central africa
  + May be the first hominin split from apes
  + Foramen magnum position believed to indicate bipedality
* Ardipithecus ramidus
  + Ethiopia
  + 4.4 mya
  + Over 100 specimens
  + Mix of derived and primitive features
  + Likely capable of bipedal and arboreal locomotion

# Australopithecines

Australopiths, having appeared roughly 4 million years ago, are characterized by a continued reliance on bipedality while also retaining previous adaptations to arboreal living. They also retain a number of apelike features, such as the shape of their skull and teeth. Despite having a relatively small cranial capacity relative to later human ancestors, Australopiths were able to create and use stone tools.

* Australopithecus africanus
  + Lucy
    - One of most complete, famous Australopiths
  + 300 other specimens
  + 3.9-2.9 mya
  + Believed to be ancestral to other Australopiths, and therefore Homo / humans
* Paranthropus Boisei / Robust
  + Robust Australopiths are often placed in their own genus due to differences to the rest of Asutralopithecus
  + Adapted for consuming hard foods
    - Thick enamel
    - Large molars
    - Large jaw
  + ‘Sagittal crest
* Likely not a human ancestor

## Skull Models

* Australopithecus africanus (x3)
* Australupithecos robustus jaw
* Paranthropus robustus (x2)
* Australopithecus boisei bust
* Paranthropus boisei
* A. afarensis (x2)
  + Lucy Mandible
  + Lucy Pelvis

# Early Homo

Homo is the genus that humans, or Homo sapiens, are a part of. Even so, the early Homo species were radically different from modern humans, and lived approximately 2.4 million years ago. The fossils here show that they were becoming more similar to modern humans, but still similar to apes in some areas.

* Homo habilis
  + Similar to A. Africanus
    - Larger brain
  + Tool use / name
  + Higher, rounder cranium
  + Smaller jaw, face
  + 2.4-1.4 MYA
* Homo Erectus
  + Not the first biped, but first fully upright
  + First with human-like body proportions
  + More advanced tools than used by previous species
  + 1.9 mya to 150,000 years ago

Moving on from the early species of the Homo genus, these later Homo species are much more human looking than those that came before them. Archaic Homo sapiens, or Homo heidelbergensis shows a gradual shift towards more human features, while Homo neanderthalensis shows a split from the human line that was more well-adapted to cold weather living. The other evolutionary branch from Homo heidelbergensis results in modern-day Homo sapiens.

* Homo heidelbergensis / Archaic Homo sapiens
  + 400,000 - 150,000 ya
  + Larger cranial capacity, higher, rounder skull
  + Smaller teeth, jaws
  + Rounder eye sockets, forehead
* Homo neanderthalensis
  + Cold adapted
    - Robust skeleton
    - Wide nose opening
  + Larger cranial capacity than modern humans
  + Advanced stone tools
  + 75,000 - 30,000 ya Middle East, Europe
* Homo sapiens

Now you have seen a small portion of the long evolutionary history leading up to modern humans, or Homo sapiens. There are many other specimens that couldn’t fit within this short museum tour, but the most important ones have been presented to you. Hopefully by travelling through my museum, you have learned something about the human evolutionary history.

## Skull Models

* H. habilis
* Homo erectus georgicus
* H. erectus (x2)
  + Peking man bust
  + Femur
* H. neanderthalensis (x2)
* H. heidelbergensis
* H. floresiensis (skull, mandible)

## Other Models

* Human female skeleton
* Femur 4 (human?)

# Other

* Piltdown man
* Chimpanzee (Pan troglodytes versus)
* Female Chimp skull
* Peking man