

Appendix B: “Museum Disaster”

Sirens wailed as the giant fire engines roared down the streets. In the distance, great clouds of smoke erupted from the horizon, with an eerie, red glow that reflected dimly beneath them. The natural history museum had caught fire, and how one entire wing of the building was engulfed in flames.

Karen sat across the river from the museum in her car, speechless. She had been on her way to work as a curator in the anthropology department, bubbling with excitement at the exhibit she had been working on. A recent donation from the family of Archibald Caldwell, a famous anthropologist, had found her in procession of some very cool fossil skulls. Caldwell had been a famous paleoanthropologist, one who studies the evolutionary history of hominids, also known as the Great Apes, of which humans are a member. The skulls represented six species of hominid: the extant *Gorilla gorilla* and chimpanzee (*Pans troglodytes*), as well the extinct *Homo neanderthalensis*, *Homo erectus*, *Homo habilis*, as well as one of the earliest human ancestors, *Australopithecus afarensis*.

Karen and her team had spent the better part of this year researching the history of these hominid species and arranging them into a 3D representation of a **phylogeny**, a branching evolutionary diagram that depicts evolutionary relationships among species. The skulls provided numerous physical features she and her team had used to arrange the model. Now she watched as the entire wing, including her office and gallery, burned to the ground.

Despite the setback, Karen was not deterred. There were many times in history when important paleontological and archaeological finds were destroyed, but managed to live on thanks to the detailed notes and sketches let behind by the discoverer. Archibald Caldwell had been such a scientist himself, and in the museum’s safety deposit box, his original sketches of the different parts of each skull had been saved. However, the names of each specimen were lost, but she was sure she and her team could figure out to which species each skull belonged.

However, she knew she could not simply accept the destruction of her exhibit. She made up her mind right then and there that she would hire a team of experts in 3D modeling to help her recreate her exhibit.

You have been hired! Karen sends her best wishes, as well as the notes of the late Archibald Caldwell. Using the “Skull Diagram” by your teacher, construct an appropriately proportioned human skull from modeling clay. Identify key features.