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Scientific Illustration in Human Evolution

In understanding our origins, we rely heavily on scientific reconstructions to help us visualize our extinct hominoid relatives. Fossils, which are frequently fragments, does little to impart a solid image of what a Neanderthal would look like, which is where the vision of a scientific illustrator comes in to play. These illustrations are given credibility because of their proximity to scholarly work, but to view these works as completely accurate is naive. The illustrator relies on his own imagination to create these images, so personal interpretation is unavoidable. The earliest scientific illustrations of Neanderthals were done in a time before renderings of fossils was standardized, so the first depictions of Neanderthals were riddled with errors, which lead to an incorrect image of Neanderthals to be popularized. Although scientists eventually realized the inaccuracy of these depictions, no effort was made to produce more accurate representations until scientific illustrator Jay Matternes. His facial reconstructions of Neanderthals, published in 1981, were the result of extensive research and work alongside scientists, and considered to be the first scientifically feasible depictions (Rensberger 49). Although further improvements could be possible, Jay Matternes' work marks the beginning of a higher degree of scientific accuracy in artistic representations of human evolution.

The earliest renderings of Neanderthals were created by Hermann Schaaffhausen in 1857 while studying the skulls of Neanderthals who lived in Gibraltar about 50,000 years ago (Cartmill 339). Schaaffhausen mistakenly believed the Neanderthal skull to represent the oldest and most primitive of all human races, in keeping with the Eurocentric viewpoint of large-scale human history as a series of ethnic replacements with light-skinned Europeans at the end (Cartmill 340). Schaaffhausen commented on the skull, "A marked prominence of the supraorbital region occurs most frequently in the crania of barbarous races . . . which must have given the human visage an unusually savage aspect." (Van Reybrouck 4) His renderings of the skull were distorted with a shrunken forehead, a smaller brain case and strongly protruding eyebrows, all aspects that exaggerate the "primitiveness" (Van Reybrouck 3). Because scientific illustration is not objective, even technical drawings can be imbued with their creator's own theories, as was probably the case with Schaaffhausen's work (Van Reybrouck 3). It is now known that the Neanderthals were not a version of early humans at all, but a separate hominoid species (Andrews 154). The importance of race has also been undermined, as what we think of in terms of categorizable race is really a spectrum of morphological differences expressed by our genes (Bamshad 85). Although the artist's own ideas influenced the drawings, they were regarded as "neutral depictions of the skull" which allowed these mistaken ideas about the skull's place in history to proliferate for more than a quarter of a century before being challenged (Van Reybrouck 6). In the early 1900's, the skull was identified

as a different species from our own, and the idea it as the “missing link” between apes and humans became popularized (Cartmill 341). Illustrations of Neanderthals coming from this time conveyed this idea, representing the Neanderthal as a hairy man-beast (Foley). Scientists later discovered that Neanderthals are not a link between man and ape, but rather a cousin whose evolution followed a different path. Still, these misinformed depictions of Neanderthals had become popularized and little effort was made by the scientific community to produce more accurate illustrations for a few decades (Rensberger 49).

Scientific illustrator Jay Matternes undertook creation of Neanderthal renderings based on the most recent evidence. Working with scientists, he drew depictions of its skeleton, adding to that its muscles and lastly skin and hair (Zimmer). Published in 1981, these illustrations were the first done with the most up to date evidence. Still, artistic interpretation played a role in the depictions. In order to dispel the popular but incorrect image of the Neanderthal as a man-ape, he depicted some of the portraits without beards or hair. Although this is not historically accurate, as a Neanderthal man would almost certainly have had facial hair, it to emphasize the similarity between the faces of Neanderthals and humans and detract from the “savage” quality these features suggest (Rensberger 49). Anatomically, these portraits were as accurate as possible, a result of careful work with scientists. Though Matternes’ work is considered to be the most accurate, there is still room for improvement. Matternes’s work

appeared alongside an article about early hominids published in The Scientific American in 2000 (Matternes 56). Of the six portraits of hominids accompanying the article, all of them are of men. This seems thoughtless way to view human evolution, as half of humanity is excluded from it. Whether intentionally or unintentionally, illustration is a vehicle for communicating not only the cut and dry facts of human evolution, but also the personal rhetoric of the illustrator.

The visual component is a crucial part of the investigation of human evolution. Human evolution involves understanding things we will never see with our own eyes, so illustrations become the only way these things can be conveyed visually. By undervaluing the role illustration, researchers in human evolution are overlooking the potential impact illustration has in their dissemination of their ideas. Illustration can too easily become a tool for proliferating incorrect theory. The role of accurate illustration is crucial to the understanding of human evolution.

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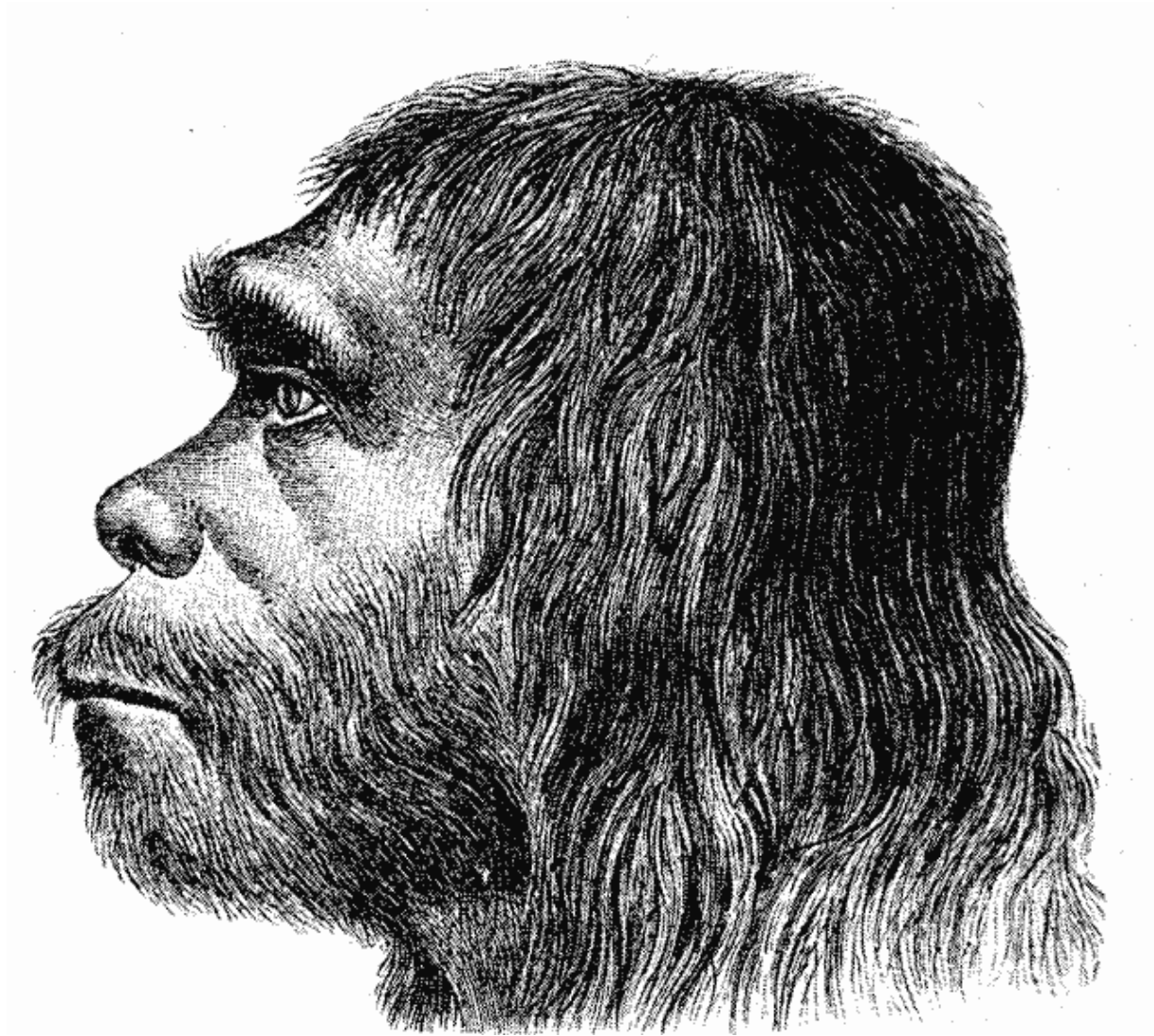
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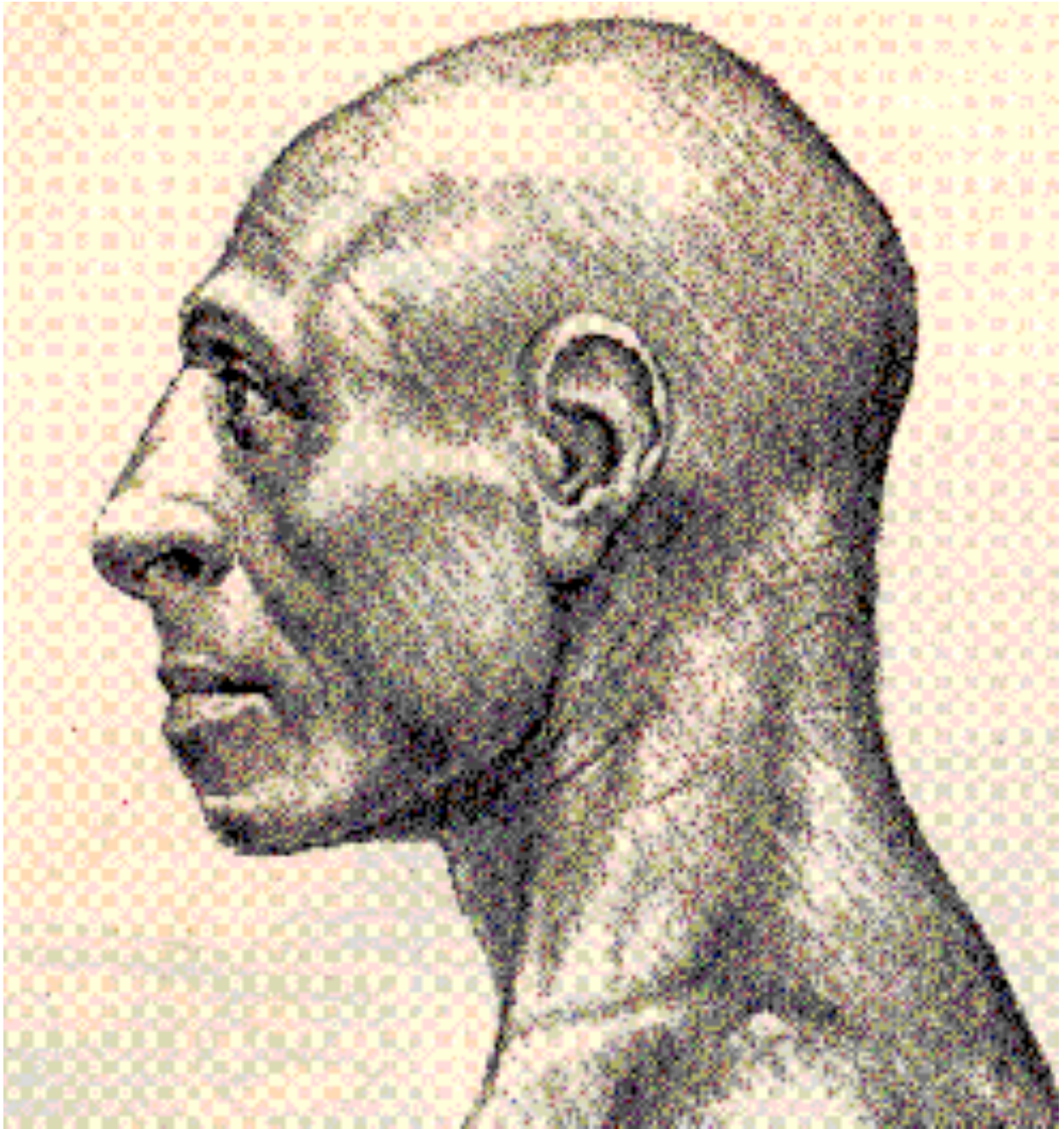
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Appendix



Hermann Schaffhausen's Neanderthal Illustration

(From Wikipedia, public domain because the copyright expired)



Jay Matternes's Neanderthal Illustration

(Rensberger, Boyce. "Facing the Past," Science 81, October 1981, p. 49.)