FROM *HOMO STUPIDUS* TO *HOMO SAPIENS*: CHANGING AND REAFFIRMING THE PARADIGM OF HUMAN UNIQUENSS THROUGH NEANDERTAL DESCRIPTIONS

A Thesis
Submitted to the Graduate Faculty
of the
North Dakota State University
of Agriculture and Applied Science

By

Megan Lynn Even

In Partial Fulfillment of the Requirements
for the Degree of
MASTER OF ARTS

Major Department:
English
Option: Composition

March 2015

Fargo, North Dakota

North Dakota State University
Graduate School

Title

From *Homo stupidus* to *Homo sapiens*: Changing and Reaffirming the Paradigm of Human Uniqueness Through Neandertal Descriptions

By

Megan Lynn Even

The Supervisory Committee certifies that this ***disquisition*** complies with North Dakota State University's regulations and meets the accepted standards for the degree of

MASTER OF ARTS

SUPERVISORY COMMITTEE:

Dr. Dale Sullivan
Chair

Dr. Andrew Mara

Dr. Zoltan Majdik

Approved:

April 2, 2015
Date

Dr. Gary Totten
Department Chair

ABSTRACT

Neandertal interpretation is changing the paradigm of human uniqueness, but exactly *how* needs to be examined. This paper provides a qualitative analysis of how Neandertal descriptions embed long-held cultural attitudes and how those cultural attitudes are being challenged and, in some ways, reaffirmed through rhetoric. A rhetorical analysis was performed on the second and third editions of a widely used physical anthropology textbook, Clark Spencer Larsen's *Our Origins*. Both editions rhetorically favor a view of Neandertals as more similar to than different from us, a view which appears at odds with the disciplinary preference. Larsen appeals to the disciplinary preference in the second edition by only implicitly favoring similarities, but the third edition is more explicit in its favoring of similarities. The analysis of Larsen's text provides examples of how rhetors can continue to move readers toward a new view of Neandertals, despite the current disciplinary preference for Neandertal classification.

ACKNOWLEDGEMENTS

I would like to thank Dr. Dale Sullivan, who first introduced me to the rhetoric of science and was patient and very supportive as I narrowed my topic, coded my data, and wrote. I would also like to thank the other members of my committee, Dr. Andrew Mara and Dr. Zoltan Majdik, who provided essential feedback and support on this thesis. Dr. Julia Bowsher also graciously provided expertise and guidance when I had questions about evolution.

Thank you to Dr. Bruce Maylath, Dr. Elizabeth Birmingham, Dr. Amy Rupiper Taggart, Dr. Linda Helstern, and Dr. Clifford Canku for encouraging and supporting me throughout my time in academia. Without encouragement and support, I never would have thought of graduate school as a possibility. Thank you to Enrico Sassi and Mary Pull for giving me the opportunity to work at the Center for Writers, an experience which has been enriching in numerous ways and which unexpectedly contributed to this thesis.

Thank you to other members of my department, who are too numerous to list here. Thank you also to my very loving friends and family, who are always kind, patient, and understanding. I am forever grateful.

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

Since their discovery in the nineteenth century, debates on how to classify Neandertal remains have proliferated. Some scholars argue that Neandertals should be classified within our own species (as a sub-species, *Homo sapiens neanderthalensis*) while others argue that they should be classified as a separate and distinct species (as *Homo neanderthalensis*). Other species' classifications are also debated, but those debates do not as directly confront the boundary between "human" and "non-human," a boundary that has been shifting for well over 200 years. While in recent years the general preference has been to classify Neandertals as a species distinct and separate from ourselves (De Vos, 2009, p. 376), recent studies on the Neandertal genome, which show interbreeding between anatomically modern humans (AMHs) and Neandertals, have re-opened the debate (White, Gowlett, & Grove, 2014, p. 32).

Debates about how to categorize species have sometimes been underemphasized and disregarded as arbitrary. Louis Leakey (1963), for example, dismissed disagreements about classification by writing, "it does not, I believe, matter what we decide to do, provided only that the majority of those who are concerned in the classification, at any given time, are agreed as to how they will use the classification system that is set up and provided that they are clear as to what they mean by the different names that are applied" (qtd. in Marks, 2007, p. 7). Charles Darwin (1859) also commented on the arbitrary nature of species delimitation: "I was much struck how entirely vague and arbitrary is the distinction between species and varieties." Indeed, species classification *is* arbitrary in the sense that human classification does not alter the natural world.

Some take the arbitrary nature of definitions one step further, questioning if the idea of a "species" is even objectively real. David Stamos (2003) asked, "Are species words merely operational conveniences made for the purpose of conveying various information and theories, or do species words refer to entities in the objective world with a real existence independent of science?" (p. 1). In other words, are we imposing on the world linguistic categories that do not objectively exist with such clean delineations, or have we "discovered" the linguistics categories "out there" and simply named them? This question, although recognizing the basic convenience

and immediate purpose of language (exchange of ideas), ignores the *social* reality of language. Definitions are not necessarily "based on the self-evidence of conceptual relations" (Perelman & Olbrechts-Tyteca, 1969, p. 210), but they are always socially constructed. Classification of Neandertals as human or as separate from human changes the way we view the remains and can be said to have a social effect.

When an argument is made to define a particular individual as belonging to one species and not another, the rhetor is attempting to shape views on species in a general sense. People who "argue in favor of some definition want it, through some slant or other, to influence the use which would probably have been made of the concept had they not intervened and mostly to influence the relations of the concept with the whole system of thought" (Perelman & Olbrechts-Tyteca, 1969, p. 213). One of the most striking examples of how species classifications can affect our reality, and how our reality affects species classifications, comes before Darwin's publication of *Origin*, when some people argued that the different human races constituted different species. The subjectively declared "inferiority" of black culture was used as "evidence" of the race's distinctness as a species. Such classification was used as a way to justify the institution of slavery (Gould, 1996, pp. 71–72), an institution with very obvious *social* consequences.

Although supposed inferiority and superiority are no longer used as criteria for classifying species, there still is necessarily some subjective criteria in classification (White et al., 2014, p. 34). Classification based on morphology is an older method and more likely to place Neandertals in a species group distinct from anatomically modern humans (AMHs). However, deciding whether two individuals are morphologically *similar enough* to be the same species is necessarily a subjective judgment. In contrast, cladistics analysis, a relatively new method for classifying based on genetic similarity and evolutionary relationships, is theoretically unambiguous because actual patterns of descent determine each organism's position in the scheme. Understanding the evolutionary relations of a group clearly determines how the organisms in the group should be classified (Boyd & Silk, 2009, p. 111). Most taxonomists agree that cladistics is a useful method and that descent should be considered

when defining a species, but taxonomists "vehemently disagree about whether descent should be the *only* factor used to classify organisms" (Boyd & Silk, 2009, p. 110). Although classification based on cladistics may appear at first glance to be less subjective than classification based on morphology, the validity of genetic criteria is often debated (White et al., 2014, p. 34) and uncertainty in knowledge of genetic relationships renders cladistics quite ambiguous in some regards. For example, most indicators of genetic closeness indicate that chimpanzees are more closely related to humans than they are to gorillas, but some genetic tests indicate the opposite. Morphologically, taxonomists view chimps as more similar to gorillas than to humans (Boyd & Silk, 2009, p. 112). How, then, should chimps be classified?

The answer may depend on the purpose for the classification. Cladistics reflects "the *process* of evolutionary history" whereas traditional taxonomy reflects the "*outcome* of evolutionary history" (Wood, 2010, p. 8902). Choosing one method over another thus changes the terministic screen through which evolution is viewed. There is no one objective measure to prefer one method of classification to another. The naming becomes cultural and dependent on what is given more importance. Choosing one method of classification over another thus reveals a cultural attitude toward a subject (valuing products more than processes, for example). When scholars argue that one method of classification is preferable, they are attempting to persuade the reader to *value* one classification system over another.

Persuading an audience to have a certain value system sometimes involves drastically restructuring the reader's worldview. A careful rhetor knows that such restructuring is not easy. In *The Structure of Scientific Revolutions*, Thomas Kuhn (1996) described the moments in science in which paradigm shifts occur. Normal science advances a knowledge base, but revolutionary science changes established paradigms. Charles Darwin's *On the Origin of Species* has been identified again and again as the catalyst for such a scientific revolution (Berra, 2008, p. 1). However, as John Angus Campbell (2003) recognized, no idea can be intelligible unless the interlocutors share a "context of assumptions" (p. 203). The context of assumptions constitutes a perceptual frame, which must always be considered in tandem with the current consensus when advancing an argument. If a scientific finding appears to contradict the

established body of knowledge, one must still, somehow, align the finding with *something* that is accepted. Ziman (1968) described the paradoxical nature of a scientific revolution—to change the consensus, first, the rhetor must demonstrate understanding and acceptance of the consensus (p. 64). Aligning one's views with the audience's views is a basic requirement of argumentation: a person will be persuaded only insofar as the rhetor "can talk his [or her] language by speech, gesture, tonality, order, image, attitude, idea, *identifying*" (Burke, 1950, p. 55) with the audience.

Although "the revolutionary" is perhaps the most well-known representation of Darwin, Darwin did use language as a way to align his ideas with his audience's already-established views. In *Origin,* he drew heavily on language from natural theology (Campbell, 2003, p. 221; Moore, 1997, p. 112), which was popular at the time Darwin was writing. Other science writers draw on popular notions and ideas all the time—without doing so, revolutionary ideas would not be accepted.

The notion of Neandertals as being the same species as us is still revolutionary. The present study does not attempt to weigh in on the debate of whether Neandertals are *H. sapiens* or not. (Such an argument is better left to the scholars who study Neandertal remains and evolution.) Rather, I take a closer look at what attitudes are being conveyed about Neandertals and what *degree* of humanness they are granted. Specifically, this paper asks *how* modern humans and Neandertals are rhetorically associated and disassociated from one another, and how that association/dissociation is shifting or has shifted. Julia Drell's (2000) paper is similar to my own in that it explored the ways Neandertals have been conceptualized as Same or Other, but her study explored the changing historical views of Neandertals within paleoanthropology, visual representation, and literary fiction. The present paper differs in that it focuses on one text as a way to flush out more of the qualitative and interacting attitudes toward Neandertals. However, because I look at two editions of the same text, this study still shows how our views of Neandertals are evolving. This study adds to Drell's in that it will not just determine *what* ideas are being conveyed about Neandertals, but also *how* those ideas are negotiated in a scientific context of debate and uncertainty. In sum, this study creates a more complex picture

of how Neandertals are depicted as Same or Other by demonstrating how one popular writer in anthropology balances the "old" view of human uniqueness and a "new" revolutionary view that connects us more to Neandertals. Darwin certainly upset the common notion of human uniqueness with the publication of *Origin*, but the narrative of human uniqueness was not destroyed overnight.

In what follows, I first outline the history of modern human and Neandertal classifications and interpretations and the relevant rhetorical theory in order to place my own findings within a larger context. Next, I describe my method for exploring the ways in which Neandertals are rhetorically connected to or disconnected from anatomically modern humans. I then present my findings along with my analysis and discussion of those findings. My analysis, while contextualized by a historical understanding of how Neandertals have been classified, is largely based on the current debates and cultural views of Neandertals along with rhetorical theory. Finally, I articulate how the rhetorical landscape of Neandertals description has changed and how writers can use rhetorical methods to continue that change. I also explore how the rhetoric foreshadows a relatively new move toward heightened connection between Neandertals and anatomically modern humans.

HISTORY OF MODERN HUMAN AND NEANDERTAL CLASSIFICATIONS

Carl Linnaeus laid the groundwork for species classification with the publication of *Systema Natura* in 1737. Linnaeus's method, referred to as binomial nomenclature or traditional taxonomy, is still in use today and is based on observed morphological traits. Linnaeus classified individuals able to produce viable offspring with one another as belonging to the same species; species were then grouped in genera, and so on. Linnaeus's taxonomy was the first logical system to classify the world's living organisms. Because natural history was popular in the eighteenth century, Linnaeus's classification system was easily accepted (Trinkaus & Shipman, 1992, pp. 10–11). However, there was at least one aspect of the taxonomic system that was controversial: the placement of humans within the system under the order Primates. This move was controversial because it went against the contemporary thought that humans "should be considered unique and separate from the rest of the animal kingdom" (Jurmain, Kilgore, & Trevathan, 2011, p. 31). Thus, many people rejected the classification. Georges Cuvier and Johann Blumenbach[1], for example, granted humans a higher degree of separateness from the rest of the animals by placing them in their own order, citing upright posture and mental capacities as defining traits (Boyd & Silk, 2009, p. 117). In the mid-1800s, Darwin argued against this common way to view humans by citing Huxley, who claimed there is "no justification for placing man in a distinct order" (qtd. in Darwin, 1871, p. 116). Humans have since been classified in the order Primates.

In addition to shifts in their order, *Homo sapiens* have seen shifts in their taxonomic family. Into the 1980's, the term "hominid" referred only to species within the human evolutionary lineage. As a way to more accurately represent *Homo sapiens*'s close genetic relationship with the other great apes, a new classification system places humans and all of the African apes within the family "hominid." The family is divided into the sub-families pan, gorilla, and hominin, with hominin now referencing the specific species within the human evolutionary lineage. This shift in our taxonomic categorization has caused confusion with the

[1] Cuvier and Blumenbach also viewed Caucasians to be a species separate from other races.

terms being used incorrectly or interchangeably, but there is a general move to accept the new terms and educate the public about their uses. In 2001, for instance, *National Geographic* printed a story using the new term "hominin" and "subsequently received several hundred e-mails complaining about the poor editorial work of the staff that had clearly erred by replacing a 'd' with an 'n'" (Berger, 2001). *National Geographic* defended the decision, claiming the term "hominin" was "technically more correct" and that "in the long run, hominin is likely to win out against the term hominid. It is more precise and recognizes the biological reality that moves beyond physical morphology" (Berger, 2001). Likewise, in 2006, Simon Underdown (2006) wrote to the prestigious publication *Nature* to advocate for the new terms.

Although *H. sapiens* now share the same order and family with other species, they are still the only surviving member of the genus *Homo*. Many scholars comfortably claim that AMHs are qualitatively different and unique from other living species. Of course, every species is unique from other species, but human uniqueness is defined as being *more* unique than other types of between-species uniqueness. In the textbook *Introduction to Physical Anthropology*, for example, Jurmain, Kilgore, and Trevathan (2011) are almost defensive in their clarification of human uniqueness. Under the heading "The Human Connection," the authors describe how humans are genetically, anatomically, and behaviorally connected to other living species, but the section ends by describing the limitations of the connection: "However," the authors write, "human beings are unquestionably unique regarding one highly significant characteristic, and that is intellect" (Jurmain et al., 2011, p. 6). The section is followed by one on biocultural evolution, which is also used to define humans as unique.

Culture and behavior may be used to define humans as qualitatively different than other *living* species, but human uniqueness becomes more difficult to defend when comparing modern humans with *extinct* species (Moritz, 2012), such as Neandertals. The disagreement on how to classify Neandertals is partly due to differences in defining a species. At least 24 different species concepts currently exist (Neubauer, 2014), and the great number is partly because different disciplines have different aims and study different topics; the species concept used to study bacteria may not be the most useful lens to use when studying human remains.

The most widely accepted way to view Neandertals is as a distinct species—this lens tends to stress the morphological differences between AMHs and Neandertals. This view aligns with the most accepted way to view humanity's origins: through the Out-of-Africa model (Villa & Roebroeks, 2014, p. 1), which hypothesizes that anatomically modern humans originated in Africa before spreading to Asia and Europe. The other competing lens for viewing Neandertals focuses more on the genetic relationships between AMHs and Neandertals, considers Neandertals to be *Homo sapiens*, and aligns with the Multiregional Continuity model for humanity's origins, which hypothesizes that anatomically modern humans evolved regionally.

Terministic Screens

The Out-of-Africa and the Multiregional Continuity models, and their corresponding classifications of Neandertals, are different terministic screens. "Terministic screen" is a term that Burke (1966) uses to describe the way language affects "the nature of our observations, in the sense that the terms direct the *at*tention to one field rather than to another" (Burke, 1966, p. 46). Norwood Hanson describes how the same evidence—in this instance, Neanderthal remains— can lead to different views. A person who argues for Neanderthals as a sub-species of *Home sapiens* would share a "common visual experience" (Hanson, 1958, p. 7) with a person who argues for Neanderthals to be classified as a separate species, meaning the two people would share the same retinal reaction to the remains. Because observation is theory-laden, however, the two people could still see the remains differently. Hanson would not argue that the two people first see and then lay interpretations on top of what is seen. The interpretation is embedded within the observation, and so two people can look at the same phenomena and *see,* not just interpret, differently.

What is seen within an observation is dependent upon a person's "corpus of . . . knowledge" (Hanson, 1958, p. 20). For example, an observer may see a bird and simultaneously "see that it will not suddenly do vertical snap rolls" (Hanson, 1958, p. 21). "Seeing that" is how prior knowledge affects what one sees. People used to "see that" humans were unique and separate from other species, which was what led to humanity's classification in a separate

order. It was not until Darwin, with all of his prior knowledge from studying nature, that people could "see that" *Homo sapiens* should be classified in the order Primates. Likewise, it was not until we started studying genetic relationships that anybody "saw that" humans should share the same family as other species. Although genetic evidence may have overturned the notion that humanity exists in a unique and separate family, genetic evidence has not been able to overturn the notion that we exist as a unique and separate species. The lens of "seeing that" anatomically modern humans are unique, and that Neandertals are "different" or "other," has a long history.

Historical Interpretations of Neandertals

The first *Homo neanderthalensis* remains were discovered in 1829 and were initially interpreted as *Homo sapiens*, the clear anatomical differences being dismissed as aberrations—the remains did not belong to a *normal* human. The same interpretation was applied the second time Neandertal remains were discovered in 1848 (Dunsworth, 2007, p. 8). The 1848 discovery was so inconsequential that the only mention of it at the time was in the minutes for the Gibraltar Scientific Society; the secretary was said to have "presented a human skull from Forbes' Quarry, North Front" (qtd. in Trinkaus & Shipman, 1992, p. 45). In 1856, men working on a quarry in Neander Valley, Germany, discovered more remains, which were eventually passed to the hands of John Fuhlrott. Fuhlrott sought out Hermann Schaaffhausen, the professor of anatomy at a nearby university, to help interpret the remains. The two were the first to classify Neandertal remains as belonging to a non-human, non-aberrant species.

The nineteenth-century scientific community did not accept Fuhlortt and Schaaffhausen's interpretations of the remains. The distinguished pathologist Rudolf Virchow greatly influenced the scientific rejection of Neandertal as an archaic human (Trinkaus & Shipman, 1992), and Virchow's influence was possible partly because his views coalesced with the popular convictions of the time (Drell, 2000, p. 2). For the people in the nineteenth century to accept Neandertals as a distinct species, they would have had to accept that the human lineage was malleable and that non-human hominin species existed so recently ("Anthropology

talk: Dr. Dean Falk, on fossil 'hobbits'" [Abstract], 2013). Thus, the remains were regarded as pathological because species were considered immutable and "in that they were unlike modern humans: they represented a deviation from humanness" (Trinkaus & Shipman, 1992, p. 59). The idea of species mutability was *gaining* traction at the time of the Neander Valley discovery in 1856, but resistance to the idea was widespread.

Three years after the discovery in Neander Valley, Charles Darwin published his highly influential *On the Origin of Species*, which opened many possibilities for interpreting the Neander Valley remains. In 1863, Darwin's "bulldog" Thomas Huxley classified the remains as belonging to a sub-species of human (White et al., 2014, p. 32), but Huxley's classification was not commonly accepted. After *Origin,* the most widely held view came to be that the Neandertal remains represented a "missing link" between African apes and AMHs, but not a link to a *direct* ancestor. Rather, the Neandertals were mostly viewed as an evolutionary offshoot, a dead-end of a *different* species (Howell, 1957, pp. 330–331). Ernst Haeckel suggested naming the remains *Homo stupidus*, but William King's earlier naming and classification of the remains as *Homo Neanderthalensis*[2] is what stuck (Wolpoff & Caspari, 2007, p. 271). By 1864, the idea that the Neander Valley remains belonged to a non-human, non-aberrant species called *Homo Neanderthalensis* was established (Dunsworth, 2007, p. 8).

In the years to come, the designation *Homo Neanderthalensis* was applied to many other remains that we consider distinct from Neandertals today. For example, the Rhodesian fossils, which are now commonly classified as either *Homo rhodesiensis* or *Homo heidelbergensis*, were originally grouped with Neandertals. Around the time of World War II, however, researchers were starting more often to consider fossils within the environmental and climatic contexts in which they were found, partly due to an increasing number of fossil discoveries. The 1960s were especially favorable for excavations (Condemi, 2011, p. 12).

In addition to their classification as a distinct species, Neandertals were marked as different from humans in their behavior. However, Solecki, in the 1971 publication of *Shanidar,*

[2] King (1864) would later change his mind and view the Neandertal remains as so different from AMH as to justify classification in a different genus, not just species.

The First Flower People, described a likely Neanderthal burial site, a description which helped usher in a scientific shift in how to view Neanderthals. Around this time, "focus of Neanderthal studies shifted from the behavioral pre-Sapiens to the anatomical pre-Sapiens" (Drell, 2000, p. 16). In other words, Neandertals became much more scientifically Same, but only in terms of behavior, not morphology. Also in the 1970s and the early 1980s, scholars began placing Neandertal studies "in a broader population framework" by analyzing "variation among modern human populations" (Condemi, 2011, p. 12). These changes in the 1970s coincided with the classification of Neandertals as a sub-species of humans, *Homo sapiens neanderthalensis*. That is not to say that the classification was necessarily agreed upon as a consensus, but the view of Neandertals in the 1970s did take on a more connective *quality*.

DNA Studies

In the 1980's, many researchers continued to believe that Neandertals had directly evolved into AMHs (Villa & Roebroeks, 2014, p. 1). However, since most of the studies were based on morphology, disagreement was (and is) common. Morphological studies led some researchers to claim that Neandertals contributed some of their genes to AMH populations, other scholars to argue that Neandertals were the direct ancestors of Europeans, and other scholars to argue that Neandertals were an evolutionary off-shoot that did not contribute any genes to AMH (Green et al., 2010, p. 710). This last argument, which originally gained popularity in 1864 after Darwin published *Origin*, gained further support through studies conducted in the late 80's and early-to-mid 90's which analyzed not Neandertal morphology, but DNA sequences from present-day humans (Krings et al., 1997, p. 19). By the late 1980s, Neandertals were again classified as a distinct species and the "name *Homo neanderthalensis* was reintroduced" (Condemi, 2011, pp. 12–13).

However, the studies that analyzed human DNA as a method to investigate gene flow between AMH and Neandertals had their validity questioned and were criticized for relying on assumptions, such the omission of selection (Krings et al., 1997, p. 19). As a response to this criticism, in 1997, Krings et al. published the first study to analyze directly DNA sequences

from Neandertal remains. Krings et al.'s study used 370 base pairs (bp) of the DNA inherited only via the mother, mitochondrial DNA (mtDNA). Today, 370 bp and mtDNA in general are acknowledged as very small parts of the hominid genome but nevertheless "represented a major breakthrough in ancient DNA research" (Hofreiter, 2011, p. 1). The conclusions drawn by Kring et al. (1997) supported the notion that Neandertals contributed no genes to AMHs, but subsequent studies using mtDNA led other researchers to conclude that Neandertals contributed up to as much as 25% to the modern human gene pool. As the years progressed, the main problem with using mtDNA analysis as a method to investigate Neandertal and modern human relations became more apparent: in addition to being inherited only through the female lineage, mtDNA "represents a mere 0.0005% of a complete hominid genome" (Hofreiter, 2011, p. 2).

DNA sequencing technology has since progressed from sequencing mtDNA to sequencing the nuclear genome. While mtDNA comprises 16,569 nucleotides of DNA (the "building blocks" of DNA), the nuclear genome comprises about 3.2 billion nucleotides of DNA (Brown, 2002, p. 4). Additionally, while mtDNA can only be traced through the mother's lineage, nuclear DNA is inherited and can thus be traced through both the mother's and father's lineages. Thus, studies on the nuclear genome provide a clearer picture of Neandertals' relationship to AMHs (Green et al., 2010, p. 710). The first Neandertal nuclear DNA sequences were reported in 2006 by two separate teams, one led by Svante Pääbo (Green et al., 2006) and the other led by Edward Rubin (Noonan et al., 2006). Although the research teams were studying the same Neandertal extract, they came to differing conclusions: Rubin's team reported no evidence for gene flow between Neandertals and modern humans, and Pääbo's team found evidence for substantial gene flow. The two studies also differed in methodology, with Pääbo able to obtain a larger amount of DNA sequence data than Rubin: about 1 million bp of Neandertal DNA sequence compared to 60,000 bp, respectively (Hofreiter, 2011, p. 2). Although Pääbo's team's methodology was viewed as better for obtaining the Neandertal genome, their data was unreliable. Four years after their 2006 study, they conceded that between 11 and 40% of their data sets had been contaminated with modern human DNA (Green

et al., 2010, p. 711). In a 2010 study, Svante Pääbo's team improved their methodology to significantly reduce the DNA contamination and have since argued convincingly that some degree of interbreeding occurred between AMHs and Neandertals

Current Views of Neandertals

It is now generally accepted that Neandertals and AMHs interbred, but such acceptance has not led to a consensus regarding how to classify Neandertals. In a larger context, it must be acknowledged that some other species interbreed but are still considered distinct from one another by a majority of the scientific community, so interbreeding does not have the persuasive power to overcome other speculations about the genome that please what Hofreiter calls "human vanity" (p. 8). Hofreiter concludes, "in the end it remains a philosophical question whether the two human forms are assigned to the same or different species or subspecies, which is, moreover, largely irrelevant for understanding the process of human evolution" (pp. 7-8).

Hofreiter's attitude is reminiscent of Leakey's (1963) concerning the arbitrary nature of species classification, which not only ignores the social reality of definitions, but also ignores the *effects* of those definitions. For example, Villa and Roebroeks (2014) point out that the disappearance of Neandertals is "routinely explained in terms of the 'superiority' of modern humans" based on archeological evidence. However, after reviewing the current archaeological evidence, Villa and Roebroeks write that they found "no data in support of the supposed technological, social and cognitive inferiority of Neandertals compared to their AMH contemporaries" (7). The researchers conclude that the demise of Neandertals was more complex than just declaring them cognitively inferior and that "archaeologists' characterizations of Neandertals as cognitively inferior to modern humans have created an interpretive framework within which subtle biological differences between Neandertals and modern humans tend to be overinterpreted" (Villa & Roebroeks, 2014, p. 7). The old worldview, Villa and Roebrokes warn, is causing researchers to "see that" humans are unique and superior,

which might cause an unwarranted exaggeration concerning the differences between AMHs and Neandertals.

Researchers who study Neandertal remains surely "see" as researchers in a unique way that is influenced by their discipline, but they are influenced by culture, just as anybody else is. In our culture's common parlance, the word "Neandertal" is derogatory—it is an insult used to a degrade a person's intelligence or manners. For example, a news article published on May 10, 2014 (on the online version of *The Philadelphia Inquirer*), although stressing the similarities between Neanderthals and humans, still appealed to popular ideas concerning Neanderthals by beginning with an apology: "No offense, but your ancestors probably were no brighter than a Neanderthal" (Dunham, 2014). This cultural insult—to call someone a "Neandertal"—may be activated in a reader's mind even when reading about scientific understandings of Neandertals. Research by Patrizia Tabossi (1988) has found that uttering a word can activate associations a person has with that word. Even if somebody is discussing "Neandertal" to mean "a member of the genus *Homo*," the meaning "idiot" may be activated. Tabossi tells us, "Context intervenes in selecting the appropriate interpretations of the lexical item only subsequently" (p. 324). Tabossi also notes that a word's dominant meaning does not prevent or undermine the activation of its other possible meanings (p. 325).

Additionally, researchers, even if not personally agreeing with the worldview of the general populace, must appeal to that worldview when writing to more generalized audiences. Thus, any writing about Neandertals intended for non-specialized audiences is expected to appeal to common ideas about Neandertals at the same time it negotiates a more nuanced identification with Neandertals rather than purely "Other" or different. Even before the first nuclear genome studies, Julia Drell (2000) noted a tendency for researchers to represent Neandertals as "same but other" (20). It remains to be seen exactly *how* Neandertals are associated and dissociated form anatomically modern humans. Looking closer at the language used to define and describe Neandertals provides a qualitative picture of the ways Neandertals are revolutionizing *and* preserving the common worldview of humans as unique.

RHETORICAL ANALYSIS AS METHOD FOR ANALYSIS

In order to explore how Neandertals are used to define humanness and how the view of Neandertals is changing, I examined the language of Neandertal description and definition in the second and third editions of the textbook *Our Origins* by Clark Spencer Larsen. My two main questions were centered on identification:

- How are humans and Neandertals rhetorically associated/connected and disassociated/disconnected from one another?
- How has the popular cultural attitude of human uniqueness been preserved or undermined within the rhetoric used to describe and define Neandertals?

The cultural valuation of human uniqueness was expected to appear in the language to describe Neandertals because some interpretations of Neandertals can be read as direct threats to modern humanity's separateness from nature. In addition, assumptions about human uniqueness are what led to the historical interpretations of Neandertals as aberrant archaic humans, so modern interpretations and representations of Neandertals may show traces of this same cultural valuation. However, language was also expected to appear that attempts to restructure the reader's thought processes in subtle ways.

Physical Anthropology as a Site of Heightened Human Uniqueness

While it can be useful to compare how different fields define Neandertals (or other species), differences in species concepts between fields are likely due to their differing purposes of classification. I look specifically at physical anthropology's language and definitions because physical anthropology is explicitly concerned with what it means to be human. Thus, the field uses Neandertal remains for the purpose of understanding modern humans and will yield insights into how the rhetoric surrounding Neandertals is used to separate or connect Us and Them. Admittedly, physical anthropology seems to devalue Neandertals from the outset: "if a fact is appraised in terms of its consequences, one seems to be regarding it as a means to these consequences and, by that very fact, to be devaluing it"

(Perelman & Olbrechts-Tyteca, 1969, p. 433). Because the interest in Neanderthals is generally connected to an interest in understanding modern humans, Neanderthals are subsumed under us. Physical anthropology, therefore, may be more aligned than other disciplines with cultural conceptions of humans as unique. Thus, any departure from the consensus may be regarded as modest when compared with other disciplines.

Teaching Tacit Knowledge, Changing Cultural Consensus: Justification for Analyzing a Textbook

In order to analyze how the narrative of human uniqueness is reinforced or undermined within physical anthropology, a widely used textbook was chosen for analysis. Although textbooks are not meant for the general public, they are still consumed by a diverse audience and are thus powerful rhetorical tools for transmitting ideas to a large number of people. Textbooks contain the explicitly accepted knowledge of a field, and they may also contain traces of what Polanyi (1958) calls tacit knowledge. Tacit knowledge is personal knowledge that one cannot always explain or even concentrate on. It is generally informally taught from master to apprentice. In physical anthropology, we might consider attitudes about evolution as a form of tacit knowledge. It is often attitudes that cause someone to study evolution in the first place. Michael Ruse (1996) explicitly studied attitudes of evolutionary scientists by analyzing writings of and conversations with the top evolutionary scientists from the last 20 years. He found that they all, "almost without exception" (Lessl, 2012, p. 13), mix evolutionary theory with evolutionism, a term Ruse uses "to describe any nonscientific application of the ideas of evolutionary science" (Lessl, 2012, p. 13). Ruse thinks the tendency to mix evolutionary theory and evolutionism might help explain why evolutionary scientists had trouble gaining respect in the past, but he ultimately presents the tendency as a matter of personal preference that, in the grand scheme, is not very significant (Ruse, 1996, pp. 526–39).

Ruse (1996) presents the tacit knowledge of evolutionary scientists as unimportant since peer review helps to filter out subjective attitudes, but Thomas Lessl (2012) thinks such a dismissal is a mistake on Ruse's part. Popular scientific publications, Lessl claims, have a great

rhetorical force and do not separate theory from the sentiments about the theory. Popular textbooks therefore mix explicit, accepted knowledge with tacit knowledge.

While popular scientific publications are sure to reveal the tacit knowledge and attitudes physical anthropologists exhibit about Neandertals, studying textbooks as opposed to a text meant for a wider audience can expose the more subtle ways that language operates to encode attitudes. Although most physical anthropologists are sure to be aware of their own attitudes regarding Neandertals, some of the language choices may not even be conscious. *All* language, no matter for whom it is written, may have some remnants of the author's subjective and cultural worldview. Scientific writing is often presented as objective, but it is impossible to have a pure language void of cultural valuations; "we must use terministic screens, since we can't say anything without the use of terms; whatever the terms we use, they necessarily constitute a corresponding kind of screen; and any such screen necessarily directs the attention to one field rather than another" (Burke, 1966, p. 50). Any cultural valuations that come across in a physical anthropologist's writings about Neandertals may function as a subtle way to teach the student the tacit knowledge about Neandertals. Learning the explicit knowledge concerning Neandertals is very important, but entering into and mastering a discipline also involves learning implicit lessons, such as the common attitude in the field toward a particular subject. This tacit knowledge is part of the "corpus of [physical anthropologists'] knowledge" (Hanson, 1958, p. 20) that affects how they see Neandertal remains.

Because physical anthropologists share prior knowledge, they will "see that" interpretations of Neandertal remains carry certain meanings. There will, of course, still be differences in what is seen, but the differences will not be as drastic as what somebody from outside the discipline sees because the organization of seeing for two physical anthropologists will be more similar than the organization of seeing for a specialist and non-specialist. Therefore, the rhetor has less reason to persuade other like-minded scientists to "see" in a certain way—the seeing is taken, to a certain extent, as a given. What is agreed upon that is seen will be the consensus in the scientific community. Texts written for non-specialized audiences will contain more rhetorical moves that attempt to change the entire "organization of

what one sees" (Hanson, 1958, p. 12) since non-specialized audiences must be convinced, first, to accept the consensus within physical anthropology. The student using a physical anthropology textbook may be thought of as an apprentice and the established writer the master; by emulating the master, "the apprentice unconsciously picks up the rules of the art, including those which are not explicitly known to the master him [or her]self" (Polanyi, 1958, p. 53). Because rhetoric can subtly influence the student's attitude toward the subject, it works as a mode of action, not just a way to communicate information (Burke, 1966, p. 54).

Larsen's *Our Origins*

The specific physical anthropology text used for analysis is *Our Origins* by Clark Spencer Larsen. It was chosen based on Amazon's list of bestsellers in physical anthropology. A text by one author admittedly limits the generalizations that are possible from this study, but limiting the study was necessary in order to allow a thorough qualitative analysis of how Neandertals are understood, discussed, and defined. However, the specific textbook chosen uses rhetorical moves that are common in the discipline—thus the analysis does offer *some* generalizations about the rhetoric of physical anthropology. For example, even the name "Neandertal" has a rhetorical effect, and use of the name is certainty not limited to one text.

Additionally, because the text was chosen for analysis based on the bestsellers from Amazon, America's top bookseller (Habash, 2013), it can be concluded that the text is accepted within the discipline. Amazon creates its bestseller lists based on sales, and the lists are updated hourly. During the first two weeks of January 2014, again in late December of 2014, and on three separate days in January 2015 (the 7th, the 16th, and the 21st), I tracked the bestsellers on the Amazon physical anthropology list. Because most American university students would have been in between semesters during the timeframes I was checking the list, it is likely that many students would have been buying college textbooks from Amazon during this timeframe. For all of the dates checked, the textbook chosen, *Our Origins: Discovering Physical Anthropology* by Clark Spencer Larsen, was in the top ten bestsellers.

In order to provide insight into how the discipline has changed and is still changing, two different editions of the text were analyzed: the second and the third editions. Both editions of the text spent time on Amazon's list of bestsellers, a testament to this particular text's popularity. On December 28, 2014, the third edition of the text was number one on the bestsellers list. On January 7, January 16, and January 21 of 2015, the third edition of the text was still number one on the physical anthropology bestseller list. On the same three dates in January of 2015, the second edition of the book, which Amazon listed as published February 16, 2012, appeared on the bestseller list at number two. Another version of the second edition, which Amazon listed as published December 15, 2010 (and with a different cover than the other second edition), appeared at number seven on the list on all three of the January 2015 dates. The reason different editions and versions of the same text appeared on Amazon's bestseller list may be because some instructors were using an old edition or version of the text and it may also be because some students were buying older editions in order to save money. For example, on January 7, 2015, Amazon listed the third edition's price for used copies starting at $106, while the 2010 version of the second edition's price for used copies started at $8.09.

In sum, the physical anthropology text written by Clark Spencer Larsen is widely used in multiple editions and multiple copies. This particular analysis used the second edition (a version published in 2011) for the main analysis—unless stated otherwise, all reported page numbers and uses of the singular "text" are for this edition and version of the text. When analyzing an element from the third edition (published in 2014), page numbers are specified as specifically for the third edition in citations. However, it should be noted that the second and third editions do not significantly differ—the specific differences are discussed in the results and discussion section of this paper.

Rhetorical Analysis as Tool

In order to analyze the tacit knowledge and "way of seeing" that is transmitted through the text, rhetorical analysis is an appropriate method because it is through rhetoric that tacit

knowledge and attitudes can be conveyed. For this purpose, I draw from Perelman and Olbrechts-Tyteca's (1969) notions of disconnection and dissociation, extending them also to connection and association. Perelman and Olbrechts-Tyteca describe disconnection as occurring when two elements are described independently even though they have been connected—in the rhetor's view, improperly—in the past. Dissociation is similar to disconnection in that it also results in independent descriptions of two elements, but dissociation is more pronounced than disconnection: it is "no more a question of breaking the links that join independent elements, but of modifying the very structure of those elements" (Perelman & Olbrechts-Tyteca, 1969, p. 412). With a structural change through dissociation, connecting the elements in the future becomes more difficult. Likewise, connection is about connecting elements that were previously disconnected, and association is about restructuring thoughts. The goal in dissociation is to modify the elements' structures to make it impossible to connect the elements in the future, and the goal of association is to modify the elements' structures to make it impossible to disconnect the elements in the future. Rhetorical association/dissociation needs to be differentiated from connection/disconnection because the former is evidence of restructuring the organization of "seeing that" which Hanson (1958) describes, while the latter is not necessarily.

Coding of the Text

In order to see how the text attempted to reorganize the audience's way of seeing, I made special note of how Neandertals were classified: as Same (*Homo sapiens neanderthalensis)* or as Other (*Homo neanderthalensis*). The classification is essentially the structural context the text operates within—it is how Neandertals are associated with or dissociated from AMHs. After noting the context, I coded the text's explicit discussion of Neandertals, which reveals the connective or disconnective moves made in the text. The majority of my analysis is about the text's connective and disconnective moves, but those rhetorical moves build toward an understanding of the larger (dis)associative moves.

To code for connections and disconnections, I first extracted every paragraph that contained the word "Neandertal" and created an electronic document with only those paragraphs. On the first read of those paragraphs, I looked for how that structural context was either reinforced or undermined by placing each paragraph broadly into the categories of "neutral/both connections and disconnection," "connection," or "disconnection." These overall categories were about the paragraphs as whole units—some paragraphs had both internal connections and disconnections but were still placed in one category or the other based on the overall message of the paragraph. However, any internal inconsistencies in the paragraph were also noted.

Next, I coded the internal elements of the paragraphs. This step was broken down into three sub-steps. First, I coded the paragraphs inductively, not knowing what categories would arise. Although unaware as to what specific categories would emerge at this stage, I still placed the emerging categories into the broader "neutral/both connection and disconnection," "connection," or "disconnection" categories. After going through the paragraphs in this way, I read through all of the codes that emerged in order to find patterns. Some of the more specific categories I combined—"burial of the dead" and "use of tools," for example, were combined under the larger category of "behavior" (although the sub-categories were still noted). Other categories had to be divided further. For example, in my original codes, I had noted "use of the term *Homo sapiens*." However, *Homo sapiens* was not used in all the paragraphs in the same way—in some paragraphs, *Homo sapiens* referred directly to Neandertals, but in others, the term was applied to anatomically modern humans as a way to compare Us and Them. Thus, I had to go back through the coded paragraphs and differentiate between these uses of the term.

The categories that emerged at this point included both the content of the text (explicit connection or discussion) as well as the concrete language of the text (more implicit connection or disconnection). After deciding the codes based on these emergent categories, I went through every paragraph again in order to code for anything that I had missed on the first read. Finally, as a precaution, I used the "control find" feature in my electronic document to search for the specific words I was coding for. I am thus able to say with certainty, for example, that I indeed

coded for every use of the word “tool” that appeared in a paragraph with the word “Neandertal.” Categories that emerged through my coding are provided in the Appendix.

Analysis of Codes and Data

After determining codes, I counted the most salient instances of each. I did this both at the paragraph level and the sentence level. Knowing what categories were weighted the most, I then took the time to look more qualitatively at what was happening within each category and in what ways the categories and codes interacted with one another. Within the results section, I offer a brief analysis of these results alongside the data.

Finally, I compared the second edition of the text to the third. First, I figured out if there were any structural changes between the texts in how Neandertals were viewed—i.e., I noted if Neandertals were associated with or dissociated from AMHs through their classification as a species and if that classification was the same as the second edition. If the species classification system changed between editions, the change would be evidence of a shift in a paradigm, in the “way of seeing” Neandertals, ourselves, and all species. Next, I went through each paragraph and compared the language, noting any changes to how Neandertals are connected to or disconnected from AMHs. After noting the changes made to the Neandertal paragraphs in the third edition of the text, I used the same codes from the second edition of the book to note how the presentation of Neandertals has subtly shifted over a small amount of time—between 2011 and 2014.

RESULTS AND DISCUSSION OF RHETORICALLY ANALYZING CLARK LARSEN'S *OUR ORIGINS*

Analysis of Clark Larsen's *Our Origins* revealed rhetorical tension within the discussion of Neandertals as similar to or different from AMHs. In many ways, Larsen's text is neutral, not explicitly favoring either view of Neandertals. In the text's second edition, the appearance of neutrality can be found within Larsen's choice of classification models, use of disciplinary language, and relatively equal weighing of connections and disconnections. However, much of the text's rhetoric moved readers to be more accepting of the connections between AMHs and Neandertals. The move toward connection can be seen in structural elements of the text and its use of language of positivity, certainty and probability, conjecture, and doubt. When it comes to Neandertals, the connective rhetoric of Larsen's second edition of the text debates its surface neutrality, but the debate is hidden. Much of the debate surrounding Neandertals is implicit in the text, a move which shows an understanding of the consensus—a necessary move in order to change that consensus. In the third edition of the text, *how* the consensus has changed is apparent—the text actually changes how it classifies Neandertals from one edition to the next, a change that we begin to see in the second edition, but that is still subtly resisted in the third edition.

Analysis of Larsen's 2011 *Our Origins*: An In-Depth Rhetorical Analysis

Origin and Classification Models: Appearance of Neutrality

In the second edition of *Our Origins*, Larsen does not directly confront the "Neandertal debate" at all, perhaps due to genre constraints; delving into the arguments about Neandertal classification in an introductory textbook could detract from the text's main purpose of introducing students to the field of physical anthropology. However, evasiveness of the issue is also a rhetorically effective move to make the text appealing to both instructors who favor a view of Neandertals as Other *and* instructors who favor a view of Neandertals as Same. The text appears, at first glance, to be neutral on the question of how to classify Neandertals. Although not explicitly discussed, the text does *gesture* toward the Neandertal classification debate in its discussion of the competing models for human origins—the Out-of-Africa model, which

positions Neandertals as a species separate from *H. sapiens*, and the Multiregional model, which positions Neandertals as the same species as us (De Vos, 2009, p. 365). The text equally weighs both models, expanding on the evidence for or against each in chapter 12. Larsen writes:

> The fossil record and the genetic record indicate . . . that neither the Out-of-Africa model nor the Multiregional Continuity model adequately explains modern humans' origins. The Out-of-Africa model correctly accounts for the origin of modern human variation, but it incorrectly asserts that no gene flow occurred between Neandertals and modern *Homo sapiens.* The Multiregional Continuity model is not correct about modern *H. sapiens*' regional development. However, it is correct about gene flow and the notion that Neandertals have contributed to modern *H. sapiens*' gene pool. In other words, elements of both models explain the emergence and evolution of fully modern people worldwide in the Upper Pleistocene. (395)

Larsen then goes on to describe the Assimilation model, which is presented as combining the correct parts from both models. Thus, it appears in Larsen's text that some sort of middle ground has been reached concerning humanity's origins, which is a somewhat simplified version of the current discussion in the scientific community. Chris Stringer, whom Larsen cited as the main proponent of the Out-of-Africa model, has conceded that due to new discoveries from advances in DNA research, the Assimilation model may be appropriate, but he is still insistent on stressing "a strong African predominance" (Stringer, 2014, p. 249) within the Assimilation model. Thus, as opposed to advocating for the Assimilation model, Stringer pushes for the idea that "we are all out-of-Africanists who accept some multiregional contributions" (251). Essentially, Stringer advocates for anthropologists to "see that" the African origins of humanity are more *important* than the gene flow that occurred between AMHs and other populations, like the Neandertals. There may be "general agreement that modern humans originated in Africa" (Villa & Roebroeks, 2014, p. 1), but how much to stress the origin over possible gene flow is debatable. By choosing to offer a favorable view of the Assimilation model, Larsen appears objective, not taking a direct stance on if origins or gene flow is more important.

Larsen's discussion of the Out-of-Africa and Multiregional models, however, does reveal an *implicit* favoring of genetic similarity over our African origins. This implicit favoring of similarity is found in the structure of how Larsen presents the correctness of each model. Order of information changes what is stressed in a text; Williams and Bizup (2014) advise writers to put information that they want to stress toward the end of a sentence, and this same logic can also be applied at the paragraph level (and even at the level of the entire text)— the idea put last is stressed. In Larsen's text, the discussion about the Out-of-Africa model begins with how the model is correct and ends with how it is incorrect. The discussion about the Multiregional Continuity model is structurally presented the opposite—first, readers are informed of how the model fails and then are told how it succeeds (395). Thus, the Out-of-Africa model, which presents Neandertals as Other, has its failure stressed, and the Multiregional Continuity model, which presents Neandertals as Same, has its success stressed.

In addition to the text's favoring of the Assimilation model, the text's explicit favoring of anatomical classification also makes it appear unbiased even while the rhetoric points readers toward a favoring of connection to Neandertals. The author recognizes that "many anthropologists are shifting to genetic classification" (176), which is the classification system that generally "sees that" Neandertals are *Homo sapiens*. However, the text's focus on adaptation combined with the knowledge that "humans have taken a very different adaptive trajectory than apes" (176) leads to Larsen's justification for using anatomical, and not genetic, classification. Such a decision aligns with the disciplinary standards for the subject since morphology has most consistently been used to identify Neandertals (White et al., 2014, p. 33). Thus, using anatomical classification is a way to align the text with the current consensus, a consensus that tends to dissociate Neandertals and AMHs. However, in the consensus, the uniqueness of anatomically modern humans is presented as a given; our adaptation as "different" is assumed. That assumption is used to shape the classification of *all* species in the text. The paradigm of human uniqueness certainty is, as Villa and Roebroeks (2014) had warned, influencing interpretations of other species.

Because Larsen's text used anatomical classification, its use of the word "hominid" must be understood as more exclusive than when "hominid" is used within genetic classification systems. The older, anatomical use of the word refers only to species within the human evolutionary lineage while its newer, genetic use signals humans and all of the African apes. Thus, when Larsen refers to Neandertals as "hominids" in 12 paragraphs of the text, he excludes other living primates from the discussion. Larsen's use of the term "hominid" creates a greater connection between AMHs and Neandertals than the term would have had within a genetic classification system.

Naming of Neandertals

Although Larsen explicitly addresses the decision to use anatomical classification and how he uses the term "hominid," he never explicitly addresses the use of "*Homo sapien"* in relation to Neandertals. The text *does* make it clear that the Multiregional model views Neandertals as being *Homo sapiens* and that Multiregional is correct in its assertions about gene flow between the populations, but the intricacies of how to view the gene flow are not mentioned. Instead, the text presents Neandertals as the same species as us without clarification that doing so is debatable. This move actually contradicts the text's decision to use anatomical classification, but the text never addresses the contradiction. Additionally, choosing to classify Neandertals as *Homo sapiens* might be in violation of the common view. De Vos (2009) was confident enough to claim there was a "consensus that Neanderthal Man is another species." (p. 376). However, more recently, White, Gowlett, and Grove (2014, p. 32), citing De Vos, softened the claim by saying that there is a "preference" to classify Neandertals as a distinct species. Larsen's text ignores these debates even when it blatantly goes against the "preference," referring to Neandertals as *Homo sapiens* in 16 paragraphs. For example, in one paragraph, Larsen writes about "modern humans" meeting a member of "their species—the Neandertals" (395). The choice to call Neandertals *Homo sapiens* without comment occludes the contentious nature of the classification and, when considered in the larger conversation about Neandertals, favors similarities.

In addition to referring to Neandertals as *H. sapiens*, the text also calls Neandertals "human" in at least eight paragraphs and "people" (or "person") in at least five paragraphs.[3] The use of the terms "human" and "person" are technically correct whether or not Neandertals are viewed as the same species as us or a separate species from us. The term "person" is defined as "a human being" ("Person," n.d.), and the term "human" denotes "belonging to the species *Homo sapiens* or other (extinct) species of the genus *Homo*" ("Human," n.d.). However, because this text is introductory, the use of the terms "person" and "human" must be understood in a non-technical sense as well. Both terms are used in everyday language, and everyday language does not usually refer to extinct species from the genus *Homo*. Thus, the terms can reasonably be thought of as having heightened connective connotations than their denotations reveal, so when applied to Neandertals, a connection is implied.

Another definition of "human" relates to "the abilities or sphere of activity of human as opposed to supernatural beings; mundane, worldly; imperfect, fallible" ("Human," n.d.). This definition of human is much more humble than our more egotistical scientific name, which in its full-form includes our own sub-species classification as *Homo sapiens sapiens*. *Homo* translates from Latin as "man" and *sapiens* translates as "wise" or "intelligent" ("Homo sapiens," 2015), so our sub-species classification translates roughly as "wise, wise, man." The Neandertal scientific naming is *Homo sapiens neanderthalensis* (or, in classification systems with Neandertals as a separate species, simply *Homo neanderthalensis*), a named derived from Neander Vally in Germany, where the first remains to be interpreted as belonging to a distinct species were discovered. AMHs are imbued with wisdom while Neandertals are attached to a specific location—the naming signals our own importance and diminishes Neandertals'.

---

[3] Due to time constraints, I was unable to use the "control find" feature described in the methods section as a precautionary check for three words: people, person, and human. Although the numbers reported are accurate to the extent that they are certainly not *less* than what I have reported, there may have been relevant usages of the terms that I did not count. The term "human," for example, appears in so many contexts—not just in relation to Neandertals—that cross-checking for any missed instances would have involved sorting through many uses of the term that are not relevant for this study. When discussing these three terms, I have used the phrase "at least" to signal the specific limitation of my results. However, as *more* instances of the words I was unable to check would actually strengthen my conclusions, this limitation does not undermine the results of this study.

However, the term "human" is probably used more often in everyday speech than the term "*Homo sapiens*," and although "human" is not used to *always* denote the humbling idea of fallibility, fallibility is still associated with the word.[4] Such an association may be activated in a language user's mind, regardless of what meaning the writer or speaker intended (Tabossi, 1988). In relation to Larsen's text, the decision to refer to Neandertals as "human" not only connects them to us, but also *humbles* them *and* us through the word's associated definitions.

Associated definitions of the words "archaic" and "modern" also rhetorically shape the view of Neandertals. Larsen's text often differentiates Us and Them through these words—we are "modern *Homo sapiens*" and Neandertals are "archaic *Homo sapiens*." This rhetorical choice might have been made in order to relate to the audience; "modern" and "archaic" are words an introductory student would already be familiar with whereas sub-species classifications might be too detailed for an introductory text (and also too wordy, perhaps). The use of the terms also properly introduces the students to terminology since "archaic" and "modern" are used by physical anthropologists writing for more specialized audiences. Larsen gives the specialized definition of "modern" as "based on a series of distinctive anatomical characteristics that contrast with *archaic* characteristics found in earlier hominids. Modern people—people who essentially look like us—tend to have a high, vertical forehead, a round and tall skull, small browridges, a small face, small teeth, and a projecting chin" (358-359).

Although instructors who chose Larsen's text would already be aware of and the students using the text would be made aware of the specialized definition of "modern," the layman definition of "modern" may still be activated through the use of the term. In layman's terms, modern is defined as "being in existence at this time; current, present" ("Modern," n.d.). The layman definition of "archaic" might also be activated; it is defined as "marked by the

[4] The terms "Homo sapien" and "human" reveal that cultural tradition may not be entirely to blame for the paradigmatic view of ourselves as "unique and special"—the *scientific* naming of ourselves is actually much more egotistical than the common cultural naming of ourselves. This is perhaps related to the etymology of the words; "human" dates as far back as 1119 ("Human," n.d.) while "*Homo sapien"* was not used until 1802 ("Homo sapiens," 2015). Because this study's main focus is on what is currently happening with rhetoric in relation to AMHs and Neandertals, the historical trajectory of these words is outside the scope of this study.

characteristics of an earlier period; old-fashioned, primitive" ("Archaic," n.d.). The more common meanings of the words "modern" and "archaic" thus position AMHs as existing more recently than Neandertals, even though the populations co-existed for "at least several thousand years" (Larsen, 2011, p. 392). The very basic terminology thus undermines the temporal connection between Neandertals and AMHs. Furthermore, the close relationship between the words "archaic" and "primitive" proves problematic when considering some of the definitions of the word "primitive": "simple, unsophisticated, or crude things or people as a class . . . an uncivilized, unintelligent, or uncouth person" ("Primitive," n.d.). The cultural meaning of Neandertal as "idiot" is embedded within the scientific terminology.

The word "archaic" and its associated "primitive" also encode a scientifically old-fashioned, but culturally popular, way of thinking about evolution—as progressive.[5] Other definitions for "primitive" include "the earliest stages; the beginnings" and "a thing from which something else is derived" ("Primitive," n.d.). Evolution does not have any end goal, but the familiar illustration of the "march of progress" that features "a parade of ape-like hominids leading up to some . . . representation of the modern human form" (Lessl, 2007, p. 126) persists. The word "primitive" may not be used to define directly Neandertals, but some of its meaning lingers in the naming "archaic *Homo sapiens*."

Larsen, although certainly not responsible for this naming system, reproduces it: at least 37 paragraphs differentiate between Neandertals and some variant of "modern *H. sapiens*" or "modern humans." Additionally, the distinction between "modern" and "archaic" should inform the observation reported above that Neandertals are often referred to as being *H. sapiens*; although true that Neandertals are called *Homo sapiens* in 16 paragraphs, the word "archaic" was paired with "*Homo sapiens*" in all of those paragraphs. Thus, even when explicitly presented as being the Same species as us, Neandertals are Other because they are "archaic," a

[5] Evolution does not have a goal, so the notion of "progress" doesn't really make sense within the scheme; "It is tempting to see evolution as a grand progressive ladder with *Homo sapiens* emerging at the top. But evolution produces a tree, not a ladder — and we are just one of many twigs on the tree" ("Understanding Evolution," 2015).

word that in its jargonistic sense refers to anatomy but that also, through its more common usage, can signify primitiveness and all the baggage that comes with such an association.

Proportion of Connective to Disconnective Paragraphs

Although disciplinary terms and norms partly shape Larsen's text's presentation of Neandertals, the text still defies the historical presentation of Neandertals as Other and approaches a representation closer to what Julia Drell (2000) describes as "same but other" (20). In total, 41 paragraphs form an overall connection between modern humans and Neandertals, which is comparable to the 37 paragraphs that form an overall disconnection between the two groups (15 paragraphs are neutral). Although these numbers represent what paragraphs are doing overall in regards to connection and disconnection, the paragraphs do not *only* form connections and disconnections. Of the 41 connective paragraphs, 13 also mention some sort of disconnective information, although the disconnective information within those 13 paragraphs is not stressed enough to overcome the paragraphs' overall connective ties between AMHs and Neandertals. Of the 37 overall disconnective paragraphs, 10 also mention some sort of connective information, although the connective information within those 10 paragraphs is not stressed enough to overcome the paragraphs' overall disconnective ties (Table 1).

Table 1.

Proportion of Connective to Disconnective Paragraphs

Overall paragraph type	Sub-paragraph type	Number of paragraphs
Connective		40
	Connective with internal disconnections	13
Disconnective		37
	Disconnective with internal connections	10

Thus, not only is the text about as equally as likely to connect Neandertals and AMHs as it is to disconnect the groups, the text is also about as equally as likely to complicate the connective and disconnective paragraphs. The roughly equal split reflects the active debate on how to view Neandertals. Larsen's approach to equally weigh disconnection and connection would be a non-contentious approach to an issue that is not quite agreed upon.

Proportion of Topics: Morphology and Behavior

Although connective information is just as likely to appear as disconnective information in the second edition of the textbook, the text does not equally present certain topics in connective and disconnective frameworks. In total, 50 paragraphs mention Neandertal morphology, which is a large portion of the total 93 paragraphs that discuss Neandertals. In contrast, a total of 37 paragraphs discuss Neandertal behavior, which is still a large portion of the text, but not as large as the focus on morphology. Such an intense focus on morphology should be expected given that Larsen's text uses anatomical classification for species delineations. Within the two topic areas of morphology and behavior, connections and disconnections are further attached to certain sub-categories.

Neandertal morphology. Overall, 7 of the 50 morphology paragraphs are either neutral or both connective/disconnective, 16 are connective, and 27 are disconnective. This same pattern generally holds at the sentence level, with 13 paragraphs using morphology as either neutral information or for both connection and disconnection, 12 paragraphs using morphology as connective information, and 25 paragraphs using morphology as disconnective information (Table 2). The move to more often frame morphology as a difference between AMHs and Neandertals is not surprising—even the commonly used name "anatomically modern humans" differentiates us from Neandertals via morphology.

Table 2.

Neandertal Morphology as Compared to AMH Morphology

Level of Connection or Disconnection	Neandertal relation to AMHs	Number of paragraphs	Most Repeated Topics (in number of paragraphs)
Paragraph	Neutral or Both	7	
	Connective	16	
	Disconnective	27	
Sentence	Neutral or Both	13	
	Connective	12	Vagueness (5) Behavior (7)
	Disconnective	25	Adaptation (6) Pathology (6) Skull morphology (13)

Within the discussion of how AMHs and Neandertals morphologically differ, adaptation is mentioned in six separate paragraphs. Again, this was to be expected since Larsen's text approaches Neandertals within a framework of understanding adaptation. Some sort of physical pathology is also mentioned six times, which harkens back to the earliest days of Neandertal interpretation, when the remains were framed as belonging to aberrant *Homo sapiens*. Although the physical differences are now accepted as *normal* for Neandertals, the text still mentions the physical problems evident in the remains. For example, one paragraph explains how "the majority of Neandertal skeletons have injuries" due to "accidents and violence" (370). This tendency to tie the physical morphology back to behavior is typical in these paragraphs. Arthritis in one Neandertal's feet, for instance is hypothesized to "have resulted from the constant stresses of traversing difficult, mountainous terrain" (369).

Outweighing the paragraphs that mention pathology and adaptation within a context of morphological differences is the sub-category of skull morphology. The morphology of the skull appears as evidence of Neandertal Otherness in 13 separate paragraphs. The Neandertal skull is characterized as having "a very wide nasal aperture, a projecting midface, and occipital bun, and a low, long skull" (373). The "occipital bun" refers to "a more projecting occipital

bone" (Larsen, 2011, p. 359), and although some modern populations have an occipital bun ("All of us have a touch of Neandertal," 2012), the term is still *defined* as a "cranial feature of Neandertals" (Larsen, 2011, p. 359). The other features that are presented as typical of the Neandertal skull are also defined in opposition to AMHs, even when some modern populations have those features. The size of the Neandertal nasal aperture alone is referenced in nine paragraphs; it is called "enormous" in one paragraph (373), "large" in two paragraphs (370 and 374), "wide" in five paragraphs (366, 367, 369, 371, and 373), and "wider" in one paragraph (359). Of course, what is meant by "wide" is "wide as compared to what has been defined as modern," and "modern" is simply a series of features that Larsen says appear in "people who essentially look like us" (358-359); the "modern" nasal aperture is described as "narrow" (388-389, 390, and 391), so people with narrow noses are presented as "us."

Although a "wide" nasal aperture is referenced throughout the text as a defining Neandertal characteristic, Larsen recognizes that "many people around the world today have wide, big noses" and that the feature is not "uniquely Neandertal" (373). This one paragraph does draw a connection between Neandertal and AMH morphology, but the sheer number of paragraphs that define a "wide nose" as a Neandertal feature overshadows the one paragraph's morphological connection about the nasal aperture. It must be recognized that including a "wide" nose as a defining Neandertal characteristic is outside Larsen's control—this is a move of the discipline, not an individual writer. Reproducing the disciplinary standard to present wide noses as "not modern" does more to exclude people with wide noses from the category of "modern" than Larsen is able to offset with any individual paragraph that connects Neandertal noses to modern populations.

When Larsen's text successfully moves the reader toward connecting AMH and Neandertal morphology, it most often does so by being vague about *what* morphological similarities the two groups share. Of the 12 paragraphs that use morphology as connective information, 5 never specify the *exact* features that AMHs have in common with Neandertals. For instance, one paragraph simply states that "Neandertals looked very similar to modern humans in many respects" (374) without further clarification. The page in which that paragraph

appears does not offer clarification in any surrounding paragraphs, which are equally as vague—the visual elements on the page are presented as self-evident in regards to the similarities, with one figure caption of a Neandertal reconstruction reading, "Some of the morphological traits associated with Neandertals can be found in modern humans" (374).

The text also presents morphological similarities by blurring the line between morphology and behavior, a move that occurs in 7 of the 12 paragraphs containing morphological similarities. For instance, in order to talk—a behavior that is often cited as evidence of our uniqueness from other living species—a certain anatomy is required. One paragraph in Larsen's text describes the Kebara Neandertal hyoid bone: "various muscles and ligaments attach it to the skull, mandible, tongue, larynx, and pharynx, collectively producing speech . . . The morphology of the Kebara Neandertal's hypoid is identical to that of a living human's. The Kebara people talked" (379). In such paragraphs, the artificial nature of my own categorization is made apparent—behavior and morphology are linked, a fact that is often undermined through taxonomic systems.

Neandertal behavior. In contrast to Neandertal morphology, Neandertal behavior is more often presented in a connective context. Of the 37 paragraphs that discuss Neandertal behavior, 25 are connective and 12 are disconnective. The higher number of behavioral connections is also reflected at the sentence level, with 6 paragraphs using behavior for both connections/disconnections, 21 paragraphs using behavior as connective information, and 10 paragraphs using behavior as disconnective information (Table 3). That behavior is more likely than morphology to connect AMHs and Neandertals aligns with Julia Drell's (2000) assessment that since the 1970s, Neandertal interpretation has become much more scientifically Same in terms of behavior—this connection with Neandertals has not eroded over time.

Table 3.

Neandertal Behavior as Compared to AMH Behavior

Level of Connection or Disconnection	Neandertal relation to AMHs	Number of paragraphs	Most Repeated Topics (in number of paragraphs)
Paragraph	Neutral or Both	0	
	Connective	25	
	Disconnective	12	
Sentence	Neutral or Both	6	
	Connective	21	Burial of the dead (6) Material culture (8)
	Disconnective	10	Cannibalism (3)

As compared to the information connecting Neandertal and AMHs morphology, the information connecting Neandertal and AMH behavior is much less vague. Only one paragraph mentions how Neandertal and AMH behavior is similar without explaining how or why. One behavior used to link Neandertals and AMHs was their burial of the dead, a behavior cited in six separate paragraphs. Using burial of the dead to link Neandertal and AMH behavior gained popularity in the 1970s (Drell, 2000, p. 16), and Larsen's text showed that it is still used to connect us to Neandertals today. For example, in one paragraph, Larsen wrote that the La Chapelle-aux-Saints Neandertal "provides evidence of intentional burial. When this individual was found in a pit, it was the first suggestion that Neandertals cared for their dead in a way similar to modern humans' methods" (379). The word "intentional" is repeated in connection to burial of the dead in two other paragraphs (369 and 406), and the phrase "purposeful behavior" is used in another (378-379). Thus, Neandertals are presented in these paragraphs as self-aware and intentional in their behavior.

The production or use of material culture by Neandertals is also commonly cited as a similarity in behavior, appearing in eight total paragraphs. For example, one paragraph begins by stating, "Modern humans use symbolism in countless contexts" and ends by describing how Neandertals made body ornaments by painting marine shells that they then likely strung

around their necks. Thus, the text states, Neandertals likely engaged in symbolic behavior "at least 10,000 years before the appearance of modern *H. sapiens* in Europe" (379-381). In addition to symbolic material culture, tools made and used by Neandertals are also described. The specific stone tool culture used by Neandertals is actually given a unique name within anthropology—Mousterian (376). The naming thus sets Neandertals apart from other species, but not in quite the same way the specialized term "occipital bun" does. While the "occipital bun" is defined partly by being a protrusion *as compared to most AMHs*, the Mousterian stone tool culture is not compared against modern humans. Instead, Mousterian tools are allowed to stand by themselves as a testament to the Neandertals' ability to use a specific technique indicative of their ability to "visualize the shape and size of a tool from a stone core, an advanced cognitive ability" (377).

In contrast to the clear categories that appear when looking at how Neandertals are behaviorally connected to AMHs, examples of Neandertal behavior differing from AMHs do not fall repeatedly into any unique and distinct categories besides one: cannibalism. In total, cannibalism is mentioned in three separate paragraphs. Even though cannibalism has been well documented among some AMH populations, the text avoids directly relating modern humans to the behavior. While the text is so careful to make it clear that wide noses are not "uniquely Neandertal" (373), the same move is not made when it comes to cannibalism. The text *almost* moves readers in that direction: "The Krapina Neandertals were not the only ones to practice cannibalism" (372). However, the Krapina cannibalism is then related to cannibalism of Neandertals at other locations, not to the behavior of modern humans, which indicates a discomfort in connecting ourselves to this behavior.

Textbook Structure: Uneven Distribution of Connective and Disconnective Information

In addition to connections and disconnections being unevenly distributed within topic areas, connections and disconnections are unevenly distrusted throughout the text as a whole. The paragraphs are about the same in number, but the disconnective paragraphs tend to appear earlier in the text and the connective paragraphs tend to appear later in the text: 24 of the 37

overall disconnection paragraphs appear in the text's first half of paragraphs concerning Neandertals, and 28 of the 41 overall connection paragraphs appear in the text's second half of paragraphs concerning Neandertals (Table 4).

Thus, Larsen's text gradually moves the reader from the idea that Neandertals are dissimilar to and different from modern humans toward the idea that Neandertals are similar to humans. This writing move aligns with a technique to create coherence in writing—place information familiar to readers, "old" information, before new information (Williams & Bizup, 2014). Because there is a general scientific "preference" (if not a consensus) to view Neandertals as a distinct species, the ways Neandertals and AMHs differ would be considered "old" information to anthropologists. Indeed, besides a brief period of greater identification with Neandertals in the 1970s, the *tendency* since 1864 has been to think of Neandertals as a different species from AMHs. The general audience of the introductory textbook would share this tendency to view Neandertals as Other, although perhaps in an exaggerated form from anthropologists. Even if a desire to present "old" information first is what motivated Larsen to put disconnective information first, the *effect* of such a move should also be considered. By putting the connective information toward the end of the book, connections are stressed, which could help *offset* any preconceived views about Neandertals.

Table 4.

Distribution of Connective and Disconnective Paragraphs

Overall paragraph type	Total	Number in text's first half (and percentage)	Number in text's second half (and percentage)
Connective	41	13 (~32%)	28 (~68%)
Disconnective	37	24 (~65%)	13 (~35%)

Positive Language

Because the textbook's readers would be likely to hold preconceived notions of Neandertals as Other, they might negatively view information that contradicts this view. Such a tendency is combated in the text through language of positivity. Positivity was identified based on the denotations and connotations of words. For example, "fascinating" is a word that almost always is used to present information in a positive light. The word "technique" was also coded as positive language; although defined generally as a "way of doing something," it also is defined as a "the formal or practical aspect of any art, occupation, or field" ("Technique," n.d.). Informally, people even say that something takes a "certain technique" to mean that it takes a learned and practice skill. The word thus has connotations of requiring some sort of cognitive ability, and the word is also used generally in the context of *human* achievement. A complete list of the words identified as positive is included in the Appendix. In total, 19 of the paragraphs contain language imbued with positivity. Of the 19 paragraphs, 2 are neutral, 13 form overall connections, and 4 form disconnections. These paragraphs have very similar numbers at the sentence level— 1 paragraph uses positive language in relation to neutral information, 15 use positive language in relation to connective information, and 3 use positive language in relation to disconnective information (Table 5). The text thus creates a positive association between Neandertals and AMHs.

Of the 19 paragraphs with positive language, 10 attach positivity to behavior (367, 369, 376 [three paragraphs on the same page], 376-378, 377, 381, 392, and 395). All 10 of these paragraphs use the information about Neandertal behavior as a connection between Neandertals and AMHs. For example, one paragraph states that "sometime within 200,000-100,000 yBP," modern *H. sapiens* encountered the Neandertals, "who were as behaviorally and technologically complex as they" (395). (The phrase "technologically complex" signifies a positive view Neandertals.)

Table 5.

Positive Language Attached to Neandertal Descriptions

Level of Connection or Disconnection	Neandertal relation to AMHs	Number of paragraphs	Repeated Topics (in number of paragraphs)
Paragraph	Neutral or Both	2	
	Connective	13	
	Disconnective	4	
Sentence	Neutral or Both	1	Physical morphology (1)
	Connective	15	Behavior (10) Physical morphology (3)
	Disconnective	3	Physical morphology (1)

Positive language is also attached to information about physical morphology in 5 (370, 373, 376, 378, and 406) of the total 19 paragraphs with positive language. One of those paragraphs (370) attaches the positivity to information that neither connects nor disconnects Neandertal and AMH morphology, three paragraphs attach positivity to language that describes similarities between AMH and Neandertal morphology, and one paragraph attaches positive language to information that highlights differences between Neandertal and AMHs morphology.

One of the paragraphs that positively connect Neandertal morphology to AMH morphology (376) also discusses a Neandertal behavior, tool making; the paragraph describes the Neandertal hand's "size, shape, and articulations" as reflecting "the kind of precise manual dexterity crucial for the fine-crafting of tools" (376). The other two paragraphs that attach positivity to similarities between AMH and Neandertal morphology (373 and 378) both discuss Neandertal adaptation. Thus, similarities in physical morphology were positively described in these paragraphs, but only in larger contexts of behavior or adaptation.

The paragraph with positive language tied to differences between AMH and Neandertal morphology explains that "the fundamental details of modern human anatomy probably have a single place of origin" (406), meaning Neandertals did not contribute to what Larsen calls the "fundamental" anatomy of AMHs. However, the same sentence undermines the disconnection

by continuing, “but Neandertals later contributed to the European gene pool. Neandertals are part of modern humans’ ancestry” (406). Thus, although the text frames the differences in morphology as “fundamental,” it does not dwell upon those differences.

Language of Certainty and Probability

In addition to offsetting the audience’s tendency to negatively view information that contradicts the “modern humans as unique” paradigm, Larsen’s text offsets skepticism toward connection through language of certainty and probability. Certainty was identified based on the confidence attached to a word. For example, to “conclude” something is to have more confidence in it than to “suggest” it. (See the Appendix for a complete list of words attached to certainty and probability.) The more certain the language, the more likely the paragraph is to be discussing connections between modern humans and Neandertals. Of the 31 paragraphs that contain the strongest language of certainty, 3 paragraphs are neutral or form both connections/disconnections, 19 form an overall connection between AMH and Neandertals, and 9 form an overall disconnection between the two groups. The certainty established at the paragraph level generally matches the certainty at the sentence level: 3 paragraphs attach certainty to neutral or both connective/disconnective information, 18 paragraphs attach certainty to connective information, and 10 paragraphs attach certainty to disconnective information (Table 6).

The 32 paragraphs that use language of probability are also more likely to discuss similarities between Neandertals and AMH: 4 paragraphs are neutral or form connections and disconnections, 19 form overall connections, and 9 form overall disconnections. Like certainty, the sentence level matches the paragraph level for language of probability: 5 paragraphs use language of probability in relation to neutral or both connective/disconnective information, 16 attach probability to connective information, and 11 attach probability to disconnective information (Table 7).

Table 6.

Language of Certainty Attached to Neandertal Descriptions

Level of Connection or Disconnection	Neandertal relation to AMHs	Number of paragraphs
Paragraph	Neutral or Both	4
	Connective	19
	Disconnective	9
Sentence	Neutral or Both	5
	Connective	16
	Disconnective	11

Table 7.

Language of Probability Attached to Neandertal Descriptions

Level of Connection or Disconnection	Neandertal relation to AMHs	Number of paragraphs
Paragraph	Neutral or Both	3
	Connective	19
	Disconnective	9
Sentence	Neutral or Both	3
	Connective	18
	Disconnective	10

Using language of certainty and probability, the text thus answers an anticipated skepticism toward viewing Neandertals as similar to modern humans—the higher chance of encountering one of these "confirmation" words with information about similarities could lead the audience to start associating connective information with confirmation that the information is fairly certain or probable. The associations might not create an overall *greater* degree of connection than disconnection to Neandertals, however. Since the text's audience is likely to

view Neandertals as more different than they are similar to AMHs, the association of connection with certainty would simply help offset the tendency to Other Neandertals. For example, paragraphs that contained the term “evidence” were more likely to discuss similarities—one paragraph discussed “evidence found with the Neandertal skeletons” as suggestive “that the Neandertals intentionally buried their dead” (369). Another paragraph used “a growing body of archaeological and biological evidence” to demonstrate “that Neandertals were not clumsy mental deficients” (375).

The defensiveness of this last example is also seen in another paragraph that uses evidence as a term: “The key point of this discussion of Neandertal characteristics . . . is that Neandertals likely were not weird humanlike primates, less adaptable and less intelligent than modern humans. The record shows that their behaviors, both in form and in substance, were similar to modern humans'. . . The empirical evidence disproves arguments that Neandertals were less than human” (381). If Clark Spencer Larsen felt the need to be defensive of the idea that Neandertals were “similar to modern humans,” the implication is that the audience was expected to come to the text with attitudes expressing the opposite view. Thus, any paragraph that discusses similarities had to combat this attitude and tendency to Other Neandertals by making it clear that we are *certain* that Neandertals shared similarities with AMHs.

Language of Conjecture

Combating the presumed tendency to Other Neandertals can also be seen in the ways the text moves the audience to question the differences between Neandertals and AMHs. In contrast to the language of certainty and probability, language that highlights the conjectural nature of knowledge is more likely to be used in relation to information concerning differences (see the Appendix for a complete list of words). However, that is not to say that conjecture is more likely to be highlighted within *paragraphs* that form an overall disconnection. At the paragraph level, conjectural language is more likely to appear within overall connective paragraphs (conjectural language appears within 2 neutral paragraphs, 6 connective paragraphs, and 3 disconnective paragraphs), but *how* conjectural information is used within

the paragraphs is not generally to form connections. While language of certainty and language of probability both have a general match between paragraph-level and sentence-level connections or disconnections, of the 11 paragraphs containing conjectural language, 3 attach conjecture to connective information (with all 3 paragraphs being connective overall) and 7 paragraphs use conjecture in relation to disconnective information (with that information appearing within 1 neutral paragraph, 3 connective paragraphs, and 4 disconnective paragraphs) (Table 8). The conjectural disconnective information appearing within 3 paragraphs that were overall about connection contrasts with conjecture tied to connective information being, overall, still presented in a larger context of connection. Thus, conjecture about connection was softened while conjecture about disconnection was highlighted more often through the contextual contrast.

This information can also be considered in light the internal inconsistencies of the connective and disconnective paragraphs; 13 of the 41 connective paragraphs have internal disconnections and 10 of the 37 disconnective paragraphs have internal connections (see Table 1). Because the 10 disconnective paragraphs that contain sentence-level connective information do not present any of the connective information as conjectural, there is a qualitative difference between the connective and disconnective paragraphs with internal inconsistencies: the disconnections within connective paragraphs are approached in a more skeptical way by tying the information to conjecture. Again, this analysis supports the idea that the text is moving the reader to question information that highlights differences between AMHs and Neandertals.

Specifically, the conjectural information frames Neandertals as different from AMHs in terms of the behaviors of cannibalism (373), speech (379), and hunting practices (382); physical morphology (356); intelligence (379-381); and gene flow (393-394). All of these topics, although setting Neandertals apart from AMHs, are only *conjecturally* framing Neandertals as different. Some of these same topics—gene flow (360) and behavior in terms of burial ceremonies (369) and tool production (376)—are also used for connective conjectural information. Thus, even though anthropologists may only be able to make conjectures about how similar Neandertals and AMHs are in some ways, the conjectural nature of the knowledge is more likely to be

Table 8.

Language of Conjecture Attached to Neandertal Descriptions

Level of Connection or Disconnection	Neandertal relation to AMHs	Number of paragraphs	Type of paragraph (and number of each)
Paragraph	Neutral or Both	2	
	Connective	6	
	Disconnective	3	
Sentence	Neutral or Both	1	
	Connective	3	Connective (3)
	Disconnective	7	Neutral (1) Connective (3) Disconnective (4)

highlighted when discussing behaviors or traits that set Neandertals and AMHs apart. Additionally, 3 of the 7 disconnective conjectural pieces of information (229-230, 379, and 382) mention the names of specific researchers in direct relation to the conjectural piece of knowledge while none of the 3 connective conjectural pieces of information directly relate researchers to the conjectural knowledge. The claims of disconnection are thus attached more to specific people, and specific people are easier to doubt than are free floating claims that arose not from people but from, as one connective conjectural claim says, “anthropologists” (376) in a general sense.

Language of Uncertainty: Questionable Claims and Doubt

Compared to language of certainty, probability, and conjecture (which appear in a total of 31, 31, and 11 paragraphs, respectively), language of uncertainty appears significantly less. In total, only 5 paragraphs contain language of questionable claims and only 4 paragraphs contain language of doubtful claims. At the paragraph level, questionable claims appear in 1 neutral paragraph, 1 connective paragraph, and 3 disconnective paragraphs. At the sentence level, language that highlights the questionable nature of knowledge is used in relation to 1

piece of neutral information, 2 pieces of connective information, and 2 pieces of disconnective information. Language of doubt does not neatly align at the paragraph and sentence level: doubtful language appears in 2 connective and 2 disconnective paragraphs, but within those paragraphs the doubt was attached to connective information in 1 of the paragraphs and to disconnective information in 3 of the paragraphs. The combined totals for both questionable claims and doubt are presented under the category "uncertainty" in Table 9. In total, there is a greater tendency to attach uncertainty to information that disconnects AMHs and Neandertals.

Uncertainty and Connection. The connective information attached to uncertain language concerns physical morphology (389-390), diet (376-378), and the ability to talk (406). The uncertainty about the physical morphology connection between AMHs and Neandertals is qualitatively mild: "The skeleton . . . has a number of archaic, Neandertal-like cranial and postcranial features" (389-390). The sentence questions the connective quality of the cranial features by referring to them as being "Neandertal-*like* features" as opposed to just "Neandertal features." Although making the audience question exactly how alike those features are, the sentence is only mildly uncertain.

The uncertainty concerning information about the Neandertal diet barely even qualifies as uncertainty. The paragraph begins by cautiously clarifying that Neandertal remains being found with animal bones can not lead to definite conclusions about the Neandertal diet: "Suggestive though this evidence is, the mere presence of animal remains does not reveal how *important* animals were in the people's diet" (376-378). However, this same paragraph goes on to instill the audience with more confidence that it really was the case that Neandertals not only ate meat as an important part of their diet, but were successful hunters, too: "The chemical signature of diet . . . is a powerful indicator of Neandertals' effectiveness in acquiring and consuming animal protein. That is, it shows that Neandertals were successful hunters." (376-378). The uncertainty about this particular similarity is diminished within the same paragraph in which it is introduced. The order of all this information should also be considered;

Table 9.

Language of Uncertainty Attached to Neandertal Descriptions

Level of Connection or Disconnection	Neandertal relation to AMHs	Number of paragraphs	Quality of uncertainty (in number of paragraphs)
Paragraph	Neutral or Both	1	
	Connective	3	
	Disconnective	5	
Sentence	Neutral or Both	1	
	Connective	3	Mild (3)
	Disconnective	5	Pronounced (5)

because endings of paragraphs have more stress than beginnings, the uncertainty in this paragraph is not only undermined in the paragraph's overall content, but also its structure.

The information about Neandertals perhaps being able to talk is also mild in its uncertainty: "Anthropologists do not know when spoken communication first began, but at least one Neandertal had the vocal anatomy consistent with speech" (406). The uncertainty is mild here partly because of the order of information, beginning with the uncertainty ("anthropologists do not know when spoken communication first began") and ending with the connective information ("but at least one Neandertal had the vocal anatomy consistent with speech" [406]). If Larsen had wanted to, he could have introduced further doubt about this idea by flipping the order of information in the sentence's second part, perhaps writing something like "The vocal anatomy consistent with speech has only been found in one Neandertal," thus stressing the number "one," which is not an overwhelming amount of evidence. However, the connective information "vocal anatomy consistent with speech" is stressed instead. Thus, the doubt, although present, is relatively mild.

Uncertainty and Disconnection. In comparison to uncertain language attached to connective information, the uncertain language attached to disconnective information is much more pronounced. The information attached to uncertainty concerns the ability to talk (379),

the age of Neandertals (229-230), and gene flow and/or whether or not Neandertals evolved into humans (372, 372-373, and 393-394). Concerning Neandertals' alleged inability to talk, doubt is introduced in the beginning of the paragraph by use of the word "belief": "early anthropologists believed that Neandertals lacked the ability to speak" (379). The paragraph also temporally distances readers from the belief of disconnection by attaching it to "early anthropologists." The paragraph is not all about "early anthropologists," however, stating that the idea of Neandertals not being able to talk "continues to the present." Larsen then goes on to describe research by Philip Lieberman and Edmund Crelin, who reconstructed a Neandertal vocal tract. The reconstruction led the researchers to believe that Neandertals lacked the ability to produce sounds for articulate speech, but the paragraph ends by instilling doubt about Lieberman and Crelin's reconstruction: "Although interesting, their reconstruction of the Neandertal vocal tract is conjectural. Based on skulls alone, it necessarily lacks the anatomical parts (soft tissues) important for speech production" (379). Thus, this paragraph has a pronounced level of uncertainty, especially in comparison to the uncertainty found within the paragraph suggesting that Neandertals *could* talk, which structurally took the stress off the doubt. Structurally, this disconnective paragraph does the opposite, stressing the doubt surrounding the disconnection.

The paragraph containing the uncertainty about the age of Neandertals starts by contextualizing research about Neandertal remains that were found in Krapina, Croatia. In order to see how old the Krapina remains were, the paleontologist Dragutin Gorjanovic-Kramberger applied fluorine dating to them and to animals remains found at the same site. If Gorjanovic-Kramberger could prove that the animal and Neandertal remains were the same age, he could prove that Neandertals were ancient. As a way to contextualize how Gorjanovic-Kramberger's results would be received by the people of the time, the disconnective information was introduced in the paragraph: "Some scientists believed that the Krapina Neandertals were not ancient, however, but had been living at the site in recent times only. They considered the Neandertals simply different from people living in Croatia in the late nineteenth and early twentieth centuries" (229-230). A shadow of doubt is cast on the view that Neandertals were "simply different" with the words "believed" and "considered," which both

highlight the subjectivity of the view. This view of Neandertals as "simply different" is dismissed at the paragraph's end, which states that "the simple chemical analysis revealed that the Neandertal bones and the animal bones had very similar amounts of fluorine" and that "this pioneering study had shown human beings' deep roots" (229-230). The uncertainty about viewing Neandertals as Other is thus *pronounced* both in the word choice and in the paragraph's overall context, which ties the idea of Neandertals as Other to an outdated way of thinking.

Also pronounced, through both word choice and context, is the uncertain language within the paragraphs that disconnect Neandertals and AMHs through discussion of gene flow and/or whether Neandertals evolved into AMHs. The first paragraph in this particular category describes the interpretation of a Neandertal skeleton by the eminent paleoanthropologist Marcellin Boule. Boule's views were first contextualized in the paragraph as "tremendously" (372) influential during the early 1900s. Overall, Boule viewed Neandertals as Other. The paragraph uses more certain language when first describing Boule's interpretations, stating that he "argued" and, toward the end of the paragraph, "concluded." However, the very end of the paragraph leads readers to doubt Boule's interpretations: "Simply, in [Boule's] mind, Neandertals represented some side branch of human evolution—they were too primitive, too stupid, and too aberrant to have evolved into modern humans" (372). Although this paragraph ends by stressing the very Otherness that Boule advocated for, it also stresses that the particular view of Otherness existed "in the mind," a quick way to undermine any view.

The paragraph immediately after the one explaining Boule's view of Neandertals as Other also ends by discussing, and thus stressing, the doubt readers should have about the genetic disconnections between AMHs and Neandertals. The paragraph reads:

> Boule's interpretations led to the prevailing view at the time (still held by some authorities) that Neandertals were evolutionary dead ends, replaced by the emerging modern humans and representing distant cousins of humanity that were not able to survive. In rejecting this view, we should take a closer look at some topics Boule addressed in his study of the La Chapelle skeleton. (p. 372-373)

This paragraph not only leads the audience to question Boule's views by calling them "interpretations," but also leads the audience in the direction of rejecting Boule's view altogether.

Like the first two, the third paragraph with uncertain language in relation to genetic disconnective information stresses the uncertainty. The paragraph states that the differences in mtDNA between Neandertals and AMHs "seem to support the hypothesis that no gene flow occurred between Neandertals and modern humans . . . and, importantly, that Neandertals contributed none of their genetic material to the modern human gene pool" (393-394). The language "seem to" introduces uncertainty, an uncertainty that is further stressed at the paragraph's end by pointing out that mtDNA "reflects only a small fraction of the genetic code" (393-394). This weakness in mtDNA research had first been highlighted by Green et al. (2006) and Noonan et al. (2006) roughly five years before Larsen's second edition of the text was published, so it would have been expected for *Our Origins* to be cautious about the differences in mtDNA. The paragraph continues, "The failure of one part of the genome to survive to the present does not mean that the entire genome became extinct. Moreover, it is possible that mtDNA lineages have been lost owing to genetic drift." (393-394). The very last line in the paragraph calls for more research in order to have "a more complete picture" (393-394). Thus, the paragraph is *not* necessarily creating a connection, but simply instilling doubt about disconnection.

Analysis of Larsen's 2014 *Our Origins:* Changes Between the Second and Third Editions

The third edition of Clark Larsen's *Our Origins* contains a drastic difference from the second edition in framing of content—in the ways Neandertals are dissociated from and associated with AMHs—but small changes in the actual paragraphs concerning and language used to describe Neandertals. This contrast is a testament both to language's resistance to change and to how language in the second edition was hinting toward the changes in the third edition. The most striking change Larsen introduces in the 2014 edition of the book is the classification method used. While in the second edition of the text, Larsen stuck to traditional

classification because of humans' "different" and "unique" (176) adaptive trajectory as compared to apes, the third edition of the book, citing the "priority of and focus on evolution and not description in this book" (Larsen, 2014, p. 173), uses cladistics analysis, which favors genetic relationships over physical morphology. The change in classification systems is evidence of a paradigm shift within physical anthropology—the overall classification system in the second edition dissociated the two groups, but the third edition uses species classification to associate Neandertals and AMHs.

The classification shift in the third edition can also be seen in the descriptions of our taxonomic family. Neandertals are called "hominins" (Larsen, 2014, p. 413) in the third edition, and "hominin" is defined more broadly. In the second edition, Larsen defines "hominin" as "humans and human ancestors in a more recent evolutionary taxonomy based on genetics" (176), a definition which is shortened in the third edition as "humans and humanlike ancestors" (Larsen, 2014, p. 173). Because of this shift in classification, Larsen's choice to refer to Neandertals as "*Homo sapiens,"* which was present in multiple places in the text's second edition, was more consistent with the text overall. The contradiction between classification system and terms was resolved through a change in classification.

The smaller, non-structural changes of the text appear in 13 paragraphs about Neandertals.[6] The changes are in regards to physical morphology, in 7 paragraphs; to behavior, in 3 paragraphs; to our African origins, in 2 paragraphs; and to human diversity, in 1 paragraph (Table 10).

[6] One other paragraph about Neandertals also has a change, but that change is simply to aid readers—as opposed to just referring readers to a figure from a previous page, the change directs readers to the specific chapter and section of the chapter. This change is therefore not relevant for this study.

Table 10.

Changes From Second to Third Edition of Our Origins

Category Change	Total Number of paragraphs	Number of paragraphs: Type/effect of change
Morphological Descriptions	7	5 paragraphs: strengthen disconnections
		1 paragraph: no change
		1 paragraph: lessens disconnections
Behavioral Descriptions	3	2 paragraphs: strengthen connections
		1 paragraph: no change
African Origins	2	2 paragraphs: strengthen disconnections
Human Diversity	1	1 paragraph: strengthens connection

Changes in Morphological Descriptions

In regards to morphology, the most common change to the text was to add an adjective to the description of the Neandertal nose. In four paragraphs, in which "wide" was a sufficient descriptor for Neandertal noses in the second edition, "tall" was added to "wide" as a descriptor of Neandertal noses (366, 374, 375, and 379). The fifth paragraph's change about noses in the third edition adds in an alternate explanation for why Neandertal noses were so large: "the large noses of Neandertals may simply be due to the fact that their faces are so large" (Larsen, 2014, p. 380). The third edition strengthens my assessment above about the second edition that noses were used as a way to Other Neandertals and modern humans who have large noses.

In addition to adding a descriptor to nose descriptions, the third edition adds information to one paragraph that I had discussed above as being vague about the similarities between AMH and Neandertal morphology. However, the paragraph in the third edition does not make any clearer what the morphological similarities are. The paragraph from the second edition reads, "In this reconstruction, the Neandertal looks modern in some respects. Neandertals are central to our understanding of modern *Homo sapiens*' origins" (356). To compare, the paragraph from the third edition reads, "In this reconstruction, a Neandertal child

from Roc-de-Marsal, in Dordogne, France, shows a mix of modern and archaic features. Neandertals are central to our understanding of the origins and evolution of modern humans, including key aspects of human growth and development" (Larsen, 2014, p. 362). While more specific about where this particular Neandertal came from and why understanding Neandertals is important in order to understand ourselves, the paragraph is *still* vague about what the similarities are between Neandertal and AMH morphology. However, as compared to the language of the second edition ("looks modern in some respects"), the third edition is more confident in its statement about morphological similarity, with the Neandertal simply "show[ing] a mix of modern and archaic features" (Larsen, 2014, p. 362).

We also see a move toward accepting Neandertal morphology in one paragraph about pathology. In a paragraph about how one Neandertal had a fracture on his face that may have caused him to be blind, the third edition clarifies that the fracture was "well healed at the time of his death" (Larsen, 2014, pp. 375–376). Thus, the pathological nature of the injury is softened in the third edition as compared to the second.

Changes in Behavioral Descriptions

The third edition of the text also changes its presentation of Neandertal behavior in three paragraphs. One paragraph about Neandertal's symbolic behavior in terms of body ornamentation includes more details about how Neandertals made the ornamentation (Larsen, 2014, p. 388). Another paragraph about the Neandertal diet clarifies that although Neandertals ate meat, they did not depend "wholly on animals as sources of food. Analysis of plant residues found in Neandertal tooth calculus shows that Neandertals ate a diversity of plants, some of which were cooked;" the paragraph goes on to describe how Neandertals may have also self-medicated with the use of plants, although "we can never know fore sure if they did" (Larsen, 2014, p. 384). Thus, the behavioral ties between AMHs and Neandertals, already strong in the second edition of the book, are further strengthened in the third edition.

However, there is one area in which the third edition still avoids tying Neandertal behavior to AMH behavior—cannibalism. One paragraph offers more details about Neandertal

cannibalism, tying the behavior to an additional site not mentioned in the book's second edition (Larsen, 2014, p. 378). Still, the third edition avoids mentioning that AMHs have engaged in cannibalism, even though it is true. The reluctance to associate ourselves with this behavior held across editions of the textbook.

Strengthening of African Origins and Human Diversity

In two paragraphs, AMHs' African origins are strengthened within a context of Neandertal description. One paragraph simply clarified that although "symbolic behavior and cognitive advancement were present in Europe" (Larsen, 2014, pp. 399–400), they were present at an earlier time in Africa. Another paragraph underwent a change in its level of certainty. The second edition of the text stated that certain modern characteristics "suggest strongly that modern variation originated in Africa" (395). The third edition says that the same topic "provides compelling evidence" (Larsen, 2014, p. 402) of an African origin for AMH variation.

At the same time the text strengthens the African origin of modern humans in its third edition, it also allows for more variety in what is considered "human." The last paragraph to differ between the second and third edition of the text not only uses the term "hominin" instead of "hominid," but also adds information that was absent in the second: "The presence of a third group—the Denisovans, with a genome distinct from those of Neandertal and modern *H. sapiens*—indicate that diversity in late Pleistocene Europe was complex" (Larsen, 2014, p. 413). With a third group added to the mix, the "Us versus Them" dichotomy is softened.

RHETORICAL EFFECTS AND POSSIBLE FUTURE DIRECTIONS

In both the 2011 and 2014 editions of Clark Larsen's *Our Origins*, some of the descriptions that were applied to Neandertals were outside the author's control. A lot of the terminology of the discipline embeds the notion of human uniqueness and Neandertal Otherness—the naming of *Homo sapiens neanderthalensis* as compared to *Homo sapiens sapiens*, the naming of archaic humans as compared to modern humans, the definition of the occipital bun as uniquely tied to Neandertals, etc. Considering the history of how Neandertals have been interpreted, the terms that embed views of modern humans as unique are not surprising—it is the nature of language to reflect social thought. The nature of language is also to resist change—change is always possible, but it generally takes large amounts of time. Likewise, science is revolutionary, but it also will resist change unless that change is somehow aligned with the current consensus.

Larsen works within the established paradigms in the text's second edition by using anatomical classification, but even within the second edition, Larsen resists the established paradigm of human uniqueness in many ways. Structurally—at the sentence level, at the paragraph level, and in the text as a whole—Larsen's text stresses similarity over difference. It also ties similarity to positivity and certainty, and it ties difference with uncertainty. These moves, when considered in their cultural and disciplinary contexts, respond to the assumption of humans as unique. Essentially, Larsen's text moves readers to question such an assumption. It also implicitly heightens the connection between AMHs and Neandertals by referring to Neandertals as *Homo sapiens*—a move that actually is contradictory in the text's second edition, which uses anatomical classification. The second edition of the text primes its readers to implicitly "see that" Neandertals and AMHs are the same species, and this move is made explicit in the third edition. The second edition's contradiction is a hint about the changes to come in the text's third edition.

From the 2011 to the 2014 edition of *Our Origins*, Larsen's text restructured how its readers are to "see" Neandertals. The 2014 edition broadly associates Neandertals and AMHs by using cladistics classification (based on genetics) instead of the old classification system based

on anatomy that the 2011 edition of the text used. The switch in the classification system might help physical anthropology to be taken more seriously as a science. As Ruse (1996) notes, evolutionary scientists have had trouble gaining respect in the past. Matt Cartmill (2002) provides reasoning for this difficulty, critiquing paleoanthropology in particular for being content with narrative, a critique which jives with the use of anatomical classification. Cartmill believes that paleoanthropologists have been content with simple narrative because the narratives crafted within the discipline position humans as unique and special. We can see this in the second edition of Larsen's text, which justifies its use of anatomical classification *through* the assumption that modern humans are adaptively unique (176). Cartmill might critique this decision since narratives—like a narrative about how modern humans have unique adaptations—are not necessarily explanations; "the only evolutionary events we can explain are those that conform to recurring regularities. That's what 'explanation' means" (Cartmill, 2002, p. 194). When physical anthropology makes statements about humanity's uniqueness *outside* of a context of explaining how those unique patterns are the result of the same natural forces acting on all organisms, then the discipline has fallen into storytelling. That is not to say that storytelling is absent from science, because it is not—but for something to be scientific, it must combine storytelling with explanation. Storytelling void of explanation is unscientific.

The move to use cladistics classification in the 2014 edition is an answer to the type of critique made by Cartmill—the third edition of the text justifies its choice in classification by appealing to its focus on evolution and "not description" (Larsen, 2014, p. 173). The move to cladistics also reflects the broader move—even in other disciplines—to focus on genetic classification; *National Geographic*'s declaration that the term "hominin" would win out over "hominid" (Berger, 2001) is supported in this study.

Possible Future Directions for Physical Anthropology

In addition to supporting physical anthropology as a science, the switch to cladistics supports the notion that Neandertals are more Same than they are Other. However, there are certain ways that both texts present Neandertals as Other—the narrative of human uniqueness, although slowly changing, is still present, even within the text's third edition. In both editions,

behavior is broadly used to connect AMHs and Neandertals, but cannibalism is still avoided as a site of commonality. The third edition presents more details about evidence for cannibalism among Neandertals, so the topic is being broached more than it was in the past. Perhaps if the topic *continues* to be explored, it will eventually be related back to modern human behavior—even when presented to an introductory audience.

The third edition stresses morphological differences even more than the second edition—and the second edition was already using morphology as a major difference between Neandertals and AMHs. To further stress morphological differences appears at odds with the third edition's move to use cladistics—the text moves from anatomical classification to genetic classification, and at the same time it heightens its discussion of Neandertal morphology while keeping its discussion of Neandertal genetics the same as it is in the second edition. This apparent contradiction may foreshadow what is to come in the future—just as the second edition of Larsen's text, by calling Neandertals *Homo sapiens* even though it uses anatomical classification, foreshadows the switch in classification systems in the third edition, the contradiction of heightening physical difference at the same time the third edition of the text overtly switches to a more connective classification scheme may foreshadow greater diversity being accepted into what is considered to be human. That is, contradictions in the texts may point readers toward forthcoming paradigmatic change. The switch to greater acceptance of human diversity could be something akin to what happened with Neandertal classification in the 1970s and early 1980s. At that time, Neandertal classification took on a much more connective quality—this was the only time period in which it was *common* (if not an established consensus) to view Neandertals as the same species as us. Also during that time, scholars were more often studying the diversity among AMH populations (Condemi, 2011, p. 12). One of the few changes introduced in the third edition of the text places Neandertals within a more diverse frame by contrasting them with the Denisovans (Larsen, 2014, p. 413), and we may continue to see change in the direction of more often viewing Neandertals and AMHs in a broader frame with other groups.

Without a move to more broadly frame Neandertals and their relation to AMH, the Othering of Neandertals through morphological differences will continue to Other certain groups of people alive today—like those with wide (and tall) noses. Combating this tendency is desirable in order to be sure pre-conceived notions of human uniqueness are not influencing scientific views of Neandertals, a critique made by Villa and Roebroeks (2014) in regards to archeological evidence. The very terms of the discipline contain predictable biases to view Neandertals as Other, and such deeply ingrained biases influence interpretations of Neandertals.

Combating these deeply ingrained historical biases is possible by more often tying Neandertal morphology to positive language. This move is made in both the second and third editions of Larsen's text, but in order to not completely upset commonly accepted paradigms, the move is only made within contexts of behaviors and adaptations. The tendency to Other Neandertals through morphology can also be combated through language of certainty—a move also employed by Larsen. Additionally, delving more into what the similarities are between Neandertal and AMH morphology could combat how Neandertals are defined as Other. Both editions of *Our Origins* were quite vague as to how Neandertal and AMH morphology are connected. Perhaps as an intermediate step between being vague about and describing morphological similarities, writers within anthropology could focus on how morphology reflects behavior, another move employed by Larsen. Blurring the boundaries between "behavior" and "morphology" chips away at the paradigm of Neandertals as Other and humans as unique, but it also aligns with the current consensus which is much more likely to highlight behavioral rather than morphological similarities between Neandertals and AMHs. Blurring these boundaries is thus a method to convince others to accept a change.

As anthropology continues to move toward genetic classification, the boundary between AMHs and Neandertals will have to be interrogated. Remaining aware of how social classifications and paradigms affect our views is crucial in order to present Neandertals in an accurate way. Additionally, being aware of the tacit comfort levels that are accepted in regards to connecting and associating AMHs and Neandertals can help writers who want to move the

consensus toward a view of modern humans as part of nature. Such a shift could be physical anthropology's way to support the Darwinian revolution's evolution in more implicit ways. Although the analysis presented here was based on one text, that text *is* widely used within physical anthropology classrooms. As such, that text is transmitting these attitudes about Neandertals to many students. In the future, we should expect to see a continued shift toward connecting Neandertals and AMHs, breaking the long-held paradigm of human uniqueness.

REFERENCES

All of us have a touch of Neandertal. (2012, October 2). Retrieved March 9, 2015, from http://mediarelations.illinoisstate.edu/report/1213/oct2/neandertal.asp

Anthropology talk: Dr. Dean Falk, on fossil "hobbits" [Abstract]. (2013, October 7). Retrieved May 2, 2014, from http://www.unlv.edu/event/anthropology-talk-dr-dean-falk-fossil-quothobbitsquot?delta=0

Archaic. (n.d.). *Oxford English Dictionary*. Retrieved from www.oed.com

Berger, L. R. (2001, December 4). Viewpoint: Is it time to revise the system of scientific naming? Retrieved February 25, 2015, from http://news.nationalgeographic.com/news/2001/12/1204_hominin_id.html

Berra, T. M. (2008). Charles Darwin's paradigm shift. *The Beagle, Records of the Museums and Art Galleries of the Northern Territory*, *24*, 1–5.

Boyd, R., & Silk, J. B. (2009). *How humans evolved* (5th ed.). New York: W. W. Norton & Company.

Brown, T. A. (2002). Genomes, transcriptomes, and proteomes. In *Genomes* (2nd ed., pp. 3–30). Manchester, UK: Garland Science. Retrieved from http://www.garlandscience.com/res/pdf/9780815341383_ch1.pdf

Burke, K. (1950). *A rhetoric of motives*. New York: Prentice-Hall, Inc.

Burke, K. (1966). Terministic screens. In *Language as symbolic action: Essays on life, literature, and method*. Berkeley, CA: University of California Press.

Campbell, J. A. (2003). Why was Darwin believed? Darwin's Origin and the problem of intellectual revolution. *Configurations*, *11*(2), 203–237. http://doi.org/10.1353/con.2004.0016

Cartmill, M. (2002). Paleoanthropology: Science or mythological charter? *Journal of Anthropological Research*, *58*(2), 183–201.

Condemi, S. (2011). One hundred fifty years of Neanderthal discoveries: Continuity and discontinuity. In S. Condemi & G.-C. Weniger (Eds.), *Continuity and discontinuity in the peopling of Europe: One hundred fifty years of Neanderthal study*. Berlin: Springer.

Darwin, C. (1859). *The origin of species*. Oxford: Oxford University Press. Retrieved from http://darwin-online.org.uk/content/frameset?itemID=F373&viewtype=side&pageseq=1

Darwin, C. (1871). *The descent of man*. (M. T. Ghiselin, Ed.). Cambridge, MA: Courier Corporation.

De Vos, J. (2009). Receiving an ancestor in the phylogenetic tree. *Journal of the History of Biology*, *42*, 361–379.

Drell, J. R. R. (2000). Neanderthals: A history of interpretation. *Oxford Journal of Archaeology*, *19*(1), 1–24.

Dunham, W. (2014, May 10). Researchers say Neanderthals were not our dimwitted inferiors. Retrieved May 12, 2014, from http://www.philly.com/philly/news/science/Researchers_say_Neanderthals_were_not_our_dimwitted_inferiors.html

Dunsworth, H. (2007). *Human origins 101* (1st ed.). Westport, CT: Greenwood.

Gould, S. J. (1996). *The mismeausre of man*. New York, NY: W. W. Norton & Company.

Green, R., Krause, J., Briggs, A., Maricic, T., Stenzel, U., Kircher, M., … Pääbo, S. (2010). The draft sequence of the Neandertal genome. *Science*, *328*, 710–722.

Green, R., Krause, J., Ptak, S. E., Briggs, A. W., Ronan, M. T., Simons, J. F., … Pääbo, S. (2006). Analysis of one million base pairs of Neanderthal DNA. *Nature*, *444*, 330–336.

Habash, G. (2013, March 10). How many copies does it take to be an Amazon bestseller? Retrieved January 7, 2014, from http://www.publishersweekly.com/pw/by-topic/industry-news/bookselling/article/56284-how-many-copies-does-it-take-to-be-an-amazon-bestseller.html

Hanson, N. R. (1958). Observation. In *Patterns of discovery: An inquiry into the conceptual foundations of science*. Cambridge, UK: The Cambridge University Press.

Hofreiter, M. (2011). Drafting human ancestry: What does the Neanderthal genome tell us about hominid evolution? Commentary on Green et al. (2010). *Human Biology*, *83*(1), 1–11.

Homo sapiens. (2015). *Merriam-Webster*. Encyclopedia Britannica. Retrieved from http://www.merriam-webster.com/

Howell, F. C. (1957). The evolutionary significance of variation and varieties of "Neanderthal" Man. *The Quarterly Review of Biology*, *32*(4), 330–347.

Human. (n.d.). *Oxford English Dictionary*. Retrieved from www.oed.com

Jurmain, R., Kilgore, L., & Trevathan, W. (2011). *Essentials of physical anthropology* (8th ed.). Stamford, CT: Cengage Learning.

King, W. (1864). The reputed fossil man of the Neanderthal. *The Quarterly Journal of Science*, *1*(96), 88–97.

Krings, M., Stone, A., Schmitz, R., Krainitzki, H., Stoneking, M., & Pääbo, S. (1997). Neandertal DNA sequences and the origin of modern humans. *Cell*, *90*, 19–30.

Kuhn, T. S. (1996). Postscript-- 1969. In *The structure of scientific revolutions* (3rd ed.). Chicago: The University of Chicago Press.

Larsen, C. S. (2011). *Our origins: Discovering physical anthropology* (2nd ed.). New York, NY: W. W. Norton & Company.

Larsen, C. S. (2014). *Our origins: Discovering physical anthropology* (3rd ed.). New York, NY: W. W. Norton & Company.

Leakey, L. (1963). East African fossil Hominoidea and the classification within this super-family. In *Classificaiton and human evolution* (pp. 32–49). Chicago, IL: Aldine.

Lessl, T. M. (2007). The culture of science and the rhetoric of scientism: From Francis Bacon to the Darwin fish. *Quarterly Journal of Speech*, *93*(2), 123–149.

Lessl, T. M. (2012). *Rhetorical Darwinism*. Waco, TX: Baylor University Press.

Marks, J. (2007). Anthropological taxonomy as subject and object. *Anthropology Today*, *23*(4), 7–12.

Misconceptions about evolution. (2015, April 1). University of California Museum of Paleontology. Retrieved from http://evolution.berkeley.edu/evolibrary/misconceptions_faq.php#a3

Modern. (n.d.). *Oxford English Dictionary*. Retrieved from www.oed.com

Moore, R. (1997). The persuasive Mr. Darwin. *BioScience*, *47*(2), 107–114.

Moritz, J. M. (2012). Human uniqueness, the other Hominids, and "anthropocentrism of the gaps" in the religion and science dialogue. *Zygon*, *47*(1), 65–96.

Neubauer, F. (2014). A brief overview of the last 10 years of major late Pleistocene discoveries in the Old World: Homo floresiensis, Neanderthal, and Denisovan. *Journal of Anthropology*, 1-7.

Noonan, J. P., Coop, G., Kudaravalli, S., Smith, D., Krause, J., Alessi, J., … Rubin, E. M. (2006). Sequencing and analysis of Neanderthal genomic DNA. *Science*, *314*, 1113–1118.

Perelman, C., & Olbrechts-Tyteca, L. (1969). *The new rhetoric: A treatise on argumentation*. (J. Wilkinson & P. Weaver, Trans.). Notre Dame: University of Notre Dame Press.

Person. (n.d.). *Oxford English Dictionary*. Retrieved from www.oed.com

Polanyi, M. (1958). Skills. In *Personal knowledge: Towards a post-critical philosophy*. New York: Harper Torchbooks.

Primitive. (n.d.). *Oxford English Dictionary*. Retrieved from www.oed.com

Ruse, M. (1996). *Monad to man: The concept of progress in evolutionary biology*. Cambridge, MA: Harvard University Press.

Stamos, D. (2003). *The species problem: Biological species, ontology, and the metaphysics of biology*. Lanham, MD: Lexington Books.

Stringer, C. (2014). Why we are not al multiregionalists now. *Trends in Ecology and Evolution*, *29*(5), 248–251.

Tabossi, P. (1988). Accessing lexical ambiguity in different types of sentential contexts. *Journal of Memory and Language*, *27*(3), 324–340.

Technique. (n.d.). Oxford English Dictionary. Retrieved from www.oed.com

Trinkaus, E., & Shipman, P. (1992). *The Neandertals: Of skeletons, scientists, and scandal*. New York: Random House.

Underdown, S. (2006, December 7). How the word “hominid” evolved to include hominin. *Nature*, *444*, 680.

Villa, P., & Roebroeks, W. (2014). Neandertal demise: An archaeological analysis of the modern human superiority complex. *PLOS ONE*, *9*(4), 1–10.

White, S., Gowlett, J. A. J., & Grove, M. (2014). The place of the Neanderthals in hominin phylogeny. *Journal of Anthropological Archaeology*, *35*, 32–50.

Williams, J. M., & Bizup, J. (2014). *Style: Lessons in clarity and grace* (11th ed.). Boston: Pearson.

Wolpoff, M., & Caspari, R. (2007). *Race and human evolution: A fatal attraction*. New York, NY: Simon & Schuster.

Wood, B. (2010). Reconstructing human evolution: Achievements, challenges, and opportunities. *Proceedings of the National Academy of Sciences of the Unites States of America*, *107*(2), 8902–8909.

Ziman, J. M. (1968). *Public knowledge: An essay concerning the social dimension of science*. Cambridge, UK: The Cambridge University Press.

APPENDIX. INDUCTIVE CODES FROM ANALYZING *OUR ORIGINS*

Category	Sub-category	Terms used in text
Naming Systems	To describe/define Neandertals	Homo sapiens Archaic Person Human
	To describe/define AMHs in contrast to Neandertals	Homo sapiens Modern Person Human
Topics	Behavior	Burial of the dead Material culture Cannibalism
	Physical Morphology	Skull/Cranial
Positive Language		Breathtaking Fascinating Important Interesting Fundamental Best-known, most-studied Excellent Technique Complex Considerable/considerably Successful/successfully/success Effective/effectively Fundamentally Significant Foundation
Generally Certain Language	Language of certainty	Evidence Demonstrate(s) Disproves/proves Shows/has shown Reveals Correct/incorrect Distinctive/distinctly Insight Proves/proving Conclude(s)
	Language of probability	Argues Indicates Strongly suggests Suggests

Category (cont.)	Sub-category (cont.)	Terms used in text (cont.)
Conjectural Language		Appear to Considers Possibly Conjectural In some respects Purported Potential/potentially hypothesize
Generally Uncertain Language	Language of questionable claims	Use of “scare quotes” “Noun-like” (although forming a connection, adding in the suffix “–like” makes it an uncertain connection) Interpretations View Although + suggestive
	Language of doubt	“do not know” believed opinions “in his mind”