Journal of Undergraduate Research in Anthropology

Volume VII
Summer 2023

Journal of Undergraduate Research in Anthropology
Volume VII, 2023

Contents

From the Editors

Welcome!
Since its inception (2017), JURA has been the chosen forum for 55 undergraduate students representing eighteen different universities and colleges.

Submissions have been both multidisciplinary and geographically broad in scope with contributions that pertain to theory, archaeology, biological, linguistic, and cultural concerns.

Submitted articles are part of an external peer-review process, with each submission reviewed by an anonymous reviewer. We thank those reviewers for their contributions.

Eric Bowne has joined the editorial staff, replacing Duncan McKinnon.

We hope you enjoy the contributions in this volume.

Eric E. Bowne and Jonathan Berkshire

Information for Authors

Articles should not exceed 10,000 words in length, including references. Papers will follow JURA style guide.

For review, please submit to ebowne@uca.edu
- a PDF file of the complete submission
- OR a Word file containing the complete paper (i.e., including abstract, tables and figures)
- OR a Word file containing the text, references, table and figure captions, plus an individual file of each figure (600 dpi) and/or table.
- Excel file of tables is preferred.

Cosmology and Colonization: Oral Traditions as History and the Impact of Trauma on Native American Religion

Ashley McCann, *University of Central Arkansas*

Abstract

The hardships suffered by Native American groups at the hands of colonization are deeply rooted, the effects of which are still seen in modern times. It is the hypothesis of this article that these historical traumas might have been incorporated into Native American oral traditions over time, and it is the goal to analyze how this in turn advocates for the academic reliability of oral traditions in establishing a historical record.

Introduction

Throughout many academic settings, the use of Native American oral traditions and religion in establishing a historical narrative has been the subject of heavy debate. The primary focus of this article is to analyze this debate on all sides from the lens of Caddo religion, and what effect colonization, removal, and assimilation had on it leading to the 19th century Ghost Dance Movement and its aftermath. How does such historical trauma affect a culture's stories and religious beliefs, if it does so at all? In turn, how does this relate to the reliability of oral history? These are the questions to analyze through the historical context and folklore of the Caddo people, as well as that of the Ghost Dance Movement of 1890.

In order to approach this analysis with as little bias as possible, one must pertain a grasp of anthropological theory to come to their own informed conclusions. As such, this article will delve into the theories of ethnoscience and hermeneutics, as well as the modernistic background of folklore analysis.

Modernism

In his book Tradition in the Twenty-First Century, Trevor Blank introduces the evolution of folklore through a variety of lenses, including modernism and antimodernism, as well as how tradition comes into play. Modernism through the lens of folklore can be defined as the antithesis of tradition, focusing instead on the progress of society. Blank points out, however, that modernism has its roots in the "justification for European cultural hegemony," meaning that the definition of "progress" is almost exclusively based in biased European thought (Blank 2013:7). As anthropological theory has developed over time, this manner of thinking has been highly criticized for being narrow-minded and ethnocentric, or the bias that one culture is superior to any other. In this sense, studying folklore and folkloric artifacts was centered on documentation rather than analysis (Blank 2013:7).

In regard to the topic of this article, ethnocentrism and the biased definition of "progress" has a troubled history in the story of indigenous Americans. Native American history after European contact has been marred by racism, assimilation, the forced suppression of their beliefs and culture, and genocide – all due to the self-proclaimed supremacy of Western civilization. It is essential to move forward from such controversial roots, and make the definition of "progress" more subjective - if it should even be defined at all.

Ethnoscience

Ethnoscience – the empirical study of culture – was developed in the 1950s by Boasian-based anthropologists who believed that the "old" fashion of ethnography was unscientific due to outside biases by the ethnographer. They were highly against the etic (or outsider)-only perspective, and argued that ethnography should be entirely emic, that is, entirely within the cultural perspective one is studying (Goodenough 1957:167-168). The argument was that if all researchers write, study, and experience things in different ways, then the data will inevitably be varied; therefore, unscientific. In short, to an ethnoscientist, an outsider's analysis and interpretation would not be worth much consideration. The irony of this article being primarily etic based should not escape readers, and should be kept in mind as various interpretations are presented.

Hermeneutics

In an opposite vein of thinking, hermeneutics is the study of meaning and interpretation, and posits that everything around us is a matter of interpretation (Caputo 2018:intro). It is a philosophy most commonly associated with religion – particularly Christianity and Biblical studies – and is a train of thought employed by many folklorists in order to understand what certain stories might mean in regard to their culture. Criticisms include the high level of subjectivity employed in such a philosophy, which can include the risk of outsider bias. In relation to the questions this article seeks to answer, one

of the main concerns is non-Natives inserting themselves into Native religion and folklore. This is problematic due to the history of the destruction of Native culture and forced assimilation into white Western society.

Introduction to the Caddo

The Caddo that are known today are the descendants of three historical confederacies: the Hasinai of eastern Texas, the Cadohadacho (from whom the word 'Caddo' is derived) near the modern Arkansas-Louisiana border and the Red River, and the Natchitoches near the Red River to the south (Carter 1995a:3-4). A fixed agricultural society, the Caddo predominantly planted the Three Sisters (corn, squash, and beans) along with pumpkins, sunflowers, and melons (Smith 1995:7). Archaeologically, the Caddo are known for their distinctive pottery and beehive-shaped houses, as well as their construction of mounds (Dorsey 1905:vii-viii). Before the arrival of European explorers and settlers, the total Caddo population had a population of approximately 2000,000, and occupied the fertile land of the Red River Valley (Smith 1995:7).

It was in the late 17th century that the Caddo formally came into contact with European powers: the Spanish and the French. Spanish conquistadors bent on conversion and conquest had contacted tribes to the south of the Caddo in the centuries prior, but it is debated whether or not they ever made contact with the Caddo themselves. Spanish missionaries were formally sent to the Caddo in response to the encroaching French threat of the late 17th century. This interaction was disappointing for both the Spanish and the Caddo, as the Caddo were not interested in conversion and the missionaries unwilling to provide the Caddo with weapons and protection (Smith 1995:21). This relationship quickly grew strained. Indeed, in 1693, the Caddo forced out the missionaries when they realized they were only there for religious purposes (Smith 1995:35).

The Caddo were much more favorable towards the French, who were more interested in trading relations than religion. This friendly trade was established by the La Salle expedition in 1686. In return for highly desired hides and furs, the French provided the Caddo with weapons, clothing, and farming utensils. These interactions granted France a foothold in Spanish territory, which it heavily coveted. Trade deals grew to military relationships, with both sides helping the other in their respective battles. This, of course, the Spanish resented. The alliance with France ultimately ended in 1762, when France ceded Louisiana to Spain and fled from North America (Smith 1995:21-24, 49, 62).

The tense relationship between the Caddo and the Spanish skyrocketed with the introduction of disease, with a fever wiping out nearly three hundred to four hundred Caddo in 1691. This was one of many epidemics across Native America, and resulted in a drastic decline in population. Accounts from the 18th century described the Caddo in a constant state of illness. These constant epidemics were a further wedge between the Caddo and the Europeans, specifically the Spanish empire, and the smaller population left them vulnerable to enemy tribes (Smith 1995:31, 54).

Caddo land was greatly desired by European and eventual Euro-American settlers, and they, like many other Native groups, faced removal in the 19th century. In the years after the War of 1812, the Caddo faced pressure from the United States and eastern tribes. Anglo-American farmers began to settle in the area – with illegal traders supplying the Caddo with copious amounts of alcohol and destroying the game population – pushing emigrants from eastern tribes further towards Caddo territory (Smith 1995:107-110).

The election of President Jackson marked the beginning of nationwide Indian removal. Andrew Jackson was elected the seventh president of the United States in 1829, a notorious precursor to the infamous Manifest Destiny movement. Due to the rising conflicts between Native Americans and Euro-Americans, Jackson's terms (1829-1837) prioritized the removal of the indigenous populations, culminating in the Indian Removal Act in 1830. In his State of the Union address to Congress in December 1830, Jackson boasted of his administration's success in removing such groups as the Choctaw and Chickasaw, or in his colorful language, "savage tribes" (Jackson 1905:111). Indeed, Jackson dismissed the contemporary tribes as remnants of a powerful long-gone race, and that their removal was an advantage for both sides in order to avoid further conflict.

In 1835, the Caddo signed a similar treaty where they agreed to leave their traditional lands in Louisiana and Arkansas and move to the Brazos Reservation in Texas. In return they received $30,000 worth of goods and horses, $10,000 to be paid to them during their relocation, and an annual $10,000 for the next four years (Brooks 1835:119). This was the first of many Caddo migrations. It was their agent, Jehiel Brooks 1835, that had encouraged and commissioned this treaty at the Louisiana Agency House (Brooks 1835). Before they agreed to sign the Treaty of 1835, the head chief of the Caddo Nation, Tarshar, and other representatives decided to convene with the rest of the tribe to discuss the matter. The meeting was recorded by Jehiel Brooks, during which the rest of the tribe expressed sorrow at being uprooted. Tarshar acknowledged this, but defended this choice as being preferable to waiting "till the white man steals [their land], little by little, and then

gives [them] nothing" (Brooks 1835:118). The treaty was ratified in 1836, and gave the Caddo one year to evacuate.

Eventually, due to constant threats and hostility from their white Texan neighbors, the Caddo fled into Indian Territory in Oklahoma, led by their agent Robert S. Neighbors (who was later killed due to his friendly relations with the Caddo). They remained in the Indian Territory until the beginnings of the American Civil War, when some retreated to Kansas and others stayed and fought with the Confederacy out of necessity. Those who fled returned to Oklahoma in 1867, where they again faced the loss of much of their land due to the Dawes Act of 1887 (Dorsey 1905:ix-x).

Caddo Cosmology and Storytelling

In modern media, there is no single way to tell a story. It is the same with the Caddo, just as it has been for millennia. While many stories, dances, and songs have been lost as a result of cultural genocide and assimilation, many are still practiced today. These can be stories of victory, of resilience, of caution, and the like. These, as mentioned, could be conveyed orally or through song and dance. For example, the Turkey Dance tells the story of its own origins, and of the timelessness of tradition.

Both transcribed oral traditions and dancing – such as George Dorsey's Traditions of the Caddo, Eugene Heflin's "The Oashuns or Dances of the Caddo," and Cecile E. Carter's Caddo Turkey Dance – are useful in conducting research regarding Caddo religion. Dorsey (1905) transcribes seventy oral stories with a broad range of subjects and characters, from the origins of life and death, to cannibals with iron noses, to the mischievous Trickster Coyote taking the fall for his actions (Dorsey 1905).

From these stories, audiences can piece together what the Caddo consider noble traits and values, such as loyalty to one's family and respect for the spirits. For example, the brave brother determined to rescue his other brothers from the Iron Nosed Cannibal, or the Caddo people refusing to touch growing corn before it was ready for harvest out of respect for Snake-Woman, who laid claim to it (Dorsey 1905:18, 58-61). The purpose of these stories is, essentially, to teach life lessons. Dorsey pulls these stories from a variety of Caddo sources, Mr. Wing, White-Bread, Annie Wilson, and many others, though he unfortunately does not list all of his contributors. Similarly, according to Wallace L. Chafe in the introduction to the collection, Dorsey left very little behind regarding the actual story-collecting (Dorsey 1905:vii-xxii).

Oral tradition was not the only mode of storytelling to the Caddo. Eugene Heflin made his first observations of Caddo dancing while assisting a professor making a motion picture. He made careful notes of the movements, dress, and customs, particularly those surrounding gender, and spoke with various Caddo about the significance of these dances. Through his descriptions, the reader learns that these dances recount important Caddo stories and events in history. For example, the Turkey Dance relays its own origin: a young warrior encountering a group of turkey hens circling some males, learning their dance, and bringing it back to his tribe for them to emulate (Heflin 1953:39-42). What Heflin does not convey is that the dance not only tells this story, but provides insight into Caddo religious beliefs.

According to the Caddo, the turkey is the symbol of the ancestors, the remnants of their physical presence on Earth. Through this context, the young warrior learned this dance directly from the departed, and thus spread it along the generations. The songs sung during the dance themselves are a "collective memory" of the Caddo people. Indeed, today the Turkey Dance is performed as a celebration of Caddo resilience and triumph against the odds of history (Carter 1995b:32, 35).

One primary concern when it comes to dealing with such stories and ideology is the simple fact that it is ever-changing throughout time. Narratives get changed, whether it be from misinterpretation, censorship, creative differences, or being lost altogether, and people can end up with different versions of the same story. As such, the legitimacy of the "collective memory" is challenged (Carter 1995b:32). Such is the case for Heflin and Chafe. Heflin writes that one of his sources, Maurice Bedoka, could only recall two original Caddo dances, while another anthropologist, John Reed Swanton, recalled being told of three – thirty years earlier (Heflin 1953:39-42). Wallace Chafe encounters the same predicament with his own source, Sadie Weller Bedoka. She and Dorsey's source, White-Bread, told differing versions of the same story (Dorsey 1905:xvi-xix).

While the theme remained generally the same, many character aspects were flipped, making character analysis quite difficult. Some might say this is only a minor issue when it comes to the big picture of folklore. Character traits, in this mindset, are less important than the actual events and overall outcome of the story. However, it is important in an academic environment to at least be aware of such differences for the sake of being thorough – whether or not they warrant further analysis is up to the researcher.

Historical Effect on Stories

Traumatic historical events like colonization and forced removal left a permanent scar in the minds of the Caddo people. Indeed, Mark van de Logt argues that this trauma of violence and forced removal had already left a deep

wound in Caddo folklore centuries before, specifically as a result of the devastating de Soto expedition (Van de Logt 2020:129-153). It was his interpretations that encouraged me to look further into this possibility of using folklore as a source of tribal history.

Consulting Dorsey's collection of Caddo stories, van de Logt was introduced to the Iron-Nosed Cannibal: an antagonist of two collected stories. In these stories, the Iron-Nosed Cannibal – a separate entity from the other mentioned cannibals – wears a mask of iron with a long spike for a nose that he uses to spear his victims. Both tales feature a band of brothers gradually disappearing, and the remaining brother setting off to rescue or avenge them. He discovers that his brothers have been compromised in some way by the Cannibal, and with the help of a mythic character is able to defeat him (Dorsey 1905:59-61).

Van de Logt pays special attention to the latter of the two stories, "Coyote and the Six Brothers," in which Coyote, a trickster figure in Caddo folklore, appears to the remaining brother in a dream proclaiming that his brothers had been enslaved by the Cannibal along with many others, and were being worked to death. Coyote wishes to aid them, and turns himself into a new corn mill to be picked up by the "bad people." He remains undiscovered for several days, but then arouses the suspicion of the Iron-Nosed Cannibal who tries to smash the corn mill with his spiked nose. He misses, and gets his nose stuck in the log the corn mill had been resting on. Coyote then returns to his previous form, secures the Cannibal in place, and calls to the slaves to kill him. After this was done, the enslaved brothers were freed and returned home (Dorsey 1905:59-61).

How does such a story relate to the de Soto expedition? Van de Logt provides his own personal interpretation through his recognition of historical similarities. Spanish conquistador Hernando de Soto had begun his expedition through the southern region of North America in 1539, reaching western Arkansas and possibly contacting the Caddo people in 1541 (Van de Logt 2020:131). The result was disastrous and bloody, leaving many Native Americans dead, enslaved, or displaced far from their homelands.

We see the same brutality expressed in "Coyote and the Six Brothers." The infamous iron-nosed mask worn by the Cannibal, van de Logt argues, could be the American Indian interpretation of the Spanish helmets, weapons, or even horse armor used during the expedition. As for cannibalism, he believes that this aspect should be taken more as a figurative consumption of the Caddo rather than a literal one, as there is no written or archaeological evidence of cannibalism (Van de Logt 2020:144-145, 153). These are his more superficial comparisons. His most in-depth argument comes from his comparison of the story to the historic Spanish battles with the Tula Indians of Western Arkansas.

One Peruvian chronicler, Garcilaso de la Vega (1539-1616), described the battles of Tula, an account that stood out to van de Logt. De la Vega writes of an encounter between a Tula man and Juan Páez, de Soto's captain of crossbowmen. Páez tried to spear the man from his horse but missed, and the warrior retaliated with a blow from "'a piece of pike more than a fathom long,'" breaking Páez's teeth. This unexpectedly fierce resistance forced de Soto to retreat (Van de Logt 2020:147).

The next day Páez returned, and was met with the same resistance; however, this time a significant number of Tulans were armed with a similar pike. Garcilaso writes that this was the result of the first warrior, who had disabled Páez, had spread the word of his luck and inspired others to take up similar arms. The Tulan were ultimately defeated, but their sheer tenacity left quite an impression on de Soto. Van de Logt speculates that this piece of pike could have been part of a corn pestle – the same used to vanquish the Iron-Nosed Cannibal in the Caddo stories. Furthermore, could the Tula warrior who had wounded Páez then have been transformed into Coyote over time? Van de Logt certainly believes so, as he refers to the warrior as Coyote for the duration of his analysis (Van de Logt 2020:147-150).

Van de Logt Criticisms

One cannot ignore the predominantly etic approach van de Logt takes in his interpretation of Caddo stories. He himself admits that no Caddo were consulted in preparation for this analysis, and that he uses a lot of his own personal interpretations. He explains this lack of Native input as a result of colonization and assimilation, and the subsequent loss of cultural knowledge (Van de Logt 2020:36). Regardless, personal interpretation – especially personal outsider interpretation – incorporates personal bias into itself, something ethnoscientists would be quick to criticize.

Another weakness that van de Logt's argument rests on is the theory that the Tula people were truly Caddo. There is very little archaeological evidence to support this argument. If the Tula were in fact not considered Caddo, van de Logt's comparison of the Long-Nosed Cannibal to a Spanish Conquistador would hold little to no water.

Archaeologists who have worked on sites near where Tula would have potentially been located have considered that, based on the various archaeological evidence found, the Tula people might have been a product of many different cultures. The Carden Bottoms site in Western Arkansas, for example, has produced

many different styles of pottery sherds, housing materials, and neighborhood layouts that suggest this blending of culture. Influences include Caddo, Osage, and Quapaw (Sabo et al. 2020:28-29). The site also notably contained no traces of Spanish presence. George Sabo argues that the original occupants were not purely Caddo due to this multicultural presence, but could have held ancestral ties to the Caddo (Sabo et al. 2020:33).

Additionally, there is the detail that one of van de Logt's sources, Garcilaso de la Vega, was not part of the de Soto expedition himself. His chronicle, La Florida del Ynca, was written almost sixty years after the expedition. This is not immediately mentioned in van de Logt's book. When it comes to documenting the de Soto expedition, there are few first-hand accounts to consult. The majority of records come from second-hand chroniclers like de la Vega, many of them written after the expedition itself (Lankford 1993:173-174). As such, there is always risk of embellishment and personal bias, either from the author or their sources, which academics might consider unreliable.

The Long-Nosed God

When reading these Caddo stories of the Iron-Nosed Cannibal, archaeological evidence of there being a similar – if not the same – figure is brought to mind: the Long-Nosed God. What have been dubbed Long-Nosed God masks have been uncovered in the mounds of Mississippian and Caddo sites, including the Gahagan site in Arkansas. These masks were crafted from shells, copper, bone, and other such materials, and depict a face with an exaggerated nose (Emmerson & Girard 2004:59). This nose was either fixed to the face or could be detachable (Bareis & Gardner 1968:495-497). Could these masks be depicting the Iron-Nosed Cannibal of Caddo folklore, with the materials changing over time? It is almost impossible to know for certain, as these masks are believed to date back to the Mississippian era, and there are no other known stories depicting such masks.

The similarities are certainly interesting and give weight to the Caddo stories, but what of van de Logt's comparison to the Spanish Conquistadors? If the Long-Nosed God masks and the Iron-Nosed Cannibal proved to be one and the same, then the Cannibal outdates the Spaniards by hundreds of years. This would still be incredible evidence in favor of the reliability of Caddo oral history, with the story of a long-nosed being having lasted from the Mississippian era to the present day. However, again, it is very difficult to prove or disprove such a corroboration.

Oral Traditions as History: Criticism and Defense

The concept of oral traditions being accepted as history is a controversial topic in academic spaces. Oral traditions are often discounted as legitimate sources of history, and their reliability is doubted. These concerns sprout from the fact that these stories have been passed down through the generations, and the risk of censorship (that we see with Indigenous assimilation), mistranslations or miscommunications, and the like is great. Van de Logt references the highly critical views of anthropologist Robert Lowie, who was adamant that historical value should not be drawn from oral traditions "under any conditions whatsoever." He accuses those who do so of cherry-picking what they themselves deem to be historical while conveniently leaving out the more mystical aspects. Essentially, Lowie asks how one can reject what is inherently "mythical" and retain the rest of the story as historical (Lowie 1915:598). In this case, arguing that the Iron-Nosed Cannibal was based off of Spanish conquistador but ignoring the fantastical transformation from Coyote into cornmill (van de Logt 2020:129-153).

However, this is not to dismiss the influence that historical events can have on folklore and religion. Van de Logt and other like-minded scholars argue that while myths and folklore might not be word-for-word retellings of historical events, many contain roots of history. It is only a matter of deciphering them. While Lowie might accuse this manner of thinking as cherry-picking, it would be narrow-minded not to consider every possibility. This argument is further supported when considering Rachel B. Galan's (1994) own findings on how Caddo stories reflect their domestic and political structure.

Galan focuses specifically on the political, religious, and sexual traditions of the Caddo, and how such roles are reflected in their folklore. She first compares the political systems of the Caddo and that of their folklore: in both, we see the appointing of the xenesi (also referred to as the xinesi or chenesi), or chief, to be not only the supreme political leader, but a spiritual leader as well. Galan refers to the stories of Moon and Medicine-Screech-Owl, the most influential xenesi in Caddo folklore. Caddi, the Caddo equivalent of governors, are also appointed to each tribe as a subordinate to the xenesi (Galan 1994:62-63). This too is paralleled in both oral traditions and Caddo history.

Galan continues with the medicine-men and the motif of the owl in folklore. Again, she brings up Medicine-Screech-Owl, and of medicine-men disguising themselves as owls in Caddo cosmology. Lastly, Galan analyzes the role of women between historical accounts and folklore. Besides the story of Snake-Woman, there are no known stories of women being prominent named figures in Caddo folklore. Typically, they are mentioned as wives and mothers performing domestic duties. For example, grinding cornmeal and cultivating crops.

Again, this is paralleled in the Caddo historical record of women taking care of the home, cooking, and agricultural responsibilities (Galan 1994:61-67).

In these comparisons we can see the influence of historical social roles in folklore, or vice versa. Either way, thereby supporting the argument that oral traditions should not be excluded in discussions of historical context. Through stories we can make an inference on how a society functioned at its core – Galan mentions that folklore only explains the basics of the political system (Galan 1994:62). While not every aspect seems realistic or historically plausible to an outsider, such as the transformation of humans into animals, they still serve to convey certain values of a specific society, and are true to the believer. In this case, the Caddo reverence of owls, the role of the Caddo woman as a cultivator, and the close-knit tie between politics and religion demonstrated by the xenesi.

There are also sites and stories that support the use of oral traditions in historical records outside of the Caddo and other Southeastern Indians. The Ozette site in Washington is an example of generational knowledge proving to be historically accurate. According to Marley Brown, the author of the article "Off the Grid: Ozette, Washington," the oral traditions of the local Makah tribe describe a great mudslide destroying part of Ozette in the distant past. Recent archaeological evidence corroborates these accounts, with more than 55,000 artifacts being uncovered in Ozette, having been remarkably preserved by what seems to have been a mudslide. Radiocarbon dating of the wooden structures dated to approximately five hundred years BP (before present) (Makah Cultural and Research Center 2023).

Pan-Indianism

With all this information in mind – both supporting and rejecting the academic usage of oral histories – how might the traumatic events of 19th century discrimination, forced removal, and massacre have led to the events of the Ghost Dance Movement? To understand the context and successful spread of the Ghost Dance, one must understand the Pan-Indian Movement, or Pan-Indianism. According to Robert Thomas in his article Pan-Indianism, the Pan-Indian Movement can be traced back to the Plains Indians in the early 19th century (Thomas 1965:76). With these connections between tribes of the plains becoming easier- or forced- the exchange of culture, ideas, and religious ideas was imminent.

It is difficult to define Pan-Indianism as it is forever evolving throughout time, but can generally be understood as the coming together of Native American tribes to establish a unified identity. This unity can stem from the inter-tribe sharing of ideas, culture, and traditions. A familiar example is the pow wow. White colonialism further inspired this unity throughout the 19th and 20th centuries, from Tecumseh to Sitting Bull to Wovoka (Thomas 1965:76).

Here is a prime example of Pan-Indian unity from the year 1823: a recollection of Tecumseh's 1811 speech calling for Midwestern tribes to unite against the white invaders. Tecumseh, the chief of the Shawnee, provides authentic Indian perspective regarding Euro-Americans, this one specifically being a call to arms. Tecumseh was fearful of further expansion of white colonizers into their homelands, a sentiment that was shared by a majority of tribes that had come into contact with the Euro-Americans. Tecumseh knew this, and appealed to their sense of devotion to their homeland and tribe, referring to his Osage audience as his "brothers." He ultimately decided that force was the only way to keep the encroachers at bay, as words and promises had proved of little value to the Euro-Americans in the past (Hunter 1823:45-48).

There are concerns about the accuracy of the source as it was written years after the speech was performed, and did not come from Tecumseh himself. Rather, it came from a white American named John D. Hunter who had been abducted and raised by Midwestern tribes. Embellishments and exaggerations are not out of the question, especially considering Hunter saw Tecumseh in an extremely positive light, giving him glowing praise (Hunter 1823:43). Nonetheless, this passionate call for Midwestern unity is a compelling example of the origins and subsequent spread of Pan-Indianism, as well as the sentiments shared by many Native Americans at this point in time.

The Caddo and Pan-Indianism

Pan-Indianism was often the result of forced removal to reservations. Such was the case with the Caddo in their various removals. Due to the influx of white settlers encroaching on Native land, eastern tribes emigrated closer and closer to Caddo lands. By 1817, it was reported that members of the Cherokee, Kickapoo, Delaware, and Shawnee had all been pushed towards the Caddo (Smith 1995:109-110). The Caddo had cordial relations with all these tribes, and there was a mutual respect between them.

The Caddo were particularly keen on welcoming the emigrants as allies against the Osage, with whom they all quarreled. The Caddo led several war parties against them until around 1819, when tensions between them and the Cherokee became strained. It was during this time period that more and more Cherokee had moved to the area and began conducting their own war parties, leaving the Caddo feeling insecure about their position on their own land (Smith 1995:110).

These relations continued through 1835, after the Caddo had sold their land to the American government. The emigrated tribes and the Caddo formed a "general council" to discuss negotiations between themselves and the Texans in order to secure some land for themselves. Together they requested land be given back to them in return for their alliance against Mexico, to which the Texans agreed. This promise was unfulfilled (Smith 1995:126-127). However, this displayed a growing sense of unity between multiple tribes demanding change, one of the more positive aspects of Pan-Indianism.

The Ghost Dance

Unfortunately, very little is known about the original Ghost Dance movement of 1870, as it did not reach the same height of popularity as Wovoka's later Ghost Dance. However, we can see the seeds planted in the similarities between the two. In the 1860s, a Northern Paiute man by the name of Wodziwob claimed to see a prophecy of the return of the ancestors on a west-bound train, and white settlers swallowed by the Earth forever. This spark of hope for cultural revival was highly appealing to the Paiute, who had been subjected to Jackson's removal policies (Warren 2017:95).

Wovoka, or Jack Wilson, was a Paiute born in 1856 in western Nevada. In 1889, he, like Wodziwob before him, was granted a vision that saw the return of the grandeur of the ancestors, and white settlers cast out. He was instructed by the resurrected ancestors to perform the Ghost Dance, which would guarantee not only their return, but that of the buffalo, whose population had been decimated by white westward expansion. The excitement of this new prophecy expanded considerably, with followers all over the country performing the Ghost Dance in the hopes of restoring Native prosperity.

In James Mooney's account, Wovoka claimed this vision was brought to him during a solar eclipse, during which he was struck by some serious illness - possibly scarlet fever. Wovoka, the son of a medicine man, claimed that he had seen God, and been instructed to tell his people to "be good and love another, and not fight, or steal, or lie," and was thus given the Ghost Dance (Mooney 1991:764). As his message spread, Wovoka became a Native Messiah, and was referred to as such by many (including Mooney himself).

Louis S. Warren mentions the possibility of Christianity having a hand in influencing the Ghost Dance with Wovoka's prophecy of apocalypse, a messiah sent to deliver the destitute, the resurrection of the ancestors, and vanquishing Native enemies (Warren 2017:11-12). This suggests that Wovoka's childhood with the Presbyterian Wilson family influenced his own prophecy. This – if true – could be evidence of the adaptation of religion and how it molds itself around one's environment, similar to van de Logt's Caddo legend comparisons. There is also the significance of him using the term "God," (Mooney 1991:764) rather than the Great Spirit or the Great Father as seen in Tecumseh's speech (Hunter 1823:47). Could this be evidence of Christian influence, or is it simply a manner of linguistics, and the Great Spirit/Father linguistically evolving into 'God' over time?

From 1889 to 1890, Wovoka's message and the Ghost Dance spread east from Nevada to Wyoming, then north and south to South Dakota and Oklahoma (Warren 2017:144). According to Carla Gerona, the Caddo received instructions for the Ghost Dance after several members – White-Bread included – attended a dance on an Arapaho reservation (though specific dates are not mentioned). Here, Sitting Bull presented them with eagle feathers so that they too could lead the Ghost Dance within their own dancing grounds (Gerona 2012:357).

The goal of the dance itself was to perform it for so long that one passed out. It was debated at the time whether this should have been limited to a medicine man. Either from exhaustion or the intensity of the ritual, those who collapsed sometimes went into a trance-like state, much like Wovoka receiving his original visions. Sometimes, an eagle feather was passed over one's face before they collapsed. Upon awakening, the entranced individuals claimed to have visited the spirit world and contacted the ancestors. They then relayed their messages to the other dancers. (Mooney 1991:916-917). Many claimed to have awoken in tears, which further excited their companions and convinced them of the vision's power and inevitable fruition (Deloria 1998:83). Some danced every night for weeks at a time, such was its fervidity (Warren 2017:195).

According to Mooney, the Ghost Dance amongst the different tribes differed in style and presentation even though they all shared the same ideals. For example, the Sioux utilized the "ghost shirt" and the "ghost stick," while these items are not mentioned in the accounts of other tribes' dances. First-hand accounts from ZA Parker and an unnamed Lakota man describe the Sioux dances ranging from throngs of wailing grief to a mournful silence, and both record a centerpiece pole of either pine or cedar (Mooney 1991:916; Deloria 1998:80-83). This was particularly interesting, as the cedar tree to many Southeastern groups, including the Caddo, is believed to be the axis mundi: the connection between the Above (spirit), Middle (human), and Below (chaos) worlds (Reilly 2004:127).

Wounded Knee and the Ghost Dance

The "battle" at Wounded Knee took place on December 29, 1890, after a confrontation between the Sioux and

the American Government turned into one of the most infamous massacres in American history. Due to rising Euro-American fears of an Indigenous uprising inspired by the Ghost Dance Movement, the American government ordered that the Sioux give up all their arms. Some refused, and a scuffle broke out. It is heavily debated who shot first – accounts from both sides point the finger at the other – but what resulted left many Sioux men, women, and children slaughtered.

Black Elk, a Lakota Sioux, was not present when the first shot was fired. Upon hearing gunshots and cannons, he quickly rode in the direction of Wounded Knee to assist in any way he could. The scene he arrived at was horrific, the bodies of unarmed women and infants already scattered about the grounds, and he and other warriors charged at the American soldiers. He stayed to assist the wounded after the soldiers had left and was then informed of the circumstances leading to the bloodshed. One Sioux, Yellow Bird, refused to give up his weapon, and (accidentally or not) shot an officer in the scuffle. This escalated to the penultimate massacre (Neihardt 2008:207-212).

Charles Eastman, on the other hand, was a physician of mixed white and Santee Dakota heritage, and was tasked with retrieving any wounded from the scene. He had been informed that a "reckless and desperate" Sioux had deliberately shot first, leading the soldiers to retaliate tenfold. That is not to say he was on the side of the soldiers; he made a point to describe the victims as mostly unarmed and innocent. Though a blizzard had delayed the retrieval, he and his companions were able to retrieve what few survivors were left. He counted at least eighty dead, including unarmed men, women, and children (Eastman 1977:112, 109-114). His attitude towards the slaughter is conveyed bitterly: "All this was a severe ordeal for one who had so lately put all his faith in the Christian love and lofty ideals of the white man" (Eastman 1977:114).

After the first Wounded Knee, the Ghost Dance appeared to decline in public popularity. It seemed that such an act of white violence had served its purpose and frightened Native Americans from further practice. Many were greatly discouraged and lost hope in the optimistic future that was promised to them. However, there are accounts of the Caddo and Wichita practicing just as fervently two months after the massacre. Louis Warren writes that a Caddo delegation had made the journey to Nevada in 1891 (after the massacre at Wounded Knee) and returned home with their faith so revived that they continued to dance for the next two years at least. Wovoka himself continued to preach long after the massacre, and created new rules for the Ghost Dance in his Messiah Letter (Warren 2017:298, 309). It seemed that, if anything, white resistance against the Ghost Dance proved its power.

As a testament to its resilience, traces of the Ghost Dance are still seen in the modern era. Ghost Dance songs eventually became like Caddo "church songs" in the 1990s, and morphed into more of a social event rather than a religious one (to the dismay of traditionalists). They are also regularly rehearsed by the Caddo Culture Club as a way to preserve cultural heritage. The Southern Arapahos and Kiowa Apache continued to host Ghost Dances frequently into the twentieth century, and in other tribes began to blur with Christian ideology (also to the dismay of traditionalists) (Warren 2017:370-371).

The Caddo Today

The Caddo Nation became an established government in 1938, with their own constitution, representatives, and chairmen to follow. The Nation remains strong to this day, with elections every four years and constant cultural celebrations demonstrating their resilience in spite of the historical wrongdoings enacted upon them. The Caddo Culture Club was formed in 1988, and songs, dances, presentations, and conferences are always part of the monthly agenda. They make it their job to travel to schools and museums to educate the public about the Caddo people and their history (Caddo Nation Gov. 2023).

Contemporary Caddo artists in particular are in the beginnings of a sort of renaissance, with the blending of traditional and modern techniques being their mission to keep their culture alive and strong. The distinct style of Caddo pottery has been combined with modern themes in the work of Chase Kahwinhut Earles, and classic Caddo patterns have been given a modern street art spin in Chad Nish Earles' prints (Earles 2020; Earles 2023). Statement pieces over the past treatment and stereotypes of Native Americans are the specialty of Raven Halfmoon, and the intricate ceramics of Jeri Redcorn serve to educate fellow Caddo and archaeologists on the traditional craft (Halfmoon 2018).

The Turkey Dance is still practiced to this day, with a few alterations here and there. The meanings of some songs have been lost to time, and songs are added or removed as time goes on. Some of the dancing has been altered, and clothing has adopted more modern styles (Carter 1995b:33). However, the attitude of victory remains. This time, it is not victory over their enemies, but over time and oppression. The Turkey Dance has become a celebration of resilience and of culture, and is practiced with the same fervor as it was centuries ago.

Summary and Conclusions

As admitted in the beginning of this article, to the ethnoscientist this work would be unscientific and unreliable as mine and others' interpretations of Caddo folklore are almost entirely etic based. My intention is not to speak for the Caddo, nor is it to suggest that there can only be one set meaning for these stories. Rather, it is an invitation to conduct further research on the reliability of oral traditions in academic spaces, especially those of Native Americans, and to highlight their historical and cultural value.

The debate of relying on oral traditions as history is likely to remain just so – a debate. However, it speaks to the reliance of tribal memory and the importance of preservation that these stories, no matter how they might have changed, have been kept in the minds of indigenous Americans for hundreds of years. In cases such as the Ozette site, researchers cannot ignore the possibility of history being preserved within such stories, and the integrity of tribal memory. History has and will continue to insert itself in our stories, often in ways we don't expect, from the mundane to the traumatic.

We see this in the stories of Caddo home life, of the mothers and farmers. We learn of spiritual positions no longer occupied, the role they held in society, and how a hierarchy might have operated. We see loyalty to one's family, tribe, and friends, and a fierceness to defend. If stories cannot relay historical events word-for-word, then they can relay the values and structures of the society from which they came.

Overall, it appears that with whatever side of the debate one stands, one cannot deny the underlying message of the resilience of Native American culture, and the firm statement that their way of life refuses to be prey to erasure. The continued existence of these stories after hundreds of years is a testament to it. The revival of ancient artistic traditions, the yearly dances, and the monthly conferences and presentations are testament to it. The Caddo have had to fight to keep their way of living, and they will continue to do so.

When it comes to evaluating the success of Wovoka's Ghost Dance movement, Louis Warren puts it best: "agents who feared that the Ghost Dance could restore the old ways were not entirely wrong" (Warren, 371). Did everything promised come to fruition? Perhaps not. At least, not in the way that was expected. While the Euro-Americans not only continued to occupy Native land but further encroach upon it, the resilience of Native American culture held strong.

Dancers who had received promises from their ancestors that the old way of life would be preserved would fight for this future by reviving old traditions and ceremonies and continuing to dance. Without this determination to further preserve their religion and way of life, so much more could have been lost. Religion became history, and oral traditions proved themselves to be true. While Wovoka might not have delivered everything he had promised, he did spark unity amongst the tribes and give them something to fight for in the face of oppression.

References Cited

Bareis, Charles J., and William M. Gardner.
1968 Three Long-Nosed God Masks from Western Illinois. *American Antiquity* 33(4):495–498. https://doi.org/10.2307/278600.

Ben-Amos, Dan
2020 *Folklore Concepts Histories and Critiques. University of Indiana, Indiana.*

Blank, Trevor J
2013 *Tradition in the Twenty-First Century Locating the Role of the Past in the Present. Utah State University, Utah.*

Caddo Nation
2023 Caddo Nation Government. Electronic document, https://mycaddonation.com/caddo-tribal-council

University of Oklahoma College of Law.
2023 The Caddo Indian Treaty. (To Accompany Joint Resolution No. 18.). Electronic document, https://digitalcommons.law.ou.edu/cgi/viewcontent.cgi?article=8672&context=indianserialset

Caputo, John D
2018 *Hermeneutics: Facts and Interpretation in the Age of Information. Penguin Books, London.*

Carter, Cecile
1995 *Caddo Indians: Who We Are. University of Oklahoma.*
1995 Caddo Turkey Dance. *In Remaining Ourselves: Music and Tribal Memory,* pp. 31-35. State Arts Council of Oklahoma.

Deloria, Ella
1998 The Reservation Picture. In Speaking About Indians, pp. 80-83. Originally published 1944, Lincoln: University of Nebraska.

Dorsey, George Amos
1905 *Traditions of the Caddo*. Carnegie Institution.

Earles, Chad
2023 Nishology. Electronic document, https://www.nishology.com/products.
2020 Dominion. Ceramic. King Galleries, Scotsdale.

Eastman, Charles Alexander
1977 *From the Deep Woods to Civilization: Chapters in the Autobiography of an Indian.* Originally published in 1916, Lincoln: University of Nebraska.

Emerson, Thomas E., and Jeffrey S. Girard
2004 Dating Gahhagan and Its Implications For Understanding Cahokia-Caddo Interactions. *Southeastern Archaeology* 23(1):57–64. http://www.jstor.org/stable/40713302.

Galan, Rachel B.
1994 Caddo Mythology: Ethnohistorical and Archaeological Considerations. *Mid-America Folklore* 22:61–67.

Gerona, Carla
2012 Caddo Sun Accounts across Time and Place. *American Indian Quarterly* 36(3):348–76. https://doi.org/10.5250/amerindiquar.36.3.0348.

Goodenough, Ward H
1957 Cultural Anthropology and Linguistics. In *Report of the Seventh Annual Round Table Meeting on Linguistics and Language Study*, edited by Paul L. Garvin, pp. 167-173. Georgetown University. https://repository.library.georgetown.edu/bitstream/handle/ 10822/555451/GURT_1956.pdf;sequence=1

Halfmoon, Raven
2018 First Encounter. Sculpture. Kouri + Corrao Gallery, Sante Fe.

Heflin, Eugene
1953 The Oashuns or Dances of the Caddo. In *Bulletin of Oklahoma Anthropology Society* 1:39–42.

Hunter, John D
1823 *Memoirs of a Captivity among the Indians of North America.* London: Longman, Hurst.

Jackson, Andrew
1909 Second Annual Message. *The Statesmanship of Andrew Jackson as Told in His Writings and Speeches*, edited by Francis Newton Thorpe, pp. 110-115. New York.

Lankford, George E
1993 Legends of the Adelantado. In *Expedition of Hernando De Soto West of the Mississippi*: 1541-1543, edited by Gloria A. Young and Michael P. Hoffman, pp. 173–191. University of Arkansas.

Lowie, Robert H
1915 Oral Tradition and History. In *American Anthropologist* 17(3):597–99. http://www.jstor.org/stable/660515.

Makah Cultural and Research Center
2023 "Makah Culture - Archaeology." https://content.lib.washington.edu/cmpweb/exhibits/makah/arch.html.

Mooney, James
1991 *The Ghost-Dance Religion and the Sioux Outbreak of 1890.* University of Nebraska.

Neihardt, John G
2008 *Black Elk Speaks: Being the Life Story of a Holy Man of the Oglala Sioux.* Reprinted. Albany: State University of New York. Originally published 1932, William Morrow and Company, New York.

National Archives and Records Administration
2023 "Ratified Indian Treaty 197: Caddo - Agency House, Caddo Nation, Louisiana, July 1, 1835." National Archives and Records Administration, https://catalog.archives.gov/id/147968163.

Reilly, F. Kent
2004 People of Earth, People of Sky. In *Hero, Hawk, and Open Hand: American Indian Art of the Ancient Midwest and South*, edited by Richard F. Townsend, pp. 125–137. Art Institute of Chicago in Association with Yale University Press, Chicago.

Sabo, George, III, Jerry E. Hilliard, Leslie C. Walker, Jami J. Lockhart, Ann M. Early, and Rebecca L.F. Wiewel
2020 Carden Bottoms: Indigenous Responses to Europeans on the Far Reaches of the Mississippian Shatter Zone. In *Contact, Colonialism, and Native Communities in the Southeastern United States*, edited by Edmond A.

Boudreaux III, Maureen Meyers, and Jay K. Johnson, pp. 16-34. University of Florida Press, Gainesville.

Smith, Foster Todd
1995 *The Caddo Indians*. Texas A&M University.

Thomas, Robert K

1965 Fall 1965: Pan-Indianism. *Midcontinent American Studies Journal* 6(2):75–83. http://www.jstor.org/stable/40640557.

Van de Logt, Mark
2020 *Monsters of Contact: Historical Trauma in Caddoan Oral Traditions*. University of Oklahoma.

2017 *God's Red Son: The Ghost Dance Religion and the Making of Modern America*. Basic Books, New York.

Warren, Louis S

Pierre Clastres on Power: An Interpretive Review

Rowan F. F. Glass, *University of Oregon*

Abstract

The French anarchist anthropologist Pierre Clastres (1934–77) was one of the most influential postwar contributors to the theorization of power in political anthropology. In this theoretical review, I engage in a close reading of Clastres' theory of power, drawing on all his major writings, supplemented by secondary scholarship. I also contextualize Clastres' work by both surveying the major forms of theorizing power and the state prior to his work and profiling his legacy in terms of the applications as well as the limitations of his theory. I conclude by arguing that Clastres' theory of power remains an influential and important chapter of political anthropological theory which should still be read today. Clastres enables us to think about stateless societies in their own terms, rather than in the terms of state society, and asks us to consider the role of concerted negation, collective political imagination, and group autonomy in situations of actual or potential power imbalance. He also illustrates the intersection of power with other important concerns such as debt, violence, and economics. Clastres' contributions remain foundational to the anthropological project of theorizing power and counterpower, both in the stateless societies he worked with and in state societies today.

Introduction

The French ethnographer[1] Pierre Clastres (1934–77) was among the most influential political anthropologists of his time and remains today one of the most important figures in the theoretical development of political anthropology. His importance is due to his pioneering theses, derived from his fieldwork among several Indigenous South American societies, on the nature of power and its relation to the emergence of social hierarchy and the state from initially undivided and stateless societies[2]. These theses, which implicitly underscore many of his descriptions of Aché social and political life in his classic ethnography Chronicle of the Guayakí Indians (1998[1972])[3], were more explicitly developed in his essay collections Society Against the State (1989[1974]) and Archeology of Violence (2010[1980]), in which we find the most direct expression of Clastres' theoretical project. While we witness an evolution in his thought through the progression of his career, his theory of power remains consistent across his major works. It is that theory which I attempt to elucidate here.

In this paper, I conduct a close reading of Clastres' theory of power by drawing on each of his major works, supplemented by secondary scholarship. My commentary on Clastres' theory of power attempts to illuminate and explain its developments and key points. In addition to interpreting the nuances of Clastres' theory of power, I contextualize his work by situating it in relation to the most influential theories of power and the state prior to his work. Similarly, I follow my analysis of his theory of power with a survey of its applications and limitations in contemporary political anthropology. I conclude by arguing that although theoretical advances on the question of power in political anthropology have been made since his death, Clastres' contributions are important and lasting enough that he should still be read today.

Prevailing Theories of Power and the State Prior to Clastres

Before discussing Clastres' contribution to the theorization of power in the context of stateless societies and the strategies by which they prevent the rise of the state, it is necessary to briefly survey the broader theoretical landscape of this subject prior to Clastres' work in the 1960s and 70s. For the purposes of this discussion, I treat political power and the conditions for the emergence of the state as mutually inextricable concepts, thinking in line with Clastres' own conviction that any discussion of power implicates the state—whether in terms of its emergence or its determined negation. Indeed, for Clastres, the state is merely "an actualization of a relation of power"—as, he would also argue, is its negation (Barbosa 2004:576). For this reason, the three theories profiled below will be understood also as commentaries on the nature of political power, commentaries from which Clastres breaks in his own work. Naturally, these theories are discussed in abridged and simplified form, only in as much detail as is necessary to understand Clastres' departure from them.

There are three theoretical frameworks on which most conceptions of power and the state in the social theory of Clastres' time were based: the social contract (associated with various Enlightenment

thinkers, most notably Jean-Jacque Rousseau); the monopoly on violence (associated with Max Weber); and historical materialism (associated with Karl Marx). Together, these frameworks formed the general postwar theoretical discourse on power and the state which Clastres challenged in his work.

Although preceded by the work of early Enlightenment scholars and philosophers such as Thomas Hobbes and John Locke, it was the Swiss philosopher Jean-Jacque Rousseau who would produce the most influential conception of the social contract in his 1762 book of the same name (2013[1762]). Rousseau asks a fundamental question, paraphrased by Clastres as "Why did inequality, social division, separate power, and the State appear?" (Clastres 2010:137). The answer, Rousseau suggests, is that rational individuals are incentivized to form political communities which express the general will of the public—that is, to establish a social contract—based on the shared understanding that political order is more beneficial to each and all, on a collective level, than the natural freedom of the pre-political state of nature. In other words, the state as an instrument of the general will is the only legitimate expression of political power, and there can be no power nor politics in the absence of the social contract, i.e., the state.

Probably the most influential definition of the state within modern social theory is that of Max Weber, first formulated in his 1919 essay "Politics as a Vocation," in which he defines the state as "[a] compulsory political organization with continuous operations [which] successfully upholds a claim to the monopoly of the legitimate use of physical force in the enforcement of its order" (1978[1921]:54). For Weber, power is a relation of violence, and the only condition for the legitimacy of concentrated power (i.e., the state) is the monopolization of violence. Insofar as violence is inherent to any political formation, so is power.

For Karl Marx, the state emerged from an initially universal condition which he terms "primitive communism." In primitive communism, societies are stateless and egalitarian because productive forces have not yet developed to a point sufficient to allow for the accumulation of material surplus. It is the productive means to create surplus which gives rise to primitive accumulation, which thereafter enables the division of society into classes defined by their relations of production. Owners of surplus command resources and labor, while those without access to surplus are subordinated, beholden to their labor power to survive. Power stems from one's class standing, which is material and economic in nature. Hence, for Marx, famously, "The history of all hitherto existing human society is the history of class struggles" (Marx 2002). Where stateless societies are concerned, there is no power because there are not yet classes.

As we will now see, Clastres would reject—though not without borrowing from them when necessary—the fundamentals of each of these frameworks in turn.

Clastres' Break from the Prevailing Theories

Although Clastres was influenced by the intellectual milieu from which social contract theory emerged, he disagreed with Rousseau on several key points. One is that the state of nature proposed by Rousseau, and its supersession by the social contract, are not grounded in empirical historical or archaeological evidence. More bluntly, in the assessment of Graeber and Wengrow, it "simply [isn't] true" (2021:17). Moreover, Clastres' rejects Rousseau's belief that "a society without oppression and without submission" could never have existed (Clastres 2010:96). Whereas for Rousseau the anarchistic "state of nature" is a thought experiment, Clastres lived in societies that he characterized as both stateless and egalitarian. For Clastres, ethnography disproves Rousseau's social contract.

Clastres does not directly reference Weber nearly as often as he refers to Rousseau and Marx. Nevertheless, Weber's notion of politics as a relation of violence and his definition of the state as a monopoly on violence are deeply imbedded in Clastres' own theory. Clastres agrees with Weber in recognizing violence as central to all power relations; in his words, "the truth and reality of power consists of violence; power cannot be conceptualized apart from its predicate: violence" (Clastres 1989:11). However, Clastres dismisses the Weberian idea that "coercion and subordination constitute the essence of political power at all times and in all places" [Clastres 1989:13; emphasis in original]. He acknowledges that stateless societies—generalizing from the South American contexts in which he worked[4] — function with political power. For Clastres, there is no such thing as a pre-political or apolitical society. As he writes, "[t]he political can be conceived apart from violence; the social cannot be conceived without the political. In other words, there are no societies without power" (Clastres 1989:23). This is the key point of departure separating Clastres' theory from "the traditional form in which the problematic of power is posed," i.e., the Weberian schema (1989:13).

As for the Marxist position, Clastres rejects the historical materialist view that the state is the necessary product of a certain stage of economic development. In fact, it was Marxism's "economism" that most bothered Clastres, for the latter saw the political as ascendent over the economic. In his words, "the initial division, the one

that underlies all the others, in the last analysis, is not the division into conflicting social groups, into rich and poor, exploiters and exploited. It's the division between those who command and those who obey." (Clastres 2012:18). Marxism has it backwards; it is the political which determines the economic and not vice versa.

Clastres also responded to what he saw as problematic theoretical models which held sway in his own discipline—namely, anthropological evolutionism. Although by Clastres' time, anthropology had outgrown the earliest versions of evolutionism which stressed a unilinear development of societies towards an industrial Western European ideal, multilinear models remained prevalent. Multilinear evolutionism posits that each society, depending on its environment and history, follows a unique line of cultural evolution. All societies, the evolutionists propose, move forward towards greater complexity. Indeed, the evolutionists, like their non-anthropologist predecessors, inherited the tendency to view the state as a universally necessary or inevitable development in the linear evolution of any given society (Sahlins and Service 1960). This assumption is at the core of Clastres' rebuttal of the evolutionist position.

For Clastres, evolutionism is both ethnocentric and ahistorical. A significant part of his work is dedicated to deconstructing the assumption that societies inevitably progress through stages of increasing complexity logically culminating in the emergence of the state. As Graeber puts it, "[Clastres] insisted political anthropologists had still not completely gotten over the old evolutionist perspectives that saw the state primarily as a more sophisticated form of organization than what had come before; stateless peoples, such as the Amazonian societies Clastres studied, were tacitly assumed not to have attained the level of say, the Aztecs or the Inca" (2004:22). For Clastres, the suggestion that so-called "primitive" (that is, stateless) peoples had merely not yet advanced sufficiently along a linear course of development to conceive of or invent for themselves the state was anathema. He had a bolder idea: that stateless societies were always aware of the state as a potentiality, always cognizant of the danger that it might arise. As a result of this cognizance, they developed political mechanisms to prevent its emergence. Stateless societies are not societies without or before the state; they are societies against the state.

Pierre Clastres on Power: What Is Power?

Clastres begins the first essay of Society Against the State with an inquiry: "Can serious questions regarding power be asked?" (Clastres 1989:7). He moves quickly to clarify the terms of the inquiry: "At issue is the space of the political, at whose center power poses its questions" [Clastres 1989:8; emphasis in original]. In other words, power is political; when we reference one, we signify the other. This affirmation, made at the beginning of the book, is echoed throughout the essays that follow as well as those of Archeology of Violence, Clastres' final theoretical statement. It is an affirmation central to Clastres' understanding of power: Power is vested in the political sphere, which is that of culture. Power is not, he assures us to preemptively dispel a pervasive myth, a biologically innate fact, "a vital necessity" (Clastres 1989:8). Rather, it is immanent to culture, where it is the social and not the biological to which we must attend.

Clastres proposes that in what he calls "primitive" societies, political power is not coercive nor subordinating, nor can it be so, precisely because these societies are undivided and, in so being, are organized in such a way as to actively oppose and derail any process or effort that might tend towards division of the social body. For Clastres, undivided society wants permanently to persist in its being: as undivided, as whole. And this brings us to the crux of Clastres' theory of power: his thesis that societies without a state may better be conceived as societies against the state. To come to an understanding of that thesis will require an elaboration of Clastres' arguments. In the following pages, I trace the connections between the major terms in Clastres' theory of power: chieftainship and the duty to speak; the directionality of debt; the domestic mode of production and reciprocal exchange; and violence as a regulatory mechanism.

Chieftainship and the Duty to Speak

First, let it be clear that Clastres does not overlook the existence of chiefs, shamans, big men, and other archetypes of "political office" which are a matter of prestige within some stateless societies. The existence of these archetypes cannot be ignored, especially in the Indigenous American societies with which Clastres is most concerned. The point here is that prestige must not be confused with power. To be sure, the chieftainship is a prestigious position, one which commands a certain respect and for which only some individuals are qualified. Yet the prestige afforded to chiefs — and its continued provision by society — is dependent on their commitment to the duties which society assigns to and expects of them. In the essay "Exchange and Power," Clastres presents three essential characteristics of Amerindian chiefs:

1. The chief is a "peacemaker," the group's moderating agency, a fact borne out by the frequent division of power into civil and military.

2. He must be generous with his possessions, and cannot allow himself, without betraying his office, to reject the incessant demands of those under his "administration."

3. Only a good orator can become chief (Clastres 1989:29)[5].

We find in two of these characteristics what could be termed a duty to speak: the chief is a mouthpiece or representative, mediating disputes within society and mediating on behalf of his society when confronted with others[6]. The duty to speak is symbolic; the chief was often expected to give daily speeches, which no one was obligated to listen to, affirming traditions and reminding society of the virtue inherent in the way things have always been done. Consequently, that other duty, "to be generous with his possessions," cements the chief's indebtedness to society in terms of the production and provision of goods. In societies in which the basic units of production are first the individual and then the family, and in which no one is indebted to the chief to work on his behalf, the chief is, in effect, required to work overtime for the provision of the goods which society demands of him. Society's expectation of generosity from its chief, and the threat to his prestige—or even his membership in society, in extreme cases of exile or execution—should he fail to meet this expectation, cements the chief's indebtedness to and dependence on society; "it is only on condition of this real dependence that the chief can keep his status" (Clastres 1989:45). This raises the question of debt, to which we now turn.

The Directionality of Debt

In stateless society, power is dispersed; it cannot be wielded by one individual or portion of society over or against another, for this would introduce division and create two basic classes from which the existence of the state in all its forms proceeds: those who command and those who obey, masters and subjects. What is the basis of the dispersion of power across all of society, that is, the condition for its lack of division? The basis of power in general is, in Clastres' formation—echoed later in the work of David Graeber (2011)—debt; and it is the directionality of debt which determines whether power is concentrated or, in the case of stateless societies, whether it is dispersed, the common property of society itself. In short, the indebtedness of leaders, namely the chief, to society—as expressed in the constancy of the pressure placed on him to perform his duties to speak and to be generous—is the condition for power's dispersion. Conversely, the indebtedness of society to the chief, the first form of which is tribute, is the condition for the concentration of power, and it is this concentration which is the basis of social division—in a word, the death of stateless society and the emergence of the state. In an instrumental essay titled "Primitive Economy" first published as the preface to the French edition of Marshall Sahlins' (1976) Stone Age Economics, Clastres writes of the role of debt in ensuring stateless society's undividedness:

> The leader is in debt to society precisely because he is the leader. And he can never get rid of this debt, at least not as long as he wants to continue being the leader: once he stops being the leader, the debt is abolished, for it exclusively marks the relationship that unites the chieftainship and society. At the heart of power relations is indebtedness. […] Prisoner of his desire for prestige, the Savage[7] chief agrees to submit to society's power by settling the debt that every exercise of power institutes. In trapping the chief in his desire, the tribe insures itself against the mortal risk of seeing political power become separate from it and turn against it: primitive society is a society against the State. (Clastres 2010:203-204)

This being the result of the directionality of debt within undivided society, Clastres goes on to explain the place of debt once division in the social body has been introduced:

> Since debt relations belong to the exercise of power, one must be prepared to find it everywhere that power is exercised. This is indeed what royalty teaches us, Polynesian or otherwise. Who pays the debt here? Who are the indebted? They are, as we well know, those whom kings, high priests or despots name the common people, whose debt takes on the name of tribute that they owe to the rulers. Hence it follows that, in effect, power does not come without debt and that inversely, the presence of debt signifies that of power. Those who hold power in any society prove it by forcing their subjects to pay tribute. To hold power, to impose tribute, is one and the same, and the despot's first act is to proclaim the obligation of payment. The sign and truth of power, debt traverses the political arena through and through; it is inherent in the social as such. […] Thus, all non-primitive (that is, divided) societies comprise a more or less developed figure of the State. Where there are masters, where there are subjects who pay their tribute, where there is a debt, there is power, there is the State. (Clastres 2010:204, 232)

Having established the basis of the dispersion of power in stateless society, which is to say the condition of its statelessness, Clastres takes us one step further in our understanding of its undividedness, which in fact

is the mark of a conscious and dynamic opposition: the opposition to the state. He begins his seminal essay "Society Against the State" by refuting the notion that undivided society necessary involves a lack, namely of the state:

> What the statement says, in fact, is that primitive societies are missing something—the State—that is essential to them, as it is to any other society: our own, for instance. Consequently, those societies are incomplete; they are not quite true societies—they are not civilized—their existence continues to suffer the painful experience of a lack—the lack of a State… [Clastres 1989:189; emphasis in original]

This notion of lack, Clastres tells us, stems from an ideological conditioning that, in state societies, internalizes the idea of the state as natural and necessary, an historical inevitability[8]. The ethnocentrism inherent in this thinking resides in the fact that it uses state society as the reference point from which to analyze stateless society. In effect, it arises from and reproduces assumptions common to the theories of Rousseau, Weber, Marx, and the evolutionists—all paradigms which assume the state is inevitable and therefore interpret its absence as a lack and not a determined negation. Conversely, the "Copernican Revolution" offered by Clastres proposes, in the words of his friend and collaborator Miguel Abensour, "an understanding of societies with a state in terms of societies against the state, and no longer of societies without a state in terms of those with a state, as if so-called 'primitive' societies were defined by a logic of lack, the lack of a state" [Sztutman 2011:558; translation by author]. This brings us now to the economic considerations central to Clastres' argument.

The Domestic Mode of Production and Reciprocal Exchange

The same ethnocentric thought pattern referenced above, assuming lack where instead we find concerted negation, is evident in the explanations commonly given for stateless society's perceived lack of technological development and its supposed material scarcity. In both cases, this reasoning depends on a "subsistence economy" model. In response to the suggestion that "these societies are doomed to a subsistence economy because of their technological inferiority," Clastres writes:

> [That] argument has no basis either in logic or in fact. Not in logic, because there is no abstract standard in terms of which technological "intensities" can be measured: the technical apparatus of one society is not directly comparable to that of another society, and there is no justification for contrasting the rifle with the bow. Nor in fact, seeing that archaeology, ethnography, botany, etc. give us clear proof of the efficiency and economy of performance of the primitive technologies. Hence, if primitive societies are based on a subsistence economy, it is not for want of technological know-how. [Clastres 1989:192; emphasis in original]

With respect to the idea that the "subsistence economy" is based on a permanent scarcity of food and goods and that people in stateless society must devote their hours wholly to the work of survival lest they die of starvation, Clastres reminds us of Sahlins' (1976) argument that stateless society actually constitutes the "original affluent society" and that it resists all work beyond that required to satisfy its basic needs—which, contrary to the assumptions of the logic of lack, is not very much:

> Men work more than their needs require only when forced to. And it is just that kind of force which is absent from the primitive world; the absence of that external force even defines the nature of primitive society. The term, subsistence economy, is acceptable if describing the economic organization of those societies, provided it is taken to mean not the necessity that derives from a lack, an incapacity inherent in that type of society and its technology; but the contrary: the refusal of a useless excess, the determination to make productive activity agree with the satisfaction of needs. And nothing more. [Clastres 1989:195; emphasis in original]

Stateless society is not characterized by lack, whether of technology, material affluence, or the state; instead, it develops technology and requires work of its members only to the extent necessary to provide for the satisfaction of energy needs. This raises the question of where the idea of work as a central and necessary, even a desirable, facet of social life has its roots: it is "the question of the origin of work as alienated labor" (Clastres 1989:197). Here the matter of debt again comes into play, for only in a power relationship wherein a majority is held to be indebted to a minority can the latter demand of the former, in the way of tribute, work of a kind and degree beyond that which is necessary for the provision of needs; wherein those who hold power tell those subject to it that "you must pay what you owe us, you must perpetually repay your debt to us" (Clastres 1989:198). It is when this relationship arises that the state is also emergent: the political division of power precedes the economic division of power; the emergence of the state precedes and conditions the emergence of socioeconomic classes.

All this is to say that the economy in stateless society, such as we may speak of one, is not a political economy; it is the domestic mode of production, in which the productive units are individuals and families, all working for themselves and only as much as is necessary for their subsistence. Work is not fetishized as an end in and of itself, nor is there any want of excess production—what good is excess to people for whom it serves no practical purpose, whose conditions of survival are already met, and who feel no desire to accumulate for the sake of accumulation? While reciprocal exchange remains foundational to social relations between domestic groups, nobody is obligated to work for anyone else—except, crucially, the chief, who is obligated to work for all society, and who does so individually. In reciprocal exchange there exists a kind of debt relationship, but one in which, through constant small gifts of food from each to everyone else, society is permanently indebted to itself; individuals have obligations to everyone else but can count on everyone else having the same obligations to them. One's position in this social safety net is secure so long as the reciprocal obligations are observed, the taboos unbroken. The fact that everyone is indebted to everyone else in the same proportion, that no single debt greatly exceeds any other, ensures that power remains equally dispersed.

The result is that nobody in stateless societies performs the kind of work that in state societies is fetishized as an end in itself, but which to the former seems quite useless, because it is only through the appearance of debt relationships which introduce division into the social body that there can be any reason to perform such work. To raise the question of the origin of work as alienated labor is to ask about the origins of the state, of the transition from undivided to divided society.

The Origins of the State

This is one point on which Clastres is mostly silent, namely because he does not believe it is possible at present to determine the exact conditions in which the state first emerged (Clastres 1989:205). In any case, he was not totally silent on the issue; in the essay "Freedom, Misfortune, the Unnameable," which reviews the thinking of the proto-anarchist philosopher Étienne de La Boétie, who wrote in the mid-sixteenth century on the problem of the origins of the state, Clastres broaches this mysterious subject by asking us to reflect on it in relation to what we know, from the ethnographic literature, of stateless societies. He historicizes the state, mysterious though its origins remain, by contrasting its presence with its absence, and in so doing asks us to resist the ahistorical fetishization and naturalization of the state that defines its conception within the ideological framework of any state society. Referring to what La Boétie terms "the misfortune,"[9] this being the obscure process or moment which marks the transition from stateless to state society, Clastres tells us:

> [The] desire for power cannot come into being unless it manages to evoke its necessary complement, the desire for submission. […] Primitive societies refuse power relations by preventing the desire for submission from coming into being. […] To the immanence of the desire for power and the desire for submission—and not of power itself or submission itself—primitive societies oppose the musts and the must-nots of their Law: We must change nothing in our undivided being, we must not let the evil desire be realized. [Clastres 2010:180-181; emphasis in original]

People are born free, the desire for freedom is innate in human nature itself; and yet the state, which has monopolized the political sphere in most societies today even though it was and remains a historically contingent configuration, requires the desire for submission on the part of society in order to function. The misfortune comes to pass when society no longer wants to be free, but desires to be ruled. And stateless society does not want to be ruled. The will to freedom suppresses the will to submission; the evil desire must not be realized[10].

We have seen in our analysis so far that Clastres argues that several mechanisms at work in stateless society tend to disperse power and check all attempts to centralize it: the chieftainship and the duties of the chief which indebt him to society; the absence of coercive debt relationships; the configuration of the economy in domestic and not political terms; and reciprocal exchange relationships which indebt everyone to each other equally. Crucially, one final term in Clastres' theory of power remains to be discussed: his analysis of violence and war as central mechanisms by which the concentration of power is avoided in stateless society.

Violence as a Regulatory Mechanism

Clastres first elaborates this line of thinking in the essay "Of Torture in Primitive Societies," in which he argues that just as writing is the sign of the law in state societies, so does stateless society make use of a kind of "writing" by which its members are not allowed to forget the rules and norms which govern their society[11]. State societies write with papyrus, clay tablets, or paper; the body itself is the stateless society's medium. Referencing Franz Kafka's story "In the Penal Colony," wherein "Kafka designates the body as a writing surface, a surface suited for receiving the legible text of the law" (Clastres 2010:177), Clastres moves to an analysis of

rites of passage, especially involving torture, in which "the body mediates the acquisition of knowledge; that knowledge is inscribed on the body" (Clastres 2010:180)[12]. Commenting on the torturous scarification practices employed among some Indigenous groups in the Americas and elsewhere, he writes:

> Precisely insofar as the initiation is—undeniably—a test of personal courage, this courage is expressed (in a manner of speaking) by silence in the face of suffering. But after the initiation, when all the suffering is already forgotten, something remains, an irrevocable surplus, the traces left on the body by the wielding of the knife or stone, the scars of the wounds received. An initiated man is a marked man. The purpose of the initiation, in its torturing phase, is to mark the body: in the initiatory rite, society imprints its mark on the body of the young people. Now, a scar, a trace, a mark are ineffaceable. Inscribed in the deepest layer of the skin, they will always testify, as a perpetual witness, that while the pain may be no longer anything but a bad memory, it was nonetheless experienced in fear and trembling. The mark is a hindrance to forgetting; the body itself bears the memory traces imprinted on it; the body is a memory. [Clastres 2010:184; emphasis in original]

Not only do these ineffaceable traces identify an individual as one of many—for everyone is so marked—and so prevent one from forgetting one's place in and belonging to society, but by virtue of the same one cannot feign ignorance of society's law; to be marked by society is to be bound by its laws, and the condition for one's inability to forget the one is the impossibility of forgetting the other. In other words, society dictates its laws to its members. It inscribes the text of the law on the surface of their bodies. No one is supposed to forget the law on which the social life of the tribe is based (Clastres 2010:186). And what is that law on which the social life of the tribe is based? It is, as we have seen, an essentially egalitarian one. One is marked to never forget that one is like all others, no more and no less than one's peers who have also been so marked. Society's brand is applied indiscriminately to all. Clastres concludes:

> [Writing] points to the existence of a separate, distant, despotic law of the State… And one cannot emphasize too strongly the fact that it is precisely in order to exorcise the possibility of that kind of law—the law that establishes and guarantees inequality—that primitive law functions as it does; it stands opposed to the law of the State. Archaic societies, societies of the mark, are societies without a State, societies against the State. The mark on the body, on all bodies alike, declares: You will not have the desire for power; you will not have the desire for submission. And that non-separate law can only have for its inscription a space that is not separate: that space is the body itself. […] It is proof of the admirable depth of mind that the Savages knew all that ahead of time, and took care, at the cost of a terrible cruelty, to prevent the advent of more terrifying cruelty: the law written on the body is an unforgettable memory. [Clastres 2010:188; emphasis in original]

If violence, in the form of torture, is deployed by stateless society against its members to equalizing ends, what of violence as it exists between stateless societies: what of war? It is a fact that most stateless societies for which historical documentation exists have existed in what Clastres calls a permanent state of war, in which even if violence was not constantly realized it was nonetheless always latent, the outbreak of actual violence remaining always a possibility[13]. Clastres writes that "one cannot think of primitive society without also thinking of war which, as an immediate given of primitive sociology, takes on a dimension of universality" [Clastres 2010:241; emphasis in original]. What explains this apparent universality? Clastres identifies and successively discounts three major interpretations which have dominated anthropological thinking around the issue: the naturalist (war as product of a tendency towards violence inherent in human nature), the economist (war as arising from material scarcity), and the exchangist (war as arising from a breakdown of trade relationships). In Clastres' view, none of these explanations is adequate to explain the prevalence and the role of violence in stateless society (Clastres 2010:243)[14]. But there is an assumption common to each of these frameworks: that "the extreme segmentation of primitive society everywhere would be the cause […] of the frequency of war in this type of society" (Clastres 2010:256). There is indeed a relationship there, Clastres notes, but one whose terms as expressed above must be reversed in order to get to the basis of war's universality:

> It is not war that is the effect of segmentation, it is segmentation that is the effect of war. It is not only the effect, but the goal: war is at once the cause of and the means to a sought-after effect and end, the segmentation of primitive society. In its being, primitive society wants dispersion; this wish for fragmentation belongs to the primitive social being which institutes itself as such in and by the realization of this sociological will. In other words, primitive war is the means to a political end. To ask

> oneself, consequently, why the Savages wage war is to probe the very being of their society. (Clastres 2010:256)

The basis of this segmentation is the territory of the local group, "as a natural reserve of material resources, certainly, but especially as an exclusive space for the exercise of community rights" (Clastres 2010:258). It is from each local group's belonging to a particular territory, a locality, over which they are recognized (or recognize themselves) as holding exclusive rights, that political relationships between groups are born. It is against other communities and their territories that one's own community and territory are defined, that Self and Other are established and their relationship politically mediated. But remember: "the domestic mode of production being what it is, no local group has any need, in principle, to encroach upon neighbors' territory for provisions. […] Territorial defense, thus, is not the cause of war; the relationship between war and society has yet to be illuminated" (Clastres 2010:258).

As we have seen in our exploration of other facets of Clastres' theory of power, it is because stateless society constitutes itself as an undivided whole, a society organized by a logic of difference and dispersion, by a centrifugal rather than centripetal logic, that it must refuse "identifying with others, losing that which constitutes it as such, losing its very being and its difference, losing the ability to think of itself as an autonomous We" (Clastres 2010:263). This is why stateless society organizes its economic life according to an autarkic ideal; society must be self-contained and self-sustaining as far as possible to avoid the identification of multiplicities, the unification, the condensation of Many into One. And for the maintenance of this centrifugal, dispersive logic a sociological necessity arises in tandem with the establishment of political relations between territorialized local groups:

> [Each] community, to consider itself as such (a single totality), needs the opposite figure of the foreigner or enemy, such that the possibility of violence is inscribed ahead of time in the primitive social being; war is a structure of primitive society and not the accidental failure of an unsuccessful exchange. This structural status of violence is illustrated by the universality of war in the Savage world. (Clastres 2010:264)

This is not to say that stateless societies exist in a political network defined by permanent war of all against all. That would be just as untenable as a situation of generalized allyship. The point is that the structural function of war is to maintain stateless society's dispersive logic by contraposing discrete groups against each other, maintaining the unity of each, as a means of preventing social change which could introduce division in the social body. The logic of war is thus an essentially conservative one: it preserves society in its undivided being. That is, "in order to exist in non-division, [stateless society] needs the figure of the Enemy in which it can read the unified image of its social being" (Clastres 2010:275). Clastres returns to the question of multiplicity as a defining feature of stateless societies and their political relationships, and consequently of war among them:

> What is primitive society? It is a multiplicity of undivided communities which all obey the same centrifugal logic. What institution at once expresses and guarantees the permanence of this logic? It is war, as the truth of relations between communities, as the principal sociological means of promoting the centrifugal force of dispersion against the centripetal force of unification. The war machine is the motor of the social machine; the primitive social being relies entirely on war, primitive society cannot survive without war. The more war there is, the less unification there is, and the best enemy of the State is war. Primitive society is society against the State in that it is society-for-war. (Clastres 2010:277)

War is yet another of those control mechanisms by which stateless society, seeking to persevere in its undivided being, maintains itself as such. In this, through war as much as through other control mechanisms we have reviewed, stateless societies succeeded, in most cases right up until the historical cataclysm, the unnamable misfortune, after which so many were destroyed or forced to undergo the changes which are anathema to their social being, namely the introduction of division and all that it entails: the rise of the state and its disastrous consequences[15].

Applications of Clastres' Theory of Power

Clastres left, undeniably, an important mark on the history and theoretical development of political anthropology and adjacent disciplines. The list of those who have drawn on his work, sometimes for the elaboration of highly influential work of their own, is lengthy. In this section, I briefly highlight some of the noteworthy applications of Clastres' work in the decades since his death[16]. In the interest of providing a balanced portrait of his legacy, I follow this discussion with a survey of the limitations and criticisms of his work.

One indication of the broader significance of Clastres' theses beyond the particulars of his South American ethnography comes from the work of anarchist anthropologist James C. Scott in Southeast Asia. For Scott, "Clastres provided a kind of Latin American counterpart to what I thought I was discovering in the context of Southeast Asia" (Gilman and Guillhot 2014:111). This

is not only a confirmation of the possible cross-cultural applicability of Clastres' theoretical generalizations—a point which others, like Descola (1988), have pressed him on—but the influence of Clastres also clearly lives on in the work on Scott, whose work, Weapons of the Weak (Scott 1985), documents forms of everyday resistance to state power on the part of rural peasants in a Malaysian village. Like the Indigenous Amazonians Clastres worked with, the peasants of Scott's ethnography do not want to be ruled.

More interesting than the basic fact that resistance turns up in two otherwise unrelated societies (resistance of some sort is probably common to all societies) is the crucial difference that one finds counterpower tactics deployed in both stateless (that is, anti-state) and state societies. This bears important implications for the relevance of Clastres' work not only to stateless societies, of which there are very few left in the world, but also to the negotiation of power in modern state societies. For example, if Malaysian peasants enact counterpower practices to contest state power at its peripheries, can we also analyze anti-state subcultures such as anarchist coops or communes in the global core in similar terms? In other words, how are practices against the state enacted within state societies? Clastres' theory of power gives us the tools to begin such an analysis.

Another contemporary theorist influenced by Clastres is the anarchist anthropologist David Graeber, whose mentor Marshall Sahlins collaborated with Clastres. As Graeber writes, "by insisting that the people studied by anthropologists are just as self-conscious, just as imaginative, as the anthropologists themselves, [Clastres] did more to reverse the damage [caused by evolutionary paradigms] than anyone before or since" (Graeber and Wengrow 2021:84). Elsewhere, Graeber, drawing a comparison between Clastres and his predecessor Marcel Mauss, writes that "Mauss and Clastres have succeeded, somewhat despite themselves, in laying the groundwork for a theory of revolutionary counterpower" (2004:24)[17]. This is perhaps one of the most forthright arguments for the continuing relevance of Clastres' work. Miguel Absensour develops a similar point in greater depth:

> Not only does Pierre Clastres show the opposition between societies without a state and those with a state, or more accurately, between societies where power is non-coercive and those where it is coercive; he encourages us to perform a Copernican revolution as well. That is, to completely reverse the way we look at things, making a radical about-face by which we have societies with a state gravitate around those that are opposed to the state, so as to open up and discover a previously unheard-of space of intelligibility and to completely renew our understanding of the political. After Clastres the important thing is to take societies against the state as the basis for understanding societies with a state rather than looking at societies without a state through the prism of the state, as if the meaning of those primitive societies was to be found in a logic of absence, or deficit, rather than in a logic of refusal. (Clastres 2012:10).

Beyond restoring agency and autonomy to stateless societies, Clastres asks readers to look upon our own societies in a new light: as societies, though with a state, always potentially against it.

Limitations of Clastres' Theory of Power

Despite the important applications of Clastres' theory described above, there are certainly limitations to his theory as well. One problem, familiar to feminist critics, is that Clastres pays scant attention to questions of gender and sexuality in relation to political power. Asked in an interview whether power is at play in the normative marginalization of women and homosexual men in the societies in which he worked, Clastres replied rather dismissively: "The power of a father over his children has nothing to do with the power of a chief over the people who obey him; that's completely different. We mustn't mix up those different spheres" (2012:25). For Clastres, if there is power operating here, it is still the dispersed and non-coercive power of undivided society and not the concentrated power which is the sign of the state. In this sense, he militates against what Miguel Abensour refers to as a "prevailing Foucauldism" which tends to see power everywhere (Clastres 2012:11); for Clastres, power is not at stake in stateless societies except when it is instrumentalized in dispersed form by society against the possibility of its concentration. In other words, entrenched patriarchy and gender-based violence do not imply a power relationship. Graeber, commenting on this "glaring blind spot" in Clastres' theory, is less compromising:

> Clastres manages to talk blithely about the uncompromised egalitarianism of the very same Amazonian societies, for instance, famous for their use of gang rape as a weapon to terrorize women who transgress proper gender roles. […] Perhaps Amazonian men understand what arbitrary, unquestionable power, backed by force, would be like because they themselves wield that sort of power over their wives and daughters. Perhaps for that very reason they would not like to see structures capable of inflicting it on them. (Graeber 2004:23)

Clearly, this is one point on which a Foucauldian reading of power, for instance—and certainly explicitly feminist frameworks—has more to offer than Clastres' more limited scope.

Some scholars raise more pointed critiques. For Barbosa (2004), "society" is too broad and nebulous a term, so this author prefers "sociality against the state." For Philippe Descola (1988), Clastres indulges in theoretical generalization when writing of Amazonian chiefs as powerless figures. In addition, Descola accuses Clastres of identifying coercive power as a cultural universal, thereby implicating a "theoretical ethnocentrism" by applying a foreign conception of power to the Indigenous societies with which he worked (1988:822). Then there is a methodological problem: though basing his work in the ethnographic and historical literature, Clastres did not engage substantially with archaeology, an omission which casts a degree of doubt on the diachronic validity of his arguments. To some extent, the absence of archaeological references in his work can be forgiven since he worked in tropical regions and with social formations not generally propitious to the long-term preservation of material culture. Regardless, one should be careful not to assume too quickly that Clastres' theses, though perhaps applicable to the contexts in which he developed them, apply equally well to other cultural and historical contexts, especially where archaeological evidence is more abundant.

Faced with these arguments, I would ask: Has there ever been an anthropologist or an argument bulletproof to criticism? I think not. Indeed, a spirit of active critique (but not too personal, one hopes) is the sign of a vigorous discipline. Despite his limitations and the valid criticisms made of his work, Clastres is still worth reading today. The first part of this section has laid out the most compelling reasons why; the subsequent criticisms should merely help us to think with and beyond Clastres, but not without him.

Conclusion

Today there are very few stateless societies left that wholly persevere in their undivided being. For Clastres, this confirmed what he already thought to be true: a certain melancholy and a sense of grave injustice reminiscent of that which pervades Tristes Tropiques, Lévi-Strauss's[18] (1955) magnum opus, is present throughout Clastres' Chronicle of the Guayaki Indians. This pessimism was typical of anthropology in Clastres' time. In the words of Marshall Sahlins, "[e]thnography in the wake of colonialism can only contemplate the sadness of the tropics (tristes tropiques). Like the rusting shanty towns in which the people live, here are bits and pieces of cultural structures, old and new, reassembled into corrupt forms of the Western imagination" (Sahlins 1993:6). For Clastres, who worked with a group of recently settled and formerly nomadic Aché people in Paraguay in 1963, "it was the weary, confused, and empty face that told me the end of the [Aché] had come" (Clastres 1998:343). In his apocalyptic vision, the colonial project of the West had done what it set out to do, what it projected as the inevitable sign of progress: erasing difference, homogenizing, reducing, compressing, drawing everything and everyone into its mass. For Clastres, and many like him in postwar anthropology, escapes or alternatives could scarcely be imagined.

But Clastres was wrong. Insofar as he projected the imminent demise of the Indigenous groups he worked with, history has corrected his prognosis—all the cultures he worked with, far from remaining trapped in a past from which they could not escape, soon to be swept aside by the unstoppable advance of modernity and the state (as Clastres seems to have imagined), remain vigorous still today. There is also an uncomfortable exoticism and primitivism in his thought that has rightly been criticized as romantic and Othering (Brown 2000; Geertz 1998). As one reviewer of Chronicle of the Guayaki Indians has aptly put it:

> Clastres presents his sensational findings in the most neutral way possible: to see everything in the Atchei's way of life, even their cannibalism, as eminently reasonable, as exemplary of what in his conclusion he calls "the Atchei's piety, the gravity of their presence in the world of things and the world of beings" and "their exemplary faithfulness to a very ancient knowledge that our own savage violence has squandered," is to undermine his claim to knowledge along with the authority of whiteness that his scientific search had presumed. And yet it's hard to forgive him that assumption of authority, or his belief that the Atchei were doomed. In 2008 an Atchei woman was appointed Minister of Indigenous Affairs in Paraguay. (Schwabsky 2020)

It is no longer self-evident to suggest that cultures excluded by the hegemonic mainstream are doomed to annihilation by it. It is now possible to contemplate possibilities of cultural creativity and adaptation beyond the supposed teleological inevitability of cultural destruction. Nevertheless, what Clastres shows us, as all good thinkers do, is that alternative ways of being are possible, that what is now is not what always was nor what always must be. The ineffaceable mark of difference, of alternate possibility, can still be evoked to remind us of what must not be forgotten—namely that, if we are to take Clastres' seriously, the fact that the majority of societies ever to exist were stateless and egalitarian suggests that most people, most of the time, do not desire to be ruled.

Considering the foregoing review, we may finally ask, with Allard (2020), whether we should still read Clastres. Breaking with Allard's conclusion, I argue that we should. Clastres' theory of power remains an important chapter in the development of political anthropological theory writ large, one which contemporary practitioners and theorists alike would do well to familiarize themselves with. Clastres' pioneering thesis that stateless societies are societies against the state continues to bear great relevance for anthropological scholarship on the nature of power in both stateless and state societies. It also illuminates the nexus between such central concerns as debt, violence, and economics in relation to power. Clastres' greatest contribution is to teach us to see power—in our own societies as much as in the deep Amazon—with new eyes.

Notes

1. Clastres usually employs the term "ethnologist." In French, at least in Clastres' time, this term is used synonymously with "ethnographer" or "anthropologist" in a general sense. In English, it bears a more specific cross-cultural comparative connotation, so I avoid its use in this essay.

2. Clastres uses the term "primitive society." Except when quoting Clastres directly, I avoid using this antiquated term, preferring instead "stateless society."

3. "Aché" is the preferred endonym of this group, "Guayakí" being a derogatory exonym applied by the Guaraní and other outsiders.

4. Clastres conducted ethnographic fieldwork with several Indigenous societies in Paraguay and Venezuela, namely the Aché and the Yanomami.

5. Graeber points out that these points were first developed by Robert Lowie and reproduced nearly exactly in Clastres' work. Clastres acknowledged this debt while omitting other elements of Lowie's work, including the complicating but important factor of seasonality regarding the flexibility of organizational forms throughout the year (Graeber and Wengrow 2021:123-124).

6. The gendered language may not be unrepresentative; to my knowledge, and in Clastres' work, there are no examples of woman chiefs in the societies he refers to.

7. It goes without saying that we must reject Clastres' uses of such antiquated terms. It is worth noting, however, that in the French and at the time he wrote in, sauvage was not an overtly derogatory term, but referred to a presumed "wild" state. Do we grant Clastres the benefit of the doubt on this count?

8. For Clastres, Marxism is no less guilty of this assumption than the philosophy of Hobbes or the nebulous naturality with which the state is imbued in the mass consciousness of any state society.

9. The transition from statelessness to state society is misfortunate insofar as it reduces freedom, which La Boétie sees as the defining feature of human nature itself (Clastres 2010:173).

10. The closest Clastres comes to overtly theorizing the origins of the state is by asserting that because politics in stateless societies are arrayed to prevent the rise of the state, the state probably first arose through religious institutions rather than political ones, a conclusion apparently shared by his predecessor Robert Lowie (Graeber and Wengrow 2021:124). One could posit, then, that religious impulses are the source of the "evil desire."

11. For Clastres, the state is not requisite for the law, at least if we understand the latter in a broad sense as a system of codifying behavior and social relationships, endorsing some and proscribing others. Customary law, in other words, does not depend on the state.

12. This notion resembles Foucault's concept of the body as a text on which social realities are inscribed (Butler 1989).

13. This notion seems to bear semblance to the "state of nature" described by various social contract theorists, especially the version of Hobbes, according to which, in the absence of the state, life was invariably "nasty, brutish, and short," a "war of all against all" (Hobbes 2017). The difference would seem to be that for Hobbes, this (hypothetical or ideal and not empirical) state of nature necessitates and justifies the state through the social contract, whereas for Clastres, violence and war in stateless society function actively to prevent the rise of the state. For Hobbes violence is natural; for Clastres it is functional and regulatory. Likewise, Hobbes imagines that no society can even hold together cohesively in the absence of the state, whereas Clastres demonstrates that stateless societies constitute undivided wholes—which, nonetheless, can only persist as undivided wholes as long as they define themselves against others.

14. The details of Clastres' critique of each view are to be found in the essay "Archeology of Violence: War in Primitive Societies" (Clastres 2010).

15. This historical cataclysm is inseparable from the advent of European colonialism, being the force that imposed state formations on the majority of formerly stateless societies.

16. While is not possible to discuss their work in depth here, Eduardo Viveiros de Castro has built on

Clastres' legacy through his own ethnographic work in the Amazon, and the archaeologist Severin Fowles has drawn on Clastres' theory of violence in his work on Puebloan societies (Gyrus 2018).

17. Although it is beyond the scope of this essay, it would be interesting to probe in more depth the comparison Graeber draws between Mauss (an economic anthropologist) and Clastres (a political one). He suggests their work is directly complementary (Graeber 2004).

18. Between 1956 and 1975, Clastres studied and worked under Lévi-Strauss. The work of France's leading anthropologist certainly influenced Clastres, and the elder anthropologist is referenced (and critiqued) repeatedly throughout Clastres' work.

References Cited

Allard, Olivier
2020 Faut-il encore lire Clastres ? *L'Homme* 3(236):159-76.

Barbosa, Gustavo
2004 A Socialidade contra o Estado: a antropologia de Pierre Clastres. *Revista de Antropologia* 47(2):529-576.

Brown, Denise F.
2000 Review of Chronicle of the Guayaki Indians, by Pierre Clastres. Zone Books. *Ethnohistory* 47(3-4):818-821.

Butler, Judith
1989 Foucault and the Paradox of Bodily Inscriptions. *The Journal of Philosophy* 86(11):601-607.

Clastres, Pierre
1989 *Society Against the State: Essays in Political Anthropology.* Zone Books, New York.

1998 *Chronicle of the Guayaki Indians.* Translated by Paul Auster. Zone Books, New York.

2010 *Archeology of Violence.* Semiotext(e), Los Angeles.

2012 *The Question of Power: An Interview with Pierre Clastres.* Semiotext(e), Los Angeles.

Descola, Philippe
1988 *La chefferie amérindienne dans l'anthropologie politique.* Revue française de science politique 38(5):818-827.

Geertz, Clifford
1998 Deep Hanging Out. *New York Review of Books,* October22,1998. https://www.nybooks.com/articles/1998/10/22/deep-hanging-out/, accessed May 14, 2023.

Gilman, Nils, and Nicolas Guillhot (editors)
2014 "Transforming the Nature of the Struggle": An Interview with James C. Scott. *Humanity* 5(1):111-122.

Graeber, David
2004 *Fragments of an Anarchist Anthropology.* Prickly Paradigm Press, Chicago.

2011 *Debt: The First 5,000 Years.* Meville House, New York.

Graeber, David, and David Wengrow
2021 *The Dawn of Everything: A New History of Humanity.* Penguin Books, London.

Gyrus
2018 Primitive Heresies: An Interview with Peter Harrison. *Dreamflesh Journal* (blog), April 2018. https://dreamflesh.com/interview/primitive-heresies-peter-harrison/, accessed August 7, 2023.

Hobbes, Thomas
2017 *Leviathan.* Penguin Classics, London.

Lévi-Strauss, Claude
1955 *Tristes Tropiques.* Plon, Paris.

Marx, Karl
2002 *The Communist Manifesto.* Penguin Classics, London.

Rousseau, Jean-Jacques
2013 *The Social Contract.* Penguin Classics, London.

Sahlins, Marshall
1976 *Âge de pierre, âge d'abondance.* Translated by Tina Jolas. Éditions Gallimard, Paris.

1993 Goodbye to Tristes Tropes: Ethnography in the Context of Modern World History. *Journal of Modern History* 65(1):1-25.

Sahlins, Marshall, and Elman R. Service (editors)
1960 *Evolution and Culture.* University of Michigan Press, Ann Arbor.

Schwabsky, Barry
2020 A Reader's Diary: Anthropophagite Piety. *Tourniquet Review* (blog), August 6, 2020. https://tourniquetreview.com/blog/2020/8/6/a-readers-diary-anthropophagite-piety, accessed May 14, 2023.

Scott, James C.
1985 *Weapons of the Weak: Everyday Forms of Peasant Resistance.* Yale University Press, New Haven.

Sztutman, Renato
2011 Introdução: Pensar com Pierre Clastres ou da atualidade do contra-estado. *Revista de Antropologia* 54(2):557-576.

Weber, Max
1978 *Economy and Society: An Outline of Interpretive Sociology.* University of California Press, Berkeley.

A New Physical Anthropology: Washburn's Vision Realized

Katherine H. McLean *University of Auckland*

Abstract

In the 1950s, eminent physical anthropologist Sherwood Washburn called for the development of a New Physical Anthropology. He envisioned future physical anthropologists uniting the biological and social sciences into a cohesive, transdisciplinary whole. This paper functions as both a compact history of Washburn's impact on the discipline now known as biological anthropology and an investigation into whether modern biological anthropologists have finally realized his vision—over 80 years later. I conducted a preliminary systematic analysis of current literature, searching for evidence of Washburn's key tenets: the application of modern understandings of evolution and biosociality. The analysis suggests that biological anthropology has, to a significant extent, developed into the integrated biosocial science of Washburn's dreams. However, scrutiny of the literature reveals inconsistencies in research practises, with biological anthropology not yet a consistently transdisciplinary field.

Introduction

In the early 1950s, eminent anthropologist Sherwood Washburn proposed a multidisciplinary New Physical Anthropology (Strum et al. 1999; Stini 2010; Washburn 1951). His vision called for physical anthropologists to develop into interdisciplinary researchers and incorporate both the social sciences and the developing area of evolutionary biology into physical anthropology (Washburn 1951). Washburn's New Physical Anthropology shaped the field of physical, now biological, anthropology throughout the ensuing decades (Fuentes 2010; Strum et al. 1999). This paper comprises both a brief history of Washburn and his New Physical Anthropology and an investigation into this framework's influence on the modern discipline of biological anthropology. Current biological anthropology has, to a significant extent, successfully united the biological and social sciences, demonstrated by the variety of multidisciplinary and interdisciplinary research being published within our field (Ellison 2018; Fuentes 2010).

The terms physical anthropology and biological anthropology are not synonymous in this paper. Here, physical anthropology refers to the discipline as it was in Washburn's period—focused primarily on the physical human form (Hunt 1981). In contrast, biological anthropology is the preferred term of most modern researchers and academics, and so is used to refer to the extant field with its inclusion of the less 'physical' aspects of biology, such as genetics and behaviour (Fuentes 2010). The difference between the terms is especially salient in this paper, as the difference between the physical, or morphological, and the complete biological is crucial in understanding Washburn's New Physical Anthropology (Strum et al. 1999).

Washburn's New Physical Anthropology

Until the mid-20th century, physical anthropology mirrored the broader biological sciences in stressing essentialist classifications of organisms, and the job of a physical anthropologist centred chiefly around the measurement and categorization of fossil remains (Hunt 1981; Strum et al. 1999). The discipline focused on comparative morphology and diagnostic systems and mostly ignored the underlying processes of evolutionary change (Caspari 2003; Fuentes 2010). Biological determinism was a widely accepted axiom, and most research stemmed from highly cladistic modes of thinking (Caspari 2003; Little and Sussman 2010).

Sherwood Washburn was a driving force behind the mid-20th century integration of physical anthropology into the modern evolutionary synthesis (Mikels-Carrasco 2012). Washburn initially studied under the renowned physical anthropologist Earnest Hooton, a proponent of the accepted paradigms of essentialist classification and discrete racial categories (Caspari 2003; Kelley and Sussman 2007; Stini 2010). However, Washburn later collaborated with the geneticist and evolutionary biologist Theodosius Dobzhansky, one of the founders of the modern evolutionary synthesis (Stini 2010), and started to incorporate new, more dynamic concepts into his professional worldview (Kelley and Sussman 2007). This marked the beginning of Washburn's reign as one of the most influential physical anthropologists in the Western world (Strum et al. 1999). In 1950, Washburn and Dobzhansky co-hosted the 15th Cold Spring Harbor Symposium on Quantitative Biology entitled "The Origin and Evolution of Man" (Ellison 2018; Stini 2010), aiming to bridge the gap between physical anthropologists and evolutionary

biologists. Here, influenced by his collaborations with Dobzhansky and other biologist colleagues, Washburn first introduced his idea of a New Physical Anthropology (Stini 2010). He further developed these concepts the following year with the publication of his paper "The New Physical Anthropology" (Washburn 1951).

"The New Physical Anthropology" (Washburn 1951) proposed a subdiscipline of anthropology that emphasized dynamic evolutionary processes over static typology and classification and called for the integration of evolutionary biology and the modern synthesis into the heart of physical anthropology (Caspari 2003; Ellison 2018; Stini 2010). Washburn (1951) called for physical anthropology to shift away from the traditional paradigms of measurement and classification and embrace the complexities of evolutionary change. For physical anthropology to flourish, he said that the discipline needed to adopt a multidisciplinary and interdisciplinary approach to its studies of human evolution, behaviour, and biology (Washburn 1951). Washburn regarded biology and culture as interconnected and ever-changing, suggesting that viewing human biology as static and best measured with callipers was inherently limited and incomplete (Washburn 1951). He described the old physical anthropology as a "technique" (Washburn 1951:298), but his new physical anthropology as a broader "area of interest" (Washburn 1951:298).

Key tenets of Washburn's (1951) agenda for the discipline included: the incorporation of studies on nonhuman primates and their evolution; the characterization of genetics as a critical factor in human evolution; classifying human races not as the strict "types" discussed by Hooton (Caspari 2003; Stini 2010), but as overlapping populations; characterizing differences between groups as the result of ongoing evolutionary processes; utilizing formal scientific experimental methodologies when structuring research questions and studies; and incorporating the social sciences into the biological sciences. Field studies and controlled experimentation on nonhuman primates were fundamental to this new theory, as only by understanding the environmental and social circumstances of our closest relatives' development and existence could we begin to understand the adaptive pressures that shaped our own evolutionary trajectory (Strum et al. 1999; Washburn 1951).

In short, Washburn wanted biological anthropology to embrace its potential to bridge the biological and social sciences (Higham and Dominy 2018), opining that social context is requisite for truly understanding human biology (Strum et al. 1999; Washburn 1951). In what many view as a seminal shift in the discipline, he formally identified the necessity for multimodal research and communication methodologies and the integration of previously segregated disciplines (Ellison 2018; Strum et al. 1999). However, whether modern biological anthropology has realized Washburn's vision of a holistic discipline is debatable. Some academics confidently describe the field as unquestionably biosocial (Martin 2019). In contrast, others describe a subject bifurcated by a deep divide between social and biological perspectives, where interdisciplinary approaches are more myth than reality (Calcagno 2003). These views cannot both be correct. Rather than relying on opinion, I decided that the most efficient and accurate way to assess the state of modern biological anthropology regarding Washburn's New Physical Anthropology was to systematically review the contents and methodologies of current primary literature (Strum et al. 1999).

Methods of Analysis

My analysis required a set of studies representative of extant biological anthropology. While many journals publish individual biological anthropology papers, few focus solely on biological anthropological research and reviews. I drew my data from the two most prominent generalist biological anthropology journals—the American Journal of Physical Anthropology (AJPA) and Evolutionary Anthropology. Despite the AJPA publishing a centennial anniversary Special Edition in April 2018, summarizing how various subdisciplines of biological anthropology have developed and expanded since the journal's creation, I specifically selected regular issues instead of special or review issues. While review issues may appear to be appropriate literature subsets with which to explore the current state of a discipline, data from such editions can paint an incomplete picture: people are inherently prone to producing flawed self-assessments (Carter and Dunning 2008; Dunning et al. 2004; Mugg and Khalidi 2021). Study participants' self-assessments rarely align with those of their mentors or observers, and research shows that most people are consistently unrealistically optimistic about their skills and performance (Dunning et al. 2004). Despite scientists being trained to identify and mitigate bias in our research, we are not immune to biased and faulty self-assessment (Mugg and Khalidi 2021). This means that a deliberate attempt by biological anthropologists to assess the condition and progress of the discipline may be an inaccurate representation.

Consequently, to embody the typical publications of current biological anthropologists, I drew my data from regular issues of the American Journal of Physical Anthropology and Evolutionary Anthropology. To avoid bias, I did not choose specific issues. I instead utilized the current editions of each journal at the time of writing—respectively, October 2021, 176(2) and July/August 2021, 30(4). These issues present papers from a wide selection

of subdisciplines of biological anthropology, including primatology, palaeoanthropology, medical anthropology, osteoarchaeology, molecular anthropology, forensic anthropology, and human biology.

To analyze these articles, I synthesized Washburn's New Physical Anthropology into core criteria that I could systematically identify. A new physical anthropology, as defined by Washburn, is an anthropology that is consistently and simultaneously social and biological (Fuentes 2010; Washburn 1951). An article encapsulating this notion should investigate concepts through a multidisciplinary and interdisciplinary lens, be comfortably positioned within the context of evolutionary biology and acknowledge evolutionary processes, and introspectively scrutinize the underlying social drivers of biological phenomena. I simplified these characteristics to 1) the application of modern understandings of evolution and 2) biosociality. I defined a modern understanding of evolution as one that moves beyond classical mechanisms of Mendelian inheritance and Darwinian evolution to consider contemporary concepts such as group selection, evolvability, niche construction theory, lateral gene transfer, plasticity, and evolutionary developmental biology. I defined a biosocial research approach as one that looks at humans as holistic organisms that are simultaneously biological and cultural in nature and acknowledges that our biology is immersed in, and shaped by, our social entanglements. I did not qualify articles as biosocial unless the study methodologies addressed biological and social systems—inclusion of biosociality only in the post-study discussion section did not fulfil my criterion. Multidisciplinarity and interdisciplinarity were not included as a distinct third characteristic, as a biosocial approach inherently crosses disciplinary boundaries. Due to the nuanced nature of these concepts, I could not refine them to a set of quantifiable keywords. I instead closely read each article with these characteristics in mind and recorded relevant patterns in approach and research technique.

Findings and Discussion

American Journal of Physical Anthropology, 176(2) contained one literature synthesis and ten research articles, whilst Evolutionary Anthropology, 30(4) contained two research articles and two review articles. I analysed these fifteen primary articles for biosocial approaches and applications of modern evolutionary biology. Table 1 synthesizes the results of this analysis.

Almost all these articles viewed their foci from a biosocial perspective, acknowledged possible evolutionary pressures and drivers, and approached questions scientifically and interdisciplinarily. Researchers accomplished this to varying extents: some had a more biological focus and background, and some had a more social or ethnographic one. However, with just a single exception, every article made a concerted effort to view its subject in a simultaneously social and biological manner and at least briefly considered the evolutionary processes driving and shaping morphology and physiology. The few articles that did not explicitly focus on evolutionary processes or modern evolutionary biology, such as Tasnim et al. (2021) and Irish and Grabowski (2021), did not do so due to neglect or an absence of knowledge. Instead, these authors simply considered phenetics and morphology more pertinent for their specific foci and research questions.

Other core aspects of Washburn's "The New Physical Anthropology" (1951) include incorporating studies on nonhuman primates and their evolution into physical anthropology and viewing humans not as distinct biological "types" but constantly evolving populations (Stini 2010). These aspects were also present in the analysed articles. Irish and Grabowski (2021), Raichlen and Pontzer (2021), and Williams and Pilbeam (2021) all utilized comparative primatological approaches in their research into hominin development, and the primary subject of Corley et al. (2021) is a nonhuman primate, the Azara owl monkey (Aotus azarae). Caldwell and Jackson (2021), Fidalgo et al. (2021), Ghosh et al. (2021), Juras et al. (2021), and Tasnim et al. (2021) all discussed the effects of migration and genetic and cultural exchange on human populations. They acknowledged the fluidity of populations and that evolution, both biological and cultural, is ongoing. It is worth noting that the research techniques used in these articles would have likely pleased Washburn (Strum et al. 1999). "The New Physical Anthropology" (Washburn 1951) called for researchers to improve their scientific methodologies, and the structuring, statistical techniques, and analyses in these articles appear to satisfy Washburn's desire for a more refined and scientific anthropological practice.

The biosociality in these articles, arguably the most critical part of Washburn's proposal, was often restricted to the discussion sections, with research questions and methodologies remaining strictly biological. The quartet of articles from Evolutionary Anthropology did invoke some preliminary social considerations in their introductory and background sections (Caldwell and Jackson 2021; Ocobock et al. 2021; Powers et al. 2021; Raichlen and Pontzer 2021), but the papers from the AJPA were restricted by their primary research article structure (Corley et al. 2021; Fidalgo et al. 2021; Ghosh et al. 2021; Irish and Grabowski 2021; Juras et al. 2021; McPherson 2021; Meza-Peñaloza et al. 2021; Tasnim et al. 2021; Toso et al. 2021; van Doren and Sattenspiel 2021; Williams and Pilbeam 2021). These articles' methodologies tended to adhere more closely to the biological sciences—only in the discussion and

conclusion sections, once the authors reflected on how their specific research question fit into the wider literature, did they consider potential sociocultural drivers and effects. These articles tended to conclude by articulating salient biosocial research questions but appeared unable to answer these themselves.

While these articles do cross traditional disciplinary boundaries between the social and biological sciences, they do so in a multidisciplinary or, at best, interdisciplinary manner (Alvargonzález 2011; Choi and Pak 2006). These researchers draw knowledge from social anthropology and biology into biological anthropology, but only to an additive degree. This is not enough—the discipline still falls short of being genuinely biosocial. To meet biosocial criteria, research needs to transcend the traditional boundaries between disciplines and smoothly integrate them into a truly biological anthropology, i.e., it needs to become transdisciplinary (Alvargonzález 2011; Choi and Pak 2006). Fuentes (2010) and Ellison (2018) believe that biological anthropology has succeeded in becoming a biosocial discipline; however, my analysis suggest that this is not always true. While the collaboration between social scientists, geneticists, and physical anthropologists proposed by Washburn is indeed present in the literature, biological anthropology will remain incompletely biosocial until we reach transdisciplinarity. There is still progress to be made.

Conclusion

Studying the history of any subject allows us to begin to understand the "whys" and "hows" of its foundation and development. If we take the time to investigate the history of our discipline, then we can better understand the causes and implications of its current state. This paper is limited to a simple then versus now comparison, which presents an incomplete picture of biological anthropology's history and its implications. An extended systematic review of biological anthropology throughout the decades that assesses the manner and rate of change would benefit the discipline. However, this would be a significant undertaking.

It is clear Sherwood Washburn immensely impacted research directions within physical, now biological, anthropology. Not only did his New Physical Anthropology create a vision and pathway for the discipline to follow, but he directly supervised dozens of doctoral students, guiding the focuses and modes of thought of not just them, but their doctoral students, and their doctoral students (Barr n.d.; Kelley and Sussman 2007; Stini 2010; Strum et al. 1999). Shirley Strum, who co-authored a comprehensive book on the history of Washburn's New Physical Anthropology (Strum et al. 1999), Agustín Fuentes, whose 2008 luncheon lecture at the annual meeting of the American Association of Physical Anthropologists focused on the implications of Washburn's work for the 21st-century iteration of our discipline (Fuentes 2010), and Sarah Lacey, who co-authored one of the discussed Evolutionary Anthropology articles (Ocobock et al. 2021), are all in Washburn's direct line of academic succession (Barr n.d.). People, even more than papers, are Washburn's true legacy (Kelley and Sussman 2007; Strum et al. 1999). These academics, influenced by Washburn, continue to lead the way into the future of biological anthropology.

Biological anthropology appears to have moved beyond morphology and classification, embraced the modern evolutionary synthesis, and transformed into a field that is constantly working to unite the social and the biological—as Washburn envisioned seven decades ago. While there is still a great deal of room for growth and improvement, we are indeed now working within a New Physical Anthropology.

Reference	Acknowledgment of evolutionary processes	Biosocial approach	Summary
Caldwell and Jackson (2021)	Yes	Partially	Caldwell and Jackson studied the population genetic histories of African American groups as a partial explanation for their susceptibility and vulnerability to illnesses such as diabetes and cardiovascular disease. The authors combined understandings of genetic and genomic mediators and cultural and behavioural factors.
Corley et al. (2021)	Yes	Partially	Corley et al. searched for correlations between faecal cortisol levels in *Aotus azarae* and biparental care, looking to see if hormonal mechanisms mobilized energy during extended periods of infant care. They discussed the complex interplay of stress, behaviour, and biology. They included physiology and not just morphology and covered how social environments and stressors influence biology. However, they did not investigate relevant evolutionary processes and hypotheses.
Fidalgo et al. (2021)	Yes	Yes	Fidalgo et al. analysed dental morphological affinities in Holocene Brazilian populations. They compared the cultural spread of ceramic technologies with morphological indicators of physical population spread and moved beyond morphology into considering gene flow and phenotypic development.
Ghosh et al. (2021)	Yes	Yes	Ghosh et al. used morphology in concert with modern genetics to assess genetic relations between craniofacial morphology and body composition. They acknowledged the complex interplay of culture and biology, and genetic and environmental factors. They discussed how human populations are phenotypically, genetically, and culturally adapted to specific geographical environments.
Irish and Grabowski (2021)	Partially	No	Irish and Grabowski used Bayesian inferences to assess phenetic affinities between a range of Plio-Pleistocene hominins, *Homo sapiens*, and *Pan troglodytes* to find evolutionary dental trends. The paper returned from modern phylogenetics and genetics to analysing phenetics and morphology. The authors did not consider biosocial drivers of evolution.
Juras et al. (2021)	Yes	Yes	Juras et al. sequenced mitochondrial genomes to assess maternal genetic affinities in Neolithic Polish populations and reconstruct population migrations. They use modern evolutionary biology and study the interactions and differences between cultural exchange and genetic exchange, assessing whether genomic data matches the cultural diversity seen in the archaeological record.
McPherson (2021)	Yes	Yes	McPherson looked at developmental plasticity and stress exposure as a mediator for developmental processes. They outlined a framework that applied evolutionary developmental biology to the skeletal system to identify markers of stress and aimed to use this to enrich traditional social anthropological approaches to understanding disease and health. They utilized a holistic sociobiological approach, acknowledging environmental interplay with culture and biology and studying the skeletal system's preservation of phenotypic-environmental interactions.

Table 1. Summary of the Analyzed Articles' Fulfilment of Washburn's "*The New Physical Anthropology*"

Meza-Peñaloza et al. (2021)	Yes	Yes	Meza-Peñaloza et al. studied genetic diversity between Classic Teotihuacan and neighbouring areas in modern-day Mexico. They analysed the interplay and overlap between cultural diversity and evolution and biological diversity and evolution.
Ocobock et al. (2021)	Yes	Yes	Ocobock et al. reviewed Neanderthal cold adaptations from morphological, physiological, and behavioural perspectives. They moved beyond morphology to consider all aspects of physiology and understood Neanderthal adaptations as a biosocial complex. They utilized a holistic approach that employed ethnographic analyses and considered social adaptations.
Powers et al. (2021)	Partially	Yes	Powers et al. looked at the development of prosocial behaviours. They focused on the social interaction mechanism and the decision-making mechanism but did utilize some modern evolutionary biology. Researchers used a biosocial approach that applied evolutionary understandings to human social development.
Raichlen and Pontzer (2021)	Yes	Partially	Raichlen and Pontzer looked at selection pressures behind the development of bipedalism in the hominin lineage with regards to energetic constraints on quadrupedalism. They primarily focused on comparative biomechanics and energy expenditure but briefly touched upon locomotive changes' social implications and benefits.
Tasnim et al. (2021)	No	Yes	Tasnim et al. studied possible connections between foot and ankle dysfunction and musculoskeletal pain in barefoot/minimally shod populations in Madagascar. They analysed this pain's possible cultural causes and socioeconomic effects but restricted themselves to morphology and neglected genetics and evolutionary biology. They did not examine potential biosocial drivers of pain such as disease.
Toso et al. (2021)	Partially	Yes	Toso et al. used biomolecular techniques to explain social structures and religious and economic changes in medieval Portugal. They utilized holistic biosocial perspectives to examine interactions and feedback loops between changes in dietary composition and social structure. Evolutionary processes were briefly discussed but not looked at in-depth.
van Doren and Sattenspiel (2021)	Partially	Yes	Van Doren and Sattenspiel looked at historical tuberculosis morbidity and mortality in Newfoundland, particularly with regards to the 1918 influenza pandemic. The paper focused mainly on statistical analyses of archival data but did touch upon possible social influences on disease and death, such as healthcare availability and nutrition practices.
Williams and Pilbeam (2021)	Yes	No	Williams and Pilbeam attempted to discern the vertebral configuration of the last common ancestor of hominins and panins. They utilized modern genetics and evolutionary developmental biology concepts such as homoeotic genes but neglected to consider biosocial aspects.

Table 1. (cont.)

References Cited

Alvargonzález, D.
2011 Multidisciplinarity, Interdisciplinarity, Transdisciplinarity, and the Sciences. *International Studies in the Philosophy of Science* 25(4):387–403. DOI:10.1080/02698595.2011.623366

Barr, W. A.
n.d. Tree view. Academic Phylogeny of Biological Anthropology. Retrieved October 20, 2021, from https://www.bioanthtree.org/tree

Calcagno, J. M.
2003 Keeping Biological Anthropology in Anthropology, and Anthropology in Biology. *American Anthropologist* 105(1):6–15. DOI:10.1525/aa.2003.105.1.6

Caldwell, J., and Jackson, F. L. C.
2021 Evolutionary Perspectives on African North American Genetic Diversity: Origins and Prospects for Future Investigations. *Evolutionary Anthropology* 30(4):242–252. DOI:10.1002/evan.21910

Carter, T. J., and Dunning, D.
2008 Faulty Self-Assessment: Why Evaluating One's Own Competence is an Intrinsically Difficult Task. *Social and Personality Psychology Compass* 2(1):346–360. DOI:10.1111/j.1751-9004.2007.00031.x

Caspari, R.
2003 From Types to Populations: A Century of Race, Physical Anthropology, and the American Anthropological Association. *American Anthropologist* 105(1):65–76. DOI:10.1525/aa.2003.105.1.65

Choi, B. C. K., and Pak, A. W. P.
2006 Multidisciplinarity, Interdisciplinarity, and Transdisciplinarity in Health Research, Services, Education and Policy: 1. Definitions, Objectives, and Evidence of Effectiveness. *Clinical and Investigative Medicine* 29(6):351–364. DOI:10.25011/cim.v30i6.2950

Corley, M., Perea-Rodriguez, J. P., Valeggia, C., and Fernandez-Duque, E.
2021 Associations between Fecal Cortisol and Biparental Care in a Pair-Living Primate. *American Journal of Physical Anthropology* 176(2):295–307. DOI:10.1002/ajpa.24368

Dunning, D., Heath, C., and Suls, J. M.
2004 Flawed Self-Assessment: Implications for Health, Education, and the Workplace. *Psychological Science in the Public Interest* 5(3):69–106. DOI:10.1111/j.1529-1006.2004.00018.x

Ellison, P. T.
2018 The Evolution of Physical Anthropology. *American Journal of Physical Anthropology* 165(4):615–625. DOI:10.1002/ajpa.23408

Fidalgo, D., Hubbe, M., and Wesolowski, V.
2021 Population History of Brazilian South and Southeast Shellmound Builders Inferred through Dental Morphology. *American Journal of Physical Anthropology* 176(2):192–207. DOI:10.1002/ajpa.24342

Fuentes, A.
2010 The New Biological Anthropology: Bringing Washburn's New Physical Anthropology into 2010 and Beyond—The 2008 AAPA Luncheon Lecture. *American Journal of Physical Anthropology* 143(S51):2–12. DOI:10.1002/ajpa.21438

Ghosh, S., Kasher, M., Malkina, I., and Livshits, G.
2021 Is Craniofacial Morphology and Body Composition Related by Common Genes: Comparative Analysis of Two Ethnically Diverse Populations. *American Journal of Physical Anthropology* 176(2):249–261. DOI:10.1002/ajpa.24373

Grauer, A. L.
2018 A Century of Paleopathology. *American Journal of Physical Anthropology* 165(4):904–914. DOI:10.1002/ajpa.23366

Higham, J. P., and Dominy, N. J.
2018 The Promise of Primatology Fulfilled? *American Journal of Physical Anthropology* 166(4):783–790. DOI:10.1002/ajpa.23620

Hunt, E. E., Jr.
1981 The Old Physical Anthropology. *American Journal of Physical Anthropology* 56(4):339–346. DOI:10.1002/ajpa.1330560405

Irish, J. D., and Grabowski, M.
2021 Relative Tooth Size, Bayesian Inference, and Homo naledi. *American Journal of Physical Anthropology* 176(2):262–282. DOI:/10.1002/ajpa.24353

Juras, A., Ehler, E., Chyleński, M., Pospieszny, L., Spinek, A. E., Malmström, H., Krzewińska, M., Szostek, K., Pasterkiewicz, W., Florek, M., Wilk, S., Mnich, B., Kruk, J., Szmyt, M., Kozieł, S., Götherström, A., Jakobsson, M., and Dabert, M.
2021 Maternal Genetic Origin of the Late and Final Neolithic Human Populations from Present-Day Poland. *American Journal of Physical Anthropology* 176(2):223–236. DOI:10.1002/ajpa.24372

Kelley, E. A., and Sussman, R. W.
2007 An Academic Genealogy on the History of American Field Primatologists. *American Journal of Physical Anthropology* 132(3):406–425. DOI:10.1002/ajpa.20532

Little, M. A., and Sussman, R. W.
2010 History of Biological Anthropology. In *A Companion to Biological Anthropology*, edited by C.S. Larsen, pp. 13–38. Blackwell.

Martin, M. A.
2019 Biological Anthropology in 2018: Grounded in Theory, Questioning Contexts, Embracing Innovation. *American Anthropologist* 121(2):417–430. DOI:10.1111/aman.13233

McPherson, C. B.
2021 Examining Developmental Plasticity in the Skeletal System through a Sensitive Developmental Windows Framework. *American Journal of Physical Anthropology* 176(2):163–178. DOI:10.1002/ajpa.24338

Meza-Peñaloza, A., Zertuche, F., and Morehart, C.
2021 Population Level Comparisons in Central Mexico using Cranial Nonmetric Traits. *American Journal of Physical Anthropology* 176(2):237–248. DOI:10.1002/ajpa.24377

Mikels-Carrasco, J.
2012 Sherwood Washburn's New Physical Anthropology: Rejecting the "Religion of Taxonomy". *History and Philosophy of the Life Sciences* 34(1/2):79–101. https://www.jstor.org/stable/43831768

Mugg, J., and Khalidi, M. A.
2021 Self-Reflexive Cognitive Bias. *European Journal for Philosophy of Science* 11:Article 88. DOI:10.1007/s13194-021-00404-2

Ocobock, C., Lacy, S., and Niclou, A.
2021 Between a Rock and a Cold Place: Neanderthal Biocultural Cold Adaptations. *Evolutionary Anthropology* 30(4):262–279. DOI:10.1002/evan.21894

Powers, S. T., van Schaik, C. P., and Lehmann, L.
2021 Cooperation in Large-Scale Human Societies—What, if Anything, Makes it Unique, and How Did It Evolve? *Evolutionary Anthropology* 30(4):280–293. DOI:10.1002/evan.21909

Raichlen, D. A., and Pontzer, H.
2021 Energetic and Endurance Constraints on Great Ape Quadrupedalism and the Benefits of Hominin Bipedalism. *Evolutionary Anthropology* 30(4):253–261. DOI:10.1002/evan.21911

Stini, W. A.
2010 Sherwood L. Washburn and "The New Physical Anthropology". In M. A. Little and K. A. R. Kennedy (Eds.), *Histories of American Physical Anthropology in the Twentieth Century.*

Strum, S. C., Lindburg, D. G., and Hamburg, D. (Eds.).
1999 *The New Physical Anthropology: Science, Humanism and Critical Reflection.* Prentice Hall.

Tasnim, N., Schmitt, D., and Zeininger, A.
2021 Effects of Human Variation on Foot and Ankle Pain in Rural Madagascar. *American Journal of Physical Anthropology* 176(2):308–320. DOI:10.1002/ajpa.24392

Toso, A., Schifano, S., Oxborough, C., McGrath, K., Spindler, L., Castro, A., Evangelista, L., Filipe, V., Gonçalves, M. J., Marques, A., da Silva, I. M., Santos, R., Valente, M. J., McCleery, I., and Alexander, M.
2021 Beyond Faith: Biomolecular Evidence for Changing Urban Economies in Multi-Faith Medieval Portugal. *American Journal of Physical Anthropology* 176(2):208–222. DOI:10.1002/ajpa.24343

van Doren, T. P., and Sattenspiel, L.
2021 The 1918 Influenza Pandemic did not Accelerate Tuberculosis Mortality Decline in early-20th Century Newfoundland: Investigating Historical and Social Explanations. *American Journal of Physical Anthropology* 176(2):179–191. DOI:10.1002/ajpa.24332

Washburn, S. L.
1951 The New Physical Anthropology. *Transactions of the New York Academy of Sciences* 13(7):298–304. DOI:10.1111/j.2164-0947.1951.tb01033.x

Williams, S. A., and Pilbeam, D.
2021 Homeotic Change in Segment Identity Derives the Human Vertebral Formula from a Chimpanzee-like One. *American Journal of Physical Anthropology* 176(2):283–294. DOI:10.1002/ajpa.24356

Who Made Stone Tools?: An Analysis of Gender Bias and Flintknapping

Savannah Hough, *Kent State University*

Abstract

Stone tools were essential to prehistoric life, and the answer to who created these tools has been debated for decades. Male bias has persisted throughout time, often leading to clouded and tainted data interpretation. This paper provides evidence for prehistoric women creating and using stone tools by referencing modern-day cultures and archaeological sites. It begins by defining bias and androcentrism and citing examples of these concepts throughout archaeological literature, with concepts of feminine archaeology and gender archaeology to follow. It concludes with a detailed examination of excavated sites in Huaricoto, Peru, which shows the shifts in flake size throughout time periods and how that relates to which sex was making and using stone tool technology. The paper also examines modern women flintknappers in Konso, Ethiopia where lithic technology is still heavily utilized and considered a highly feminine skill.

Introduction

The question of gender and stone tool creation has been heavily debated for decades. Analyzing prehistoric tools provides evidence about technologies, dexterity, mental skills, and innovations that were within the scope of early hominins. Lithic analysis focuses on the production and final forms of tools, with secondary regard to the economic and cultural goals they accomplish. Excavation of prehistoric sites has revealed evidence that suggests stone tools were used by all genders. The stereotype of stone-age women being homebound with little lithic technological skill persists despite new evidence.

Before an answer of who was responsible for stone tool creation can be found it is necessary to look deeper. This paper is broken into multiple parts. Part one examines male bias in past and present literature and its effects on data interpretation, along with the concepts of feminine archaeology and gender archaeology. Part two focuses on archaeological evidence of woman tool makers and includes a subsection featuring women in modern-day societies that still utilize stone tool technology.

Stone Tool Categories

Utilized flakes are tools, but throughout the literature the term "tools" usually refers only to standardized, classifiable, and reproduced forms of stone tools, resulting in as Hayden writes, "the unbelievable lack, or rarity, of what the archaeologist calls 'tools'" (Gero 1998:165). Paleolithic artifacts have previously been classified into five categories by Binford and Binford: Levallois flakes, non-Levallois flakes, cores, waste flakes, and utilized flakes. The final category of utilized flakes has been excluded from their graphs because they aren't considered diagnostic, and they appear in such large quantities they would distort the data.

Part of the conventional use of the term "tool" derives from the real challenge archaeologists have had in identifying unretouched flakes that were tools. The term "tool" is applied generally to any stone that shows evidence of having been used. But sites often include large numbers of flakes, and it can be difficult to determine which flakes were used as tools and which were waste resulting from flintknapping.

Tools are measured based on their typological characteristics and redundant features as a means of dividing prehistoric times into easier-to-understand units. Lithic analysis has ignored large amounts of data consisting of as needed or expediently produced stone tools, non-classifiable tools, and flakes lacking retouching. Adopting a broader definition of "tool" redefines archaeology and is fundamental in a gender-neutral approach to prehistory.

Gender Bias

Gender inequality is a concept that persists through time, both modern-day and prehistoric women face sex-based bias. In 2020, the Journal of Experimental Social Psychology used the Implicit Association Test (IAT) to test the hypothesis that women are less associated with the concept of humanity than men. The test is a computer-based time-reaction task assessing the strength of mental associations. The thought behind this test is that participants are faster and more accurate in classifying concepts linked in cognition than when they are not. Bailey used the IAT to measure mental associations between the concept of "humanity" and the categories "men" and "women." Results showed the participants associated human concepts more with men than women, and these association percentages were larger for men taking the test than women. According to the authors of the study, these findings reflect an

innate androcentric tendency, proving their hypothesis that men are more associated with humanity and human tasks than women. Bailey explains, "people might use their gender as an anchor when thinking about humanity at large, exacerbating it among men and counteracting it among women" (Bailey et al. 2020).

Archaeologists must understand gender dynamics and roles to provide the most accurate picture of the past. "Archaeologists have to understand gender dynamics at some level to continue to pursue some research objectives set out for site functions and uses; subsistence systems that are based on task differentiation; inter- and intra-site spatial phenomena; the power and role of material culture; mechanisms of cultural solidarity and integration; extra-domestic trade and exchange system; and the course of culture change" (Conkey and Spector 1984). Recently, archaeologists have become increasingly aware of bias within sampling and data recovery techniques and have made great strides toward preventing it. Without a thorough understanding of the concept, it leaves room for analyst-induced errors. Errors such as differences in an analyst's perception from person to person, the soundness of class descriptions, and changes in an analyst's perception over time due to bias.

Androcentrism, the tendency to prioritize men as the "gender-neutral" standard, is a noteworthy bias. Society has favored this view for most of the archaeological past, hence until recently it was thought only males made stone tools. David H. Thomas wrote in American Antiquity, "The most visible activity in the archaeological record is stone tool fabrication, an exclusively male endeavor" (Thomas 1983:439). During the late 19th and early 20th century, several ethnographers referenced women as skillful tool makers, but these descriptions were made when scientific sexism was at its peak. Instead of aiding in solving a question, these descriptions reinforced women's low status and stone tool technology research continued to be male focused. The active assumption has been that men occupied all active positions in social and ritual life. Women have been largely ignored in interpretations and presentations of prehistory or presented using images that perpetuate stereotypes.

Male bias in literature is further proved using a study done by Richard Gould. He noted that both men and women used and sharpened flakes for the purpose of butchery, "women use these as much as men" (Gould 1977:166). Gould, after noting briefly that women were equally as involved, reverted to an androcentric view for the rest of his study. In his final summary, he titled the data "Total amounts of lithic raw material needed per man per year."

Androcentric views clearly do not tell us much about women, but how much do they really tell us about men? Bias clouds reality and allows for stereotypes of what "should" have been to take precedence over what really was. Prehistoric man is held to a mythical standard of being rugged, powerful, and radiating natural masculinity. 19th-century ideals of manliness – a man should be the head of the house – are the main cause of these stereotypes. Prehistory should be no different according to some, a man would have been the "breadwinner," so to speak, a warrior, hunter, farmer, and chief.

Prehistoric males are theorized to have engaged in more perilous activities than females, on average. Male expendability is a model that has gained some traction. It argues that, in a reproductive sense, human male lives are of less concern to a population compared to females. Many males can perish without significant harm to the population, whereas women hold the responsibility to keep the species' numbers thriving through reproduction. This argument could offer some support to men being primary tool users but still leaves the question of creation unanswered.

"I would hardly have the temerity, in these enlightened times, to deny that there has been androcentrism in the reconstruction of the past (and in the recruitment of those chosen to do that reconstruction). Yet I remain unconvinced that there is any significant misunderstanding as to the fact that most prehistoric lithic production (unarguably the material with which we must work for the first million years or so) was produced by males. No doubt women made bags and baskets and cloth of numerous sorts for just as long... [and] in most cultures past and present ceramics were and are made by women…No doubt there are some historically documented reversals of these traditional sex roles, but…. Certainly, there is no indication of a technological breakthrough that would require a seriously revisionist archaeology…" (Anonymous 1988).

"Feminist" archaeology is a new term, and something almost taboo. Most archaeologists refer to it as gender studies, some even argue the terms should remain separate. In simple terms, it is archaeology employing a gender-focused perspective. Practitioners focus on gender but consider it in tandem with features like sexuality, race, and class. Political feminism is often confused with feminist theory and archaeological studies focusing on females. This also goes both ways; feminist theory typically falls under gender studies, but gender studies are not always feminist.

Women in Archaeology

Women pursuing lithic studies are more common today than at any time before, but there are still areas in the field devoid of female archaeologists. Flintknapping, specifically published works on the subject, remains

a male-dominated field. More and more women are learning the craft of knapping, but virtually all remain unpublished. Statistically, female archaeologists focus on non-standardized tools used in things such as leatherworking, while men tend to study standardized and more rugged tool types, most commonly projectile points and Levallois. This self-fulfilling study approach supports the idea that stone-age men only focused on activities that required formal, standardized tools. This then leads to an emphasis on the importance of weapons and hunting paraphernalia in the archaeological past. Weapons and hunting are now and have been commonly considered "manly" activities.

In disproportionate numbers, female investigators work to study tools' functions using microwear and macrowear analysis. Women archaeologists are largely responsible for the consideration of "non-standard" tools, which in contemporary views are typically regarded as inferior. The assumption is that women were the main parties creating these tools used for tasks other than hunting and butchery, such as foraging and domestic work.

In a Western-centric view of the past, it is common to hold the belief that men hunted and were responsible for new technological innovations whereas a woman's main job was to bear children. There is evidence now of Paleolithic women as "small-game hunters, butchers, fishers, clothes makers, and ritual specialists" (Arthur 2018:228). There is a site in Colah, Belize that provides evidence of a female flintknapper.

When female knappers were mentioned in texts, they were often compared to men and made out to be lesser counterparts. "On the few occasions that women knapped they used the bipolar technique... The objects made by men are more likely to survive archaeologically, being of "strong" materials, particularly stone and bone" (Sillitoe and Hardy 2003). Joan M. Gero suggests women's tools would have been made with a variety of factors in mind; historical, material, economic, social, political, and symbolic, "…women are both strong and smart enough to produce stone tools" (Gero 1998:170).

In another instance of archaeologists associating women with less sophisticated tools and crediting men with standardized tools with symbolic meanings, Kohn and Mithen claim that "Males tend towards display, so conspicuously impractical hand axes were most likely made by males, whilst females would make less-refined, more practical hand axes…They [females] were now concerned about their relationships with their mates, not just the quality of their mates' genes, and their mate-choice criteria shifted accordingly; towards those males who were most reliable in the provision of resources. In response, males made their artifacts according to the demands of functional efficiency, developing varied toolkits as a result" (Kohn and Mithen 1999:523–524).

There are arguments that child-rearing responsibilities would have greatly restricted a stone age woman's ability to make stone tools. There are obvious problems with such assertions: expedient stone tools hardly take enough time that a woman with children couldn't make them. A skilled flintknapper can produce a projectile point of average quality in around 30 minutes. The time is even less for a simple tool or utilized flake. The strength difference between genders is an age-old argument for why one may not have been able to perform the same duties as the other. Upper body strength is not a factor when it comes to flaking stone tools, technique takes precedence over force. In places like modern-day India and Portugal, we see women carrying heavier loads than their male counterparts, so the argument for strength becomes basically null. Body strength could play a part when it comes to carrying raw material, breaking apart large blocks of quarried rock, and potentially some pressure flaking techniques. There is no solid evidence, whether it be biological, historical, sociological, ethnographical, or experimental, that suggests women could not have made stone tools.

Huaricoto, Peru

Huaricoto is a site in Peru with tools from the Early Intermediate Period, Early Horizon, Initial Period, and Preceramic Period. Examination of these tools using raw material, preparation of tool forms, and context may offer some insight into gender implications. There are abundant local lithic materials in the area, volcanic stones for instance, that women could have utilized without the need for quarrying their own rock. Tool preparation at Huaricoto can be assessed by separating "expedient" flakes and more elaborate bifaces. Bifaces were shown to be between 4%-23% of all tools during any period. Tools from the later periods show less retouching than tools from the earlier periods. In other words, a far greater percentage of tools were made expediently, i.e., tools, in general, are expediently made.

Understanding the context of Huaricoto lithic tools means identifying changes in site function. Projectile points and bifaces are overrepresented in the earlier periods, especially in the "ceremonial sectors." With a shift from ceremonial center to village settlement, the site shows consistent pairing of flake tools with local raw materials, bifacially produced tools showing less retouch, and an increase in flake tools with bifaces becoming increasingly rare.

"The change in the ratio of lithic forms and raw materials follows more closely from the shift from a ceremonial to a residential context" (Gero 1998:184). Flaked tools replaced bifaces in frequency and there was an increase

in expediency, along with a greater representation of local raw materials. These conditions suggest women's involvement in stone tools increased with time, especially with residential settlements appearing after the Early Horizon period.

Konso, Ethiopia

Flintknapping in the Konso village of Gocha is considered a highly feminine skill, and women are the primary creators of stone tools. There is a community of women who rely completely on lithic technology. They purposefully shun glass and iron implements because non-lithic technology tends to rip hides and softens them ineffectively. These women learn this technology through a restricted knowledge-based system. They procure long-distance resources, produce complex tools, and effectively use these stone tools to process animal hides. They hand their techniques down to their daughter and granddaughters; it is entirely woman based and has been since prehistoric times. 10-15 years of knapping experience is required before a novice is deemed proficient. The Konso provide vitally important evidence documenting how stone tools may have been made and used in the past. The original creators of stone tools are long dead, so context is usually missing, but these women offer us insight. Women and children today make and use stone tools all over the world, and there is no reason for them to be absent from reconstructions of past human activities associated with stone tool production and use. "Konso female knappers demonstrate that women's lithic technology, like men's, is sophisticated and time-consuming and takes place in a strict social context" (Arthur 2018:237). Konso women's lithic technology utilizes bipolar reduction; women tack between various bipolar and direct-percussion techniques and produce a number of usable scrapers from raw material. The bipolar technique is performed by bracing a core on a hard anvil surface and hitting it with a hammerstone. Like using a hammer to crack a nut. It is considered the oldest surviving tool type, dating back to 1.7 million years.

Jill Prutez and Paco Bertolani (2007) suggest that primates produce new tool technology when raw material is limited, such as the spears made by female chimpanzees for hunting. Using this hypothesis we can propose the idea that the earliest stone technology was created by women when local raw material supplies were low. Bipolar knapping techniques are seen most often when there is a need to economize resources. Since this technology is one of the earliest, female hominids might be responsible.

Conclusion

There is overwhelming evidence for women's engagement with lithic technology. "The idea of women as skilled toolmakers and perhaps the very first toolmakers is inspirational, but it is likely that future literature will either opt for gender neutrality on issues of flintknapping or continue to ignore the evidence" (Arthur 2018:238). Women can skillfully produce stone tools and archaeologists must consider sex and gender when analyzing lithic technology. The failure to challenge the stereotype of the "stone age man" is a disservice to archaeology. The question of who made stone tools yields the answer of both men and women alike. Women existed in approximately the same numbers as men; in a stone age society, people needed to be useful and independent. Viewing gender as symbolic does not destabilize reconstructions, it forces us to search for a better understanding of the dynamic needs, desires, ideas, and practices of individuals buried in material culture. This raises the need for a complete reevaluation of Stone Age reconstructions with the addition of women's roles.

References Cited

Arthur, K. W.
2018 *The Lives of Stone Tools.* University of Arizona Press.
2010 Feminine Knowledge and Skill Reconsidered: Women and Flaked Stone Tools. *American Anthropologist* 112(2), 228–243. https://doi.org/10.1111/j.1548-1433.2010.01222.x

Bailey, A. H., LaFrance, M., & Dovidio, J. F.
2020 Implicit Androcentrism: Men are Human, Women Are Gendered. *Journal of Experimental Social Psychology* 89, 103980. https://doi.org/10.1016/j.jesp.2020.103980

Bolen, K. M.
1992 Prehistoric Construction of Mothering. In *Exploring Gender Through Archaeology*, pp. 49-62. Selected papers from the 1991 Boone Conference. Prehistory Press, Madison.

Conkey, M. W., & Spector, J. D.
1984 Archaeology and the Study of Gender. *Advances in Archaeological Method and Theory,* 7, 1–38. https://doi.org/10.1016/b978-0-12-003107-8.50006-2

Gero, J. M.
1998 Genderlithics: Women's Roles in Stone Tool Production. In *Engendering Archaeology: Women and Prehistory*, pp. 163-186. Wiley-Blackwell.

Kohn, Marek, and Steven Mithen
1999 Handaxes: Products of Sexual Selection? *Antiquity* 73(281):518–526.

Mattison, S. M., Quinlan, R. J., & Hare, D.
2019 The Expendable Male Hypothesis. *Philosophical Transactions of the Royal Society* B, 374(1780), 20180080.

Nesathurai, A.
2019 Tackling Stone Age Stereotypes and Misconceptions Including This: They Made Tools Out of More Than Just Stone. Genetic Literacy Project. https://geneticliteracyproject.org/2019/09/18/tackling-stone-age-stereotypes-and-misconceptions-including-this-they-made-tools-out-of-more-than-just-stone/#:~:text=W%20hen%20most%20members%20of%20the%20general%20public

Nixon, L.
1994 Gender Bias in Archaeology. In *Women in Ancient Societies,* pp. 1-23. Palgrave Macmillan, London.

Owen, L. R.
2000 Lithic Functional Analysis as a Means of Studying Gender and Material Culture in Prehistory. In *Gender and Material Culture in Archaeological Perspective,* edited by M. Donald and L. Hurcombe, pp. 185–208. Macmillan Press: New York.

Pruetz, Jill, and Paco Bertolani
2007 Savanna Chimpanzees, Pan Troglodytes Versus Hunt with Tools. *Current Biology* 17:412–417.

Sanger, M. C., Bourcy, S., Ogden, Q. M., & Troutman, M.
2019 Post-Marital Residence Patterns in the Late Archaic Coastal Southeast USA: Similarities in Stone Tools Revealed by Geometric Morphometrics. *Journal of Archaeological Method and Theory,* 27(2), 327–359. https://doi.org/10.1007/s10816-019-09435-9

Sillitoe, P., & Hardy, K.
2003 Living Lithics: Ethnoarchaeology in Highland Papua New Guinea. *Antiquity* 77(297), 555-566. http://antiquity.ac.uk/Ant/077/0555/Ant0770555.pdf

Skogstrand, L.
2010 Is Androcentric Archaeology Really About Men? *Archaeologies: Journal of the World Archaeological Congress* 7(1), 56–74. https://doi.org/10.1007/s11759-010-9149-1

University of Florida.
2003 Despite Male Image, Stone Toolmaking Also Done By Women, University Of Florida Scientists Say. ScienceDaily. https://www.sciencedaily.com/releases/2003/04/030407080401.htm

Imperialism's Wayward Child: The Impact of Imperialist Thought on Neanderthal Reconstructions

Kaitlin Sennewald, *University of Maryland*

Abstract

Our popular and scientific reconstructions of Neanderthals have varied greatly over the past 200 years, paralleling trends in social thought and race science. This paper traces Neanderthal reconstructions over time from the Enlightenment to the 1970s, connecting them to Western imperialist ideals and actions, and builds on previous literature by extending the imperialist influence past World War II and into the Vietnam War era. Through analyzing political thought, scientific reconstructions, and artistic and popular work, it is evident that a post-Enlightenment imperialist influence permeated not only the Western socio-political sphere, but also the scientific sphere. This research, through its focus on Neanderthal reconstructions, serves as a case study in how socio-political activity and scientific research reify each other in order to perpetuate dominant narratives.

Introduction

In August of 1856, humanity discovered something unprecedented: we are not the only human species to have walked the earth. In fact, we were not even the only human species to have existed at one time. Until about 35,000 years ago, an archaic species of human called Homo neanderthalensis, commonly referred to as Neanderthal, roamed Eurasia, at some point even crossing paths with our own species, Homo sapiens. In August of 1856, the first identified Neanderthal specimen, Feldhofer-1, was discovered in Feldhofer Cave in Neander Valley, Germany, and this finding had drastic impacts on our understanding of human nature and evolution.

From the earliest recognition of the Feldhofer specimen's distinctive anatomical features, the Neanderthal was described and presented in comparison to modern Homo sapiens. Scientific as well as popular depictions of the Neanderthal have changed dramatically since, shifting from a savage ape-like creature to an essentially average human, and these reconstructions have correlated with changes in Western social ideology. This interpretation provides an exemplary case study of how social biases influence scientific analysis, which in turn can reify the initial bias and perpetuate a certain narrative. Some scholars have recognized Neanderthal reconstructions as both an outcome and a catalyst of racial ideologies, especially due to the imperialist undertones in nineteenth-century Europe, where much of this research took place (McCluskey 2016; Madison 2021; Stringer and Gamble 1993; Trinkaus and Shipman 1992). However, many analyses only briefly mention imperialism itself and do not consider its influence after the early twentieth century, though it remained influential beyond that time. I argue that scientific and popular portrayals of the Neanderthal between the mid-nineteenth and mid-twentieth centuries were consistently shaped by European and American imperialism, exhibiting a dichotomy between racism and human goodness.

In this paper, I will trace the relationship between imperialism and Neanderthal reconstructions from the 1850s through the 1970s, considering how the Western sociopolitical climate influenced scientific work as well as how this work was adopted by popular culture. Enlightenment thought, scientific racism, and colonialism before World War II undoubtedly colored early opinions of Neanderthal specimens, establishing them as an "other." Post-war culture, conflict, and guilt, however, played a part in positively reshaping how Neanderthals were viewed. Sources such as Bruce Baum's The Rise and Fall of the Caucasian Race provide important historical context that matches trends in Neanderthal characterization. In considering these relationships, I will look at primary sources by scholars such as Thomas Huxley and Ralph Solecki, as well as secondary sources, including Trinkaus and Shipman's The Neandertals: Of Skeletons, Scientists, and Scandal and Nicholas Ruddick's The Fire in the Stone, among others. By following these relationships, the evolution of Neanderthal reconstructions and artistic and literary representations can be understood as a reflection of imperialist thought. Essentially, early research portrayed the species as simian, largely influenced by a time of imperialist expansion, while their postwar humanization arose from an adverse reaction to the results of imperialism.

Scientific Racism During and After the Enlightenment

The Age of Enlightenment was an intellectual movement in seventeenth and eighteenth century Europe that emphasized using reason rather than religion to

understand the natural world, and it was during this time that anthropology, the study of humanity, was first born. As exceptional value was placed on scientific progress, Enlightenment thought became increasingly characterized by naturalism, the belief that everything occurred and could be explained by natural phenomena. Early research of human evolution centered around understanding humanity's place on Earth as a species. The prime example of this is Charles Darwin's The Descent of Man (1871), which posited an evolutionary perspective of humanity. Notably, as discussed by Nicholas Ruddick, Darwin's ideas signaled a shift away from viewing "man" as a "fallen creature," as assumed in the Bible, and a shift toward viewing him as a "risen one," ascending upwards from a "lowly origin" – that is, from ancestral apes (Darwin 1871; Ruddick 2009:109). With the debate over humanity's evolution steadily underway during a time of Western expansion and contact with new peoples, however, Western scholars began to debate the origin of human variation in a scientific way. Accordingly, scholars in the later eighteenth century used naturalism in attempts to classify regional differences among people, a line of thought that eventually gave rise to the concept of race (Baum 2006).

Although many Enlightenment thinkers were not concerned with biological human difference and even "eschewed ideas of innate racial superiority," the prevailing practice was to understand and classify such differences (Baum 2006:64). Over time, these classifications grew into race categories that described White Europeans in favorable ways, while other groups, particularly Black Africans and Australian Aboriginals, were described unfavorably. An important example of this is found in Systema Naturae by Carolus Linnaeus, published in 1758, which introduced Linnaean taxonomy and binomial nomenclature. The tenth edition included new descriptions of the genus Homo, which Linnaeus divided into four "varieties" (not yet identified as races): Americanus (referring to Native Americans), Europaeus (European), Asiaticus (Asian), and Afer (African; Linnaeus 1758, as cited in Baum 2006:65). Also beginning in the tenth edition, such varieties of Homo came to be described with behavioral and cultural attributes, whereas in earlier editions they were described only by geographic location. There is an obvious bias toward Europaeus, which is described as "white," "gentle," and "inventive." Meanwhile, Asiaticus is described as "sallow," "haughty," and "avaricious" while Afer is described as "Black," "lazy," and "negligent." Americanus is only slightly more favored, described simultaneously as "obstinate" and "merry." These descriptions of a diverse Homo became characteristic of the flagrant racial classification that would follow.

George Louis Leclerc, Comte de Buffon – commonly known as Buffon – similarly classified the species of Earth, but he took an anthropocentric rather than eurocentric view. Buffon's approach first viewed species "most familiar to human beings," such as dogs and horses, as the species "most closely related to them," and these species were held in the highest regard (Baum 2006:68). Going further with this hierarchy, distinctions were made within the human species as well. White Europeans – specifically those from the "civilized" temperate countries between 40 and 50 degrees latitude, extending from Spain eastward to Ukraine – were identified as the "most beautiful," and all other races were considered to be degenerative from this White normative (Buffon 1812:444). It should be noted that Buffon considered climate to be a major factor in skin color, coming close to a non-racialized explanation for variation, but he still conflated skin color with civilization and primitivity.

The practice of craniology, the study of the shape and size of the skull, became popular in the late 1700s as a way to identify racial variation. This later led to craniometry, the scientific measurement of the skull, and then phrenology, which considered such measurements to be an indication of mental capability (Baum 2006; Gould 1996; Kidd 1898). Like Linnaeus, Johann Blumenbach identified different varieties of human beings, but he paid particular attention to differences in the size and shape of the skull, describing it as a "truer indicator of 'racial' distinction" due to the theory that the skull was "more permanent" than other physical traits previously described, such as skin color (Baum 2006:75). Unlike Linnaeus, Blumenbach explicitly used the concept of race. Though he is often considered the "father of the study of race," he rejected ideas of difference in intelligence among races, and he, like Buffon, believed that racial differences resulted from different climates, and that different races could be equally successful with education (Wolpoff and Caspari 1997:61). However, Blumenbach did consider Caucasians to be the "primeval" race from which all others degenerated, and his work opened the possibility for further phrenological analysis (Wolpoff and Caspari 1997; Baum 2006:77). This type of analysis continued post-Enlightenment, becoming increasingly scientific in its racialization, as is evident by works such as Carl Vogt's influential Lectures on Man (1864), which compared the brains of Black Africans to those of White children.

These biological classifications were congruent with widespread justifications for colonization and enslavement in Western Europe and America (Baum 2006; Kidd 1898). The nineteenth century was a time of Western progress, a value prominent in humanism – a system of thought that emphasized human potential

and goodness. Barbarism was seen as an "exception [to progress] that would soon be gone" and extinction became understood as an "inevitability" of evolution that "signified a failure to adapt" (Vanheste 2007:335; Madison 2021:369). The "primitivity" of non-White, non-civilized peoples was seen as an obstacle to humanity's progress. The idea that such peoples were doomed in a progressive society because of their inferiority made it easier to rationalize their subjugation and, in some cases, their extermination (Madison 2021). For example, in 1898 Benjamin Kidd extended Vogt's brain comparison between Africans and children, claiming that the low intellectual development of Africans meant that they were incapable of governing themselves, and therefore colonial expansion into tropical Africa was necessary (Kidd 1898; Gould 1996).

Around this time, polygenism, the theory that different human races evolved separately from different ancestors, became a popular and heated debate with supporters on both sides. Notably, Darwin advocated against polygenism – as did Linnaeus, Blumenbach, and Buffon – arguing that humankind had developed from a common ancestor and then developed different adaptations in their respective environments (Baum 2006; McCluskey 2016). However, Darwin also maintained that there were "qualitative distinctions" between the African, Asian, and American "savages" and European civilization, an idea that perhaps overshadowed his rejection of polygenism in the public eye (McCluskey 2016:72). Proponents of polygenism, on the other hand, included Voltaire, Vogt, and possibly Georges Cuvier, all prominent and influential scholars in their time (Baum 2006; Stocking 1982). Regardless of its debate, just the idea of polygenism allowed for an increased perceived "otherness" among races, which could, by this logic, feasibly be viewed as completely different species. This argument was a perfect set-up for the race/species continuums that would arise when modern humans discovered the Neanderthal, an actual archaic human species, for the first time.

Imperialism and Early Neanderthal Reconstructions

The first Neanderthal remains to be studied in depth by scientists, leading to their identification as a separate species of Homo, were those of Feldhofer-1, discovered in 1856. The racial ideology of the time and debates about human antiquity complicated the Neanderthal problem. This fossil "man" was so like modern humans, and yet not enough like them, spawning debates about whether it was the same species – debates which, by their very nature, had to consider the idea of human evolution. On one hand, if Feldhofer-1 was considered to be a modern human, they became associated with "inferior" races by their physical attributes. On the other hand, if they were considered a separate, ancestral species, they were placed on a continuum from ape to man and still associated with inferior races. Scholars were trying to distance this anomaly from enlightened Western culture as much as possible, viewing it in contrast to the favored White man (Pyne 2016).

Among the first scientists to study the Feldhofer remains was Hermann Schaaffhausen, who maintained that the Neanderthal was an early human rather than a different species and equated it to the "primitive" people of Earth (identified as "Negroes, Eskimos and Australian Aborigines"), a "'savage' version of our own species" (Drell 2000:4). Drell (2000) describes some of Shaaffhausen's contributions to the Neanderthal problem, including the same type of cranial measurements that were present in the growing realm of race science. Schaaffhausen believed, like many scholars at the time, in phrenology – that the shape of the skull was an indication of intelligence, and any deviation from the round, high-vaulted shape of the Western European cranium indicated lower cognitive capacity. The traditional idea of human linear progress, an advancement from savagery, to barbarism, to civilization, was common in early anthropology and humanist thought (Drell 2000). Neanderthals, considered to be at the most savage end of this continuum, could be neatly fitted to reinforce this idea of progress: they were savage, and by association the "primitive people" described by scholars like Schaaffhausen were savage and/or barbaric peoples who simply had yet to achieve modernity.

Thomas Huxley, like Schaafhausen, considered the Neanderthal to be an archaic version of modern human, rather than a separate species. He also placed them on a continuum from ape to human, with Neanderthals positioned closer to human, although he famously described the Feldhofer-1 skull as "the most pithecoid of human crania" (Huxley 1896). Going a step further than Schaaffhausen, Huxley controversially emphasized this continuum to demonstrate evidence of human evolution (Ruddick 2009). Despite push-back, this approach effectively placed the Neanderthal in an ancestral context rather than a racial one. Still, Huxley did use craniometry to compare the Neanderthal to Australian Aboriginals, who were seen as wild and primitive. His proposed continuum was later reconfigured as a vertical hierarchy based on principles of racial separation, in the following order: ape, Neanderthal, savage, European (Ruddick 2009). Therefore, despite Huxley's evolutionary approach, the Neanderthal was still identified racially and was used to situate non-White races on the "savage" step of social evolution.

Rudolf Virchow, one of the most prominent scholars in German anthropology at the time, disagreed with the idea of evolution and even with the idea that the

Feldhofer-1 remains were archaic in nature (Drell 2000; Trinkaus and Shipman 1992). However, Virchow did not assign the remains a racial identification and did not believe in inherent racial value, going so far as to warn that such distinctions would "lead to the elimination of supposedly lower races" (Drell 2000:5). Yet his warnings went unheeded. The simple knowledge that Neanderthals and modern humans had existed relatively close to each other in space and time led to speculation over why we survived, and they did not. Many scientists attributed this to the Neanderthals' lack of certain traits that the modern human species prides itself on, namely intelligence, complex behavior, and complex culture (Pyne 2016). It was thought that this inferiority meant Neanderthals could not survive in competition with superior modern humans, and so they were eliminated. Therefore, the Neanderthals' extinction seemed to support the idea that the inferior human races being associated with Neanderthals were doomed. This could be used to justify their subjugation under colonial expansion because, supposedly, they would inevitably be replaced by the superior White Europeans (Madison, 2021).

This evolutionary edge became a key point in separating Neanderthals from modern humans, as is evident in the infamous Boule's Error. Marcellin Boule strove to eliminate the Neanderthal from possible human ancestry and provided a flawed depiction of the species that has permeated Neanderthal reconstructions to this day. He based much of his analysis on a single skeleton, commonly referred to as the Old Man of La Chapelle, which was recovered near the village of La Chapelle-aux-Saints in 1908. His reconstruction was later challenged and thought to be incorrect (Straus and Cave 1957), but not until much later. In his analysis, Boule described the Old Man as incapable of complex culture and behavior, with a slouching stance and an oblong, robust skull that indicated low intelligence (Boule 1909; Pyne 2016). Boule's work was scientific and highly detailed but included several incorrect conclusions (Trinkaus and Shipman 1992). Trinkaus and Shipman (1992) explain that Boule ignored other, relevant research and consistently selected interpretations that dehumanized the Neanderthal, as well as downplayed the significance of abnormalities in the remains in order to present a typical example of the species.

Several possible explanations have been considered for Boule's errors, including: inaccurate measurements and methods for analyzing posture based on skeletal remains (Trinkaus and Shipman 1992); his existing ideas of evolution, which made it impossible for such a "rapid turnover between Neandertals and modern humans" to occur and led him to emphasize the Neanderthals' ape-like characteristics to eliminate them as a direct human ancestor (Hammond 1982; Trinkaus and Shipman 1992:190); and, of course, racial and other hegemonic biases stemming from contemporary politics and social issues (Pyne 2016; Stringer and Gamble 1993: 25). Lydia Pyne (2016) identifies Boule's unflattering reconstruction as a comfortable explanation for why Neanderthals went extinct: they simply lacked the intelligence and culture necessary to survive. This served to separate Neanderthals from humans as much as possible because scholars were uncomfortable with the idea of a "failed" species being remotely like themselves.

Humanist thought at this time emphasized progress and human potential, again making Neanderthals and their extinction a problem, perhaps a threat. In fact, the knowledge that the Old Man was found in a possibly intentional burial pit, which indicated a concept of culture by its very nature, was often overlooked because it challenged humanity's "evolutionary edge" (Pyne 2016). Thus, a tension was created between positioning Neanderthals adjacent to modern humans for racial and colonial purposes and distancing them from humans in order to maintain the idea that complex culture equates to progress. Additionally, as mentioned earlier, barbarism was seen as an exception to humanistic progress and was meant to be eradicated. Therefore, the separation of Neanderthals from humans could also symbolize a separation of the "primitive" races from civilized ones.

Regardless of its potential social influences, Boule's removal of the Neanderthals from the human lineage arose out of a long-standing paleoanthropological debate over the nature of human evolution. Boule claimed it was impossible for Neanderthals to be direct ancestors of modern humans due to their primitivity, and he identified them as a separate, failed branch of the evolutionary tree (Stringer and Gamble 1993). Meanwhile, Gabriel de Mortillet's assumptions of linear evolution made separate branches of human ancestry, as well as extinction, impossible, placing Neanderthals as the more primitive but direct ancestors of Homo sapiens (Hammond 1982). German scholars such as Gustav Schwalbe, Hans Weinert, and Franz Weidenreich also granted Neanderthals an ancestral status, as did the American anthropologist Aleš Hrdlička (Hammond 1982). Despite these challenges to Boule's interpretation, several factors including academic politics, theoretical shifts, and the onset of World War I, which separated French and German research, allowed Boule's ideas on human evolution, and therefore his apelike Neanderthal, to prevail (Hammond 1982). Boule came to dominate the field of paleoanthropology during his lifetime, and his reconstruction of the Old Man became the face of the Neanderthal species. This portrayal circulated worldwide in a variety of pop culture mediums between 1908 and c. 1950, perpetuating a savage view of Neanderthals. They

were frequently drawn as hunched, ape-like creatures, interpretations which both popularized and were based on Boule's reconstruction (Pyne 2016). This type of depiction was not only popular in scientific research, but in twentieth century paleofiction as well, capturing the imagination of authors and readers alike.

For example, The Grisly Folk by H.G. Wells, originally published in 1921, contrasted a savage Neanderthal against the civilized Cro-Magnon – the early modern humans of Europe. The Cro-Magnon are described as "clever," "social," and lawful, the "true men" of Earth. Meanwhile, Neanderthals are described as isolated, monstrous, unintelligent, and lacking compassion. They are depicted as stalking the Cro-Magnon and killing a human child, reminiscent of a cannibalism hypothesis that circulated around this time to further distance Neanderthals from humans (Ruddick 2009). Nevertheless, the "true men" in the story triumph over Neanderthals. This idea of invasion and elimination exhibits "images congruent with an imperialist view of race relations," as White Europeans invaded and colonized new regions, triumphing over them (Drell 2000:12). Additionally, Wells describes the Neanderthals as having "queerly shaped brains," which is reminiscent of the contemporary practice of phrenology. This is an example of what Ruddick later described as the Neanderthal of paleofiction being used in "racial opposition to the progressive Aryan," a concept that became heavily influenced by the eugenics movement (Ruddick 2009:154).

Western Science and Society Post-WWII

Enlightenment and post-Enlightenment racial and imperialist ideologies were eventually applied to the eugenics movement, which rapidly swept Western society. Eugenics encouraged the reproduction of desirable traits and discouraged the reproduction of inferior traits to "improve" the human race as a whole through selective breeding. Influenced by racist and xenophobic ideologies, this movement was widespread in the late 1800s and early 1900s. It included practices such as forced sterilization and segregation in order to control the passing down of only socially valued genes and eliminate unfit lineages (National Human Genome Research Institute 2021). In Germany, during the Third Reich, racial science was thought to support the following ideas: polygenism and inherent racial difference existed biologically; mental and behavioral traits were associated with race; races differed in their capacity for civilization; and races could be purified and improved through selective breeding (Weinstein and Stehr 1999). Such ideas were utilized by Nazi race theorists during the Holocaust, as they implemented "Racial Hygiene," their version of eugenics, which led to the sterilization, forced relocation, and eventually the mass extermination of Jewish people and other groups deemed unfit, such as those with hereditary disorders (United States Holocaust Memorial Museum 2018).

After the Second World War, the global public was appalled by the capacity for violence and terror that had been exhibited by humanity, including the mass subjugation and genocide during the Holocaust and the warfare that destroyed homes, families, and livelihoods around the world. Undeniably, the ideologies that led to this terror culminated from ideas of imperialism, human progress, and scientific racism. The humanist ideologies that had fueled the expansion of Western civilization, valuing "progress" – striving for perfection – in the human race above all else became viewed not as a sign of human goodness and potential but as a simple façade for colonial aggression and genocide. Humanism was blamed, after the war, both for its inability to "prevent the barbarism" of humanity and for its inhumane role in perpetuating it (Vanheste 2007:336). Attempts to understand what had happened made Western society question its own complicity in racial terror, leading later twentieth century scholars to reconsider the role of Western humanism in the making of the war. For example, George Steiner proposed that the West was so distracted by ideas of progress and optimism, focusing on scholarship and material culture, that they became "insensitive to the real grief around [them]" (Vanheste 2007:342). Other explanations, however, bluntly described humanism as a cover-up for the colonial desire for power, allowing for Western racism and imperialism to prevail under a mask of progress at the expense of other populations (Vanheste 2007). At this same time, instigated by the discovery of Australopithecus africanus remains in South Africa, Raymond Dart originated the Killer Ape Theory, which posited that inherent aggression in humans was a driving force of our evolution (Pickering 2012; Ruddick 2009). This idea became contentious in Western scholarship, highlighting the tension between human morality and terror, and it exemplifies the trend of anti-humanism that arose in the mid-twentieth century.

After the war, European imperialism began its decline as colonial empires, including Great Britain and France, were undermined, and colonies, one by one, became sovereign states (Baum 2006). In reaction to the impacts of racism, racial science became taboo and largely eliminated from scholarship. However, race – and other issues involved in social structure such as ethnicity, gender, physical ability, and sexual orientation – remained prominent socially and even scientifically, despite the adverse reactions to World War II (Baum 2006). Social discourse and unrest following the war was omnipresent, as evidenced by countercultural movements in the United States such as feminism, civil

rights, Black Power, and anti-war movements (Rorabaugh 2015). Commonly associated with 1960s and 1970s protests and social nonconformity were the hippies, who rejected the ideals of their parent generation and mainstream authority, instead valuing nonconformity, individualism, and experimentalism, as well as love and peace (Lingyu 2020; Rorabaugh 2015; Pruitt 2019; Street 2020).

Despite the near elimination of traditional post-Enlightenment race science, racism in America continued to exist in full force, as did debate over whether race is solely a social construct or if it can (or should) be identified biologically. If we recall the colonial origins of the concept of race, then the Civil Rights Movement in America can be understood not only as a push-back against racism, but a push-back against imperialist ideologies as well. Furthermore, the Vietnam War was heavily influenced by France's colonial history, and later by U.S. imperialist force. The violence and political turmoil that stemmed from such events and histories was widely protested in the United States, especially by countercultural groups. This unrest created a social climate that was increasingly against oppression, allowing for the uplifting of diverse and controversial viewpoints in culture and in science.

The Neanderthal in Postwar Society

In part due to the postwar questioning of human nature, Neanderthals became more humanized first through popular media, and later through new research. Whether it was through attempts to correct the racial ideologies that had fueled imperialism or as a direct questioning of human morality, writers began to portray Neanderthals as more sympathetic creatures (Ruddick 2009). Published in 1955, William Golding's The Inheritors depicts Neanderthals as innocent, gentle, and familial. They have their own culture and language, reminiscent of how we might imagine the earliest Homo sapiens behavior. Furthermore, Golding imagines what the meeting between Neanderthals and the Cro-Magnon may have been like, and he chooses to portray the Neanderthals' lives as being disrupted by the introduction of Cro-Magnon – the "new people." While there is continuity in that the Cro-Magnon are written as more technologically advanced than the Neanderthals, and the Neanderthals are still written as rather ape-like in appearance, Golding does not maintain the same sense of superiority that earlier paleofiction did. The new people are more aggressive, toward each other and toward the Neanderthals, killing some of the Neanderthals and kidnapping their children (Golding 1955). This is a direct contrast to H.G. Wells' The Grisly Folk, in which Neanderthals are the primary aggressors. The story also reflects Golding's earlier work, The Lord of the Flies, as both books consider the "human capacity for evil" as well as themes of competition, survival, and savagery vs. civilization. Both books, in their own ways, are reactions to the war (Ruddick 2009: 76).

Another book raising questions of human morality through the portrayal of Neanderthals is Isaac Asimov's Child of Time (1991), which was based on his 1958 short story "The Ugly Little Boy." The original short story was published during the Civil Rights movement and revisits the idea of the Neanderthal as a racial "other" in a post-war, perhaps countercultural story that considers internal biases and perceptions of difference. It follows a Neanderthal child who was taken from his own time, over 40,000 years ago, to ours. The main characters see the child as brutish and primitive but come to realize that his differences may have more to do with an unfamiliarity with the environment than innate dissimilarity (Asimov 1991; Ruddick 2009). Ruddick comments that the child "represents the disfavored racial Other who cannot join the modern world, not because he is unable, but because we won't let him," a clear parallel to the struggle for civil rights at the time of the book's publication (Ruddick 2009:164). The Neanderthal here is again depicted sympathetically and is used in popular media to make a political statement about Western civilized society.

In the 1950s, new scientific research into the Neanderthal species and human ancestry also contributed to their renaissance. Beginning in the late 1800s and gathering more attention in the mid 20th century, there were several new discoveries of human ancestors who were even more ape-like than the Neanderthals – namely Australopithecus specimens as well as older species of Homo – providing much needed context to the study of human evolution and making the Neanderthals seem increasingly similar to us in comparison (Trinkaus and Shipman 1992). Even as debate continued over their exact placement in the evolutionary tree as well as their complexity and cultural capabilities, fossil hominins were less threatening to the human sense of self and were becoming better understood, as were methodologies for studying them. Additionally, in 1957, William Straus and A. J. E. Cave released their findings following a reevaluation of Marcellin Boule's Old Man of La Chapelle, bringing "Boule's Error" to light (Straus and Cave 1957). Boule had previously described the Old Man as brutish, stooping, and simian. Straus and Cave identified osteoarthritic deformation in the specimen's spine, which they pinned as the cause of Boule's misrepresentation of the Neanderthal (Drell 2020; Straus and Cave 1957). They claimed that the Neanderthal man likely stood with a posture like that of a modern human before this deformation, and there was no reason to believe otherwise, ultimately discrediting the long-standing portrayal that Boule had locked into

public understanding of the species. Erik Trinkaus later claimed that the deformation should not have deeply affected Boule's reconstruction, and therefore Boule's attempts to eliminate Neanderthals from the human lineage may have stemmed from his own biases and preconceptions (Pyne 2016; Trinkaus 1985).

Perhaps the most impactful study to be discussed in the latter half of this paper comes from the mountains of Iraq. Archaeologist Ralph Solecki spent four excavation seasons in Shanidar Cave between 1951 and 1960, culminating in his 1971 book Shanidar, the First Flower People, which described a Neanderthal group that had not only a sense of culture, but clear compassion for one another. One notable specimen from this site, Shanidar-I, became popular with scholars due to pathologies that indicated he was severely handicapped in life. These include atrophy of the right arm, collarbone, and scapula; degenerative joint disease in the right leg; scar tissue on the left side of his skull, which led scientists to believe he may have been blind in that eye; and evidence of damage to the right side of the skull that had healed long before his death, which was estimated to have been around the age of 40 (Solecki 1971; Trinkaus and Zimmerman 1982). Solecki (1971) argued that these injuries would have put Shanidar-I at a disadvantage in an already tough environment and lifestyle; they would have made it difficult for him to move quickly, forage for food, participate in cooperative hunting, or fend for himself. Therefore, it is likely that other group members supported him through life, and many anthropologists assert that this indicates a sense of compassion not previously seen or considered in Neanderthals.

Even more popular was the Shanidar-IV specimen. Shanidar-IV became commonly known for its "flower burial" – a burial, archaeologically identified as intentional, that, following scientific analysis of the surrounding soil and pollen, was thought to have included the placing of flowers over the body (Solecki 1971). This conclusion was later described as wishful thinking when other explanations for the presence of flower pollen were provided. For example, Jeffrey Sommer (1999) presented zoological data to show that rodents in the Shanidar region may have carried flowers into the cave, while Gargett (1989) argued that wind or rodents may have been responsible for the deposition of pollen. Meanwhile, the recent discovery of an additional Neanderthal skeleton near the flower burial site has reignited investigations into the possibility of intentional mortuary practices at Shanidar (Pomeroy et al. 2020). Regardless of this debate, the concept of the flower burial resonated with the public in the late 20th century, as people connected emotionally with the peaceful and careful act of honoring loved ones. This image brought the Neanderthal closer to humans than ever before, and it was included in many stories, artworks, and popular museum exhibits (Hochadel 2021).

The "Flower People" title of Solecki's book resonated with the public as well. While Solecki did not explicitly compare the Shanidar Neanderthals to hippies, and the title was likely only a marketing decision, it largely conditioned how the finds were understood in 1960s and 1970s America. The association of Neanderthals with nonviolent, peace-loving hippies made people perceive the Neanderthals as nonviolent and peaceful (Hochadel 2021). The sociopolitical climate in America during this time was perfect for the acceptance of the Neanderthal as compassionate, human-adjacent creatures. The rise of counterculture supported raising up the Neanderthal, this (pre-)historical "other," in the face of discrimination and continued international imperial force. They were yet another group, it seemed, that had been wronged by the Western superiority complex, and had long been yet another excuse for the subjugation of people of color. These movements were widespread enough that many people seemed to favor the Neanderthals' humanization, tearing down the racist, simian portrayals of the past century (Hochadel 2021; Madison 2021).

Additionally, the tension of human goodness vs. evil remained prominent. On one hand, going back to the Killer Ape Theory that pinned humans as inherent aggressors, if it was argued that Neanderthals were in fact our ancestors, depicting them as peaceful would mean that we cannot be inherently aggressive (it is important to note here that, according to modern research, we are not evolved directly from Neanderthals, but, as discussed above, this topic was a longstanding debate). On the other hand, if Neanderthals were seen as peaceful but they were wiped out by modern humans, then they were seen as sympathetic while Homo sapiens were viewed as aggressors. If they were seen as gentle, conflict-averse creatures and modern humans as were seen as aggressors, then "in an era when shaggy-locked anti-war protesters waving flowers confronted… heavily armed militia, it seemed easy to imagine how the Neanderthals' extinction might have come about" (Ruddick 2009:71). Neanderthals, in this case, were portrayed as a victim of Homo sapiens aggression. Therefore, whether used as a rationalization for why humans cannot be inherently evil or as a rationalization for why humans are inherently evil, the Neanderthal came to be portrayed as sympathetic and almost human, resulting in part from popular reactions to imperialist terror. These few decades post-WWII, especially with the advancement of the Shanidar finds, marked a drastic change in how the Neanderthal was depicted publicly and scientifically, making them look a lot more like ancient modern humans indeed.

Conclusion

Discourse and research since the 1970s have been dominated by new genetic science, allowing scientists to understand the Neanderthals and our relationship with them better than ever before. This research continues to humanize them, though depictions of Neanderthals as primitive, brutish 'others' continue to persist socially and scientifically. This paper has covered a vast array of science and social dynamics over a 100 year span, but there are many research efforts, sociopolitical factors, and diverse viewpoints that could not be adequately considered within the scope of it. Here I have considered a scientific community dominated by white men, and even though this skewed constitution was overwhelmingly true of pre-twenty-first century research and often remains so today, it would be worth considering if, when, and how Neanderthal research has been viewed by more diverse scientific communities and what impact those communities could have had on our reconstructions. This is perhaps a good example of how a lack of diverse perspectives can warp scientific understanding. However, between the 1850s and 1970s, the Neanderthal was imperialism's wayward child, misunderstood and subject to the biases and actions of those who studied them. Their place in human evolution was constantly in question, tied to changing theories and methods as the discipline of paleoanthropology grew. Socially, our reconstructions of Neanderthals were deeply tied not only to academic politics, race, and other sociopolitical contexts as many authors have considered, but also to the deeper ideologies and motivations of Western imperialism, stretching from justifications for colonization in the nineteenth century to adverse reactions to humanity's capacity for terror in the twentieth.

Our world is increasingly dominated by science and technology, but everything we do is potentially subject to internal and systemic bias, which often becomes entwined in our scientific work. The case of the Neanderthal provides a prime example of how sociopolitical bias may influence scientific analysis, and furthermore, how flawed analysis can enter mainstream society in such a way that perpetuates the original bias. Beginning with post-Enlightenment racial classification, science was used to justify hegemony as Europeans colonized new regions, and this racial science in turn exerted a heavy influence on the first scientific and fictional reconstructions of the Neanderthals. They became an "other," another casualty of colonization, and they were depicted as such in popular writing and artwork.

Furthermore, similar imperialist justifications were adopted by political agendas in the twentieth century, leading to greater horror than the world had ever seen in the form of eugenics, mass extermination, and world war. What followed was a questioning of human nature and the expansion of countercultural movements, creating a tumultuous social climate that was increasingly open to diverse, controversial ideas that went against mainstream culture. The Neanderthal was reborn in science and fiction as a sympathetic creature, consistent with anti-imperialist agendas, and further research continues this trend. It is important, however, that we do not forget how our understanding of this species was for so long conditioned by racist and imperialist aggression, and it may be worth asking what political and social narratives, new or old, influence our perceptions of Neanderthals today.

References Cited

Asimov, Isaac and Robert Silverberg
1991 *Child of Time.* Gollancz, London.

Baum, Bruce
2008 *The Rise and Fall of the Caucasian Race: A Political History of Racial Identity.* New York University Press.

Boule, Marcellin
1909 L'homme Fossile de la Chapelle-Aux-Saints. *L'Anthropologie* 19(1): 519-525

Buffon, G. L. L.
1812 *Natural History, General and Particular*, Vol. III. Reprinted. Translated by William Smellie. T. Cadell and W. Davies, London. Originally published 1749, Imprimerie Royale, Paris.

Darwin, Charles
1871 *The Descent of Man: And Selection in Relation to Sex.* John Murray, London.

Drell, Julia R. R.
2000 Neanderthals: A History of Interpretation. *Oxford Journal of Archaeology* 19(1):1-24.

Gargett, Robert H.
1989 Grave Shortcomings: The Evidence for Neandertal Burial [and Comments and Reply]. *Current Anthropology* 30(2):157-190.

Golding, William
1955 *The Inheritors*. Harcourt, Brace & World, New York.

Gould, Stephen J.
1996 *The Mismeasure of Man*. Penguin Books, London.

Hammond, Michael
1982 The Expulsion of the Neanderthals from Human Ancestry: Marcellin Boule and the Social Context of Scientific Research. *Social Studies of Science* 12(1):1-36

Hochadel, Oliver
2021 The Flower People of Shanidar. *Narratives and Comparisons* 99-122.

Huxley, Thomas H.
1896 *Man's Place in Nature: And Other Anthropological Essays.* D. Appleton, New York.

Kidd, Benjamin
1898 *The Control of the Tropics*. Macmillan, New York.

Linnaeus, Carl
1758 *Systema Naturae* 10th ed. Laurentius Salvius, Stockholm.

Lingyu, Kong
2020 Seeing the Hippies Beyond Stereotypes and Deciphering the Message of the Hippie Movement. *Journal of Humanities and Social Sciences* 25(11): 42-46

McCluskey, Alan
2016 'Race' and the Changing Representations of Neanderthals. *Human Geography* 9(1):68-78.

Madison, Paige
2021 Brutish Neanderthals: History of a Merciless Characterization. *Evolutionary Anthropology: Issues, News, and Reviews* 30(6):366-374.

National Human Genome Research Institute
2021 Eugenics and scientific racism. Electronic document, https://www.genome.gov/about-genomics/fact-sheets/Eugenics-and-Scientific-Racism, accessed May 5, 2022

Pickering, Travis R.
2012 African Genesis Revisited: Reflections on Raymond Dart and the 'Predatory Transition From Ape(-man) to Man.' In *African Genesis: Perspectives on Hominin Evolution*, edited by Sally C. Reynolds and Andrew Gallagher, pp. 487-505. Cambridge University Press.

Pomeroy, Emma, Paul Bennett, Chris O. Hunt, Tim Reynolds, Lucy Farr, Marine Frouin, James Holman, Ross Lane,
Charles French, and Graeme Barker
2020 New Neanderthal Remains Associated With the 'Flower Burial' at Shanidar Cave. *Antiquity* 94(373):11-26.

Pruitt, Sarah
2018 How the Vietnam War Empowered the Hippie Movement. Electronic document, https://www.history.com/news/vietnam-war-hippies-counter-culture, accessed May 5, 2022.

Pyne, Lydia V.
2016 The Old Man of La Chappelle: The Patriarch of Paleo. In *Seven Skeletons: The Evolution of the World's Most Famous Human Fossils*, pp. 13-49. Viking, New York.

Rorabaugh, W. J.
2015 *American Hippies*. Cambridge University Press.

Ruddick, Nicholas
2009 *The Fire in the Stone: Prehistoric Fiction from Charles Darwin to Jean M. Auel*. Wesleyan University Press, Middletown, Connecticut.

Solecki, Ralph S.
1971 *Shanidar, the First Flower People*. Knopf, New York.

Sommer, Jeffrey D.
1999 The Shanidar IV 'Flower Burial': a Re-evaluation of Neanderthal Burial Ritual. *Cambridge Archaeological Journal* 9(1):127-129.

Stocking, George W.
1982 Race, Culture, and Evolution: *Essays in the History of Anthropology.* University of Chicago Press.

Straus, William L., and A. J. E Cave
1957 Pathology and the Posture of Neanderthal Man. *The Quarterly Review of Biology* 32(4):348-363.

Street, John
2020 Beyond Peace and Love: Hippies. Electronic document, https://museumofyouthculture.com/hippies/, accessed May 5, 2022.

Stringer, Chris, and Clive Gamble
1993 In *Search of the Neanderthals: Solving the Puzzle of Human Origins*. Thames and Hudson, New York

Trinkaus, Erik
1985 Pathology and the Posture of the La Chapelle-aux-Saints Neanderthal. *American Journal of Physical Anthropology* 67(1):19-41.

Trinkaus, Erik, and Pat Shipman
1992 *The Neandertals: Of Skeletons, Scientists, and Scandal*. Vintage Books, New York

Trinkaus, Erik and M. R. Zimmerman
1982 Trauma Among the Shanidar Neanderthals. *American Journal of Physical Anthropology* 57(1):61-76

United States Holocaust Memorial Museum
2018 The biological state: Nazi racial hygiene, 1933-1939. Electronic document, https://encyclopedia.ushmm.org/content/en/article/the-biological-state-nazi-racial-hygiene-1933-1939, accessed May 5, 2022.

Vanheste, Jeroen
2007 Anti-Humanism After WW2. In *Guardians of the Humanist Legacy: The Classicism of T.S. Elliot's Criterion Network and Its Relevance to our Postmodern World*, pp. 335-361. Brill, Leiden, Netherlands.

Weinstein, Jay, and Nico Stehr
1999 The Power of Knowledge: Race Science, Race Policy, and the Holocaust. *Social Epistemology* 13(1):3-35.

Wells, H. G.
1998 The Grisly Folk. In *The Complete Short Stories of H.G. Wells*, pp. 607-621. J.M. Dent, London.

Wolpoff, Mildred, and Rachel Caspari
1997 *Race and human evolution.* Simon & Schuster, New York.

"Please tell me it's a boy!": The Phenomenon of Son Preferences in India and its Detrimental Impact on Daughters

Aditi Bhandari, *University of Maryland*

Abstract

Dating back to nearly 800 B.C.E., the phenomenon of "son preference" has been deeply ingrained into Indian society. Depicted everywhere from ancient scripture to modern cinema, the importance of bearing sons over daughters has undoubtedly shaped gender perceptions and patriarchal processes. Prevalent in Eastern and Southern Asian societies (as well as places in the Middle East and North Africa), "son preference" refers to the higher level of value and desire placed on bearing male children over female children. Social, economic, and religious reasons can influence a family's adherence to son preference. Son preference has led to the violent discrimination against daughters which has resulted in infanticide, sex-selective abortions (female feticide), improper nutrition and a lack of healthcare — all of which have given rise to skewed sex rations and higher premature mortality rates in girls. This analysis uses the application of anthropological concepts — specifically symbolic violence and zones of abandonment — to understand the impacts of son preference on daughters, and how this is connected to gender violence within Indian society. As the existing power-differential between sons and daughters draws on symbolic violence to create discriminatory gender relations in society, the zones of social abandonment created because of this phenomenon further perpetuates the neglectful ostracization of daughters.

Introduction

Son preference and daughter discrimination on the sole basis of gender has been a widespread issue in many parts of India. In ancient Indian scripture called Atharva Veda, hymns and mantras were written to change the sex of a fetus or to bestow luck upon a woman, so she was more likely to birth a son (Pande and Astone 2007). These highly traditional practices may be due to long standing socio-cultural and economic expectations. Males hold a central role in Indian families; they are able to inherit valuable property, they perform family-specific rituals, and they carry on the family name (Nanda et al. 2014). In the religious context of Hinduism, males are even seen as higher forms of reincarnation than females. Many also believe that they can only achieve moksha (liberation from the cycle of life and death through good deeds) through the birth of a son (Patel 1996), which is why it is the son who must light the funeral pyre of a parent (Pande and Astone 2007). Daughters, on the other hand, are often seen as an economic liability or burden. The daughter's family may be required to engage in the act of gifting a dowry to the groom's family, which is a tradition that is exclusive to the marriage of a daughter (Patel 1996). Although dowries are illegal and have been illegal since 1961, research suggests that they may still occur, though quantitative data on this subject remains murky (Robitaille 2019). When daughters are married, they traditionally leave their natal family to live with the groom and his extended family, and as a result, are not seen as "useful" to their natal family, since they are unable to take care of their parents in old age (Pande and Malhothra 2006). Such discrimination is a form of symbolic violence, as certain consequences are settled on the shoulders of young women solely due to their sex. It is apparent that a power differential exists between sons and daughters; while sons are expected to "defend or exercise the family power," daughters are seen as entities that must be "defended or protected," which further reinforces the idea that daughters are merely a burden on the household (Pande and Malhothra 2006).

Tersely put by Bourdieu and Waquant, symbolic violence is "... violence that is exercised upon a social agent with his or her complicity" (Bourdieu and Waquant 2002). This framework is imperative in the analysis of son preference, as it can explain how the violence and power differential between sons and daughters is first constructed, but then widely accepted to be the norm in a majority of households. According to Bourdieu and Waquant, symbolic violence based on gender can be perceived as the "natural order of things", or the inherent default of human nature. The authors state: "... the male order is so deeply grounded as to need no justification: it imposes itself as self-evident, universal..." (Bourdieu and Waquant 2002). Importantly, symbolic violence requires that the acts of violence are unconsciously agreed upon by the parties involved, where the dominating group holds greater power over the subordinate group. The stark differences between son and daughter roles in an Indian household have undoubtedly put a higher

importance on males than females. By the nature of the tasks entrusted among sons versus nothing more than the perception of burden placed upon daughters, it is simple to see the discrimination and power differential that is created as a product of these attitudes. It is evident that son preference points to broader implications, such as female infanticide, sex-selective abortion, improper nutrition, and a lack of health care for women. This results in an increase in premature mortality rates among girls, and even among women who are pregnant and are expecting the birth of a girl. A study released by the World Bank in 2014 states that "The observed sex ratios for first births imply that 2.2–8.4 percent of women with first-born girls are 'missing' because of son preference between the ages of 30 and 49" (Milazzo 2014), further implying that domestic violence rates seem to be linked to women that bear a daughter as a first born, as opposed to women who bear a son. In India, there are two main routes that can be taken in order to ensure the birth of a child with the desired sex: one method is to have repeated pregnancies in a short period of time until the desired number of sons is reached (a practice that is known to increase the morbidity and mortality rates of women), while the other method is to selectively abort female fetuses (Milazzo 2014). The former is more common among people of lower socioeconomic status (SES), while the latter is more common among those of higher SES. It is important to note that the healthcare gap between those of lower SES and higher SES can "... lead to differential mortality due to son preference" (Milazzo 2014).

This analysis aims to dissect and discuss the phenomenon of son preference and its impact on daughters. More specifically, the topic of gender violence (in this case, violence that disproportionately affects females over males) is vital to this analysis. Ideas of symbolic violence will be used to scrutinize non-physical forms of violence that girls and women may endure as a result of son preference, while zones of abandonment will be used to explain certain attitudes and methods of social treatment that surround girls and women.

Methodology

In order to address the phenomenon of son preference, this paper will utilize anthropological concepts and approaches to formulate its analysis. The overarching topic that will be referenced in this paper is violence, with special references to gender violence, symbolic violence, and certain violent cultural tendencies that are specific to India. These topics will be viewed through an anthropological lens, by taking into account Indian culture, society, and structural components that have impacted the rise of son preference. Content analysis will be fully derived from web-based research methods; papers were chosen based on their relevance to son preference, impacts of son preference on girls and women, prenatal diagnostic techniques used in India, laws and regulations surrounding prenatal diagnostic techniques in India, Indian social and cultural values and norms, as well as papers that examined the power differential and violence between the sexes in India. A broad initial analysis of the existing literature was done to survey the available content for son preference and its implications; a full analysis was then conducted on the existing literature on the basis of the chosen anthropological concepts.

Prenatal Discrimination: Sex-Selective Abortions Through the Lens of Symbolic Violence

Violence imposed by men against women is an apt example for the manifestation of gender discrimination and inequality, where women are given the lower ground and men are entitled to dominate them through physical, sexual, verbal, emotional, or psychological means. This further perpetuates the cycle of violence against women and daughters — especially when considering the specific context of attitudes towards childbearing and the sex of their future children.

For Bourdieu and Waquant, one of the ultimate paradigms of symbolic violence is gender relations. Son preference embodies symbolic violence, as both males and females view females to be the subordinate group. The sole pressure of bearing a son is often placed on the mother of the child, to the point where she may be threatened with violence and abandonment if she fails to give birth to a son (Nanda et al. 2014). As a result, mothers will agree to undergo sex-selective abortions if their child's sex has been determined to be female and will often recite prayers to bear sons. This speaks to the female perpetuation of her "inferior" role in Indian society, as the mother herself, will perpetuate the desire for a son. It may not be known whether this desire is out of fear for her wellbeing and the wellbeing of the potential life of her daughter, or out of her acceptance towards societal male dominance. Regardless, son preference is an ideal archetype of the mechanics of symbolic violence on the basis of gender discrimination, based on the complicities of all parties involved.

"Invest Rs. [rupees] 500 now, save 50,000 later." In the past, sex-selective abortions in India were normalized and advertised; this slogan was plastered on a billboard and was meant to encourage parents to consider sex-selective abortion to avoid paying an expensive dowry in the future (Westley and Choe 2007). When sex determination technology became accessible and popular in India in the 1980s, the rate of female abortions proceeded to skyrocket. In Bombay, a study revealed that out of 8,000 abortions that were preceded by an amniocentesis, 7,999 were on female

fetuses (Patel 1996). Between the years of 1978 and 1982, approximately 78,000 female fetuses were aborted following a sex-determination test (Kusum 1983). In 1994, the Parliament of India enacted the Pre-Conception and Pre-Natal Diagnostic Techniques Act (PCPNDT) (Tandon et al. 2020). This act aimed to rectify the issue of skewed sex ratios in India, which was highly attributed to sex-selective abortions. As per this act, the determination of sex upon conception using any technique (amniocentesis, ultrasound, chorionic villus sampling, etc.) was criminalized. This is but one of many laws that have been enacted by the Indian government to curb the disproportionality in sex ratios, and to curtail sex-selective abortions and female infanticide. Despite these efforts, some families can still manage to determine the sex of their unborn child, and as a result, sex-selective abortions still occur. This section argues that sex-selective abortions are a form of symbolic violence that can be enacted upon daughters prior to their birth and represent an outcome of the landscape of symbolic violence.

Sex-selective abortions in India are a two-step process, with the former being the identification of the child's sex and the latter being a "therapeutic abortion" which was legalized in India under the 1971 Medical Termination of Pregnancy Act (MTP) (Patel 1996). Under this act, abortions are readily available and free of charge in hospitals and clinics across the country (Patel 1996). However, there are a few caveats: the MPT act is only applicable for up to 20 weeks of pregnancy (except for life-threatening emergencies), and it cannot be done in accordance with sex-selective abortion (as per the PCPNDT act). However, sex-selective abortions still occur. The act of sex-selective abortion itself is violent towards daughters before they are born; they reinforce the fact that females are subservient to males and are subject to "disposal" prior to their birth.

The determination of sex is based merely on the physical body, resulting in the body itself being perceived as cultural symbolism. In their paper "The Mindful Body: A Prolegomenon to Future Work in Medical Anthropology," Nancy Scheper-Hughes and Margaret M. Lock discuss cultural constructions of the body, and how they can serve as "symbolic equations" that reflect relations in society. The authors assert: "... some of the frequently occurring associations to right- and left-handedness, especially the symbolic equations, on the one hand, between the left and that which is inferior, dark, dirty, and female, and on the other hand, between the right and that which is superior, holy, light, dominant, and male" (Scheper-Hughes and Lock 1987). This quote expresses the duality between males and females in a patriarchal society. This interpretation of symbolic violence can help disentangle the violence of sex-selective abortion; merely the confirmation of a fetus' anatomical body parts (that in turn, symbolizes gender roles and gender dominance, with males being superior) is enough for families to go through with an abortion. A study done in an Indian hospital in 1980 showed that in a 12 month period, 450 mothers were informed that they would bear a daughter, and out of those 450, 430 fetuses were subsequently aborted (Ramanamma 1980). In the same study, 250 mothers were told that they would bear a son, and all 250 sons were delivered, even if the mother was informed that there could be a chance that their son may have a genetic disorder (Ramanamma 1980). This further contributes to the argument that sex-selective abortions are driven by the stigma of the physical body and the many cultural implications if a family ends up with a daughter. Abortion based on sex is inherently violent, as it destroys the prospect of a life on the mere conclusion that the sex of the fetus will place a burden on the family. Even in cases where a mother may give birth to a healthy baby girl versus a son that suffers from a disability, families will still opt for the son over the daughter. Furthermore, putting the value of a son's life on a pedestal (by both men and women in society) reflects the nature of symbolic violence, where all parties perceive daughters as the lower-ranking entity. Gender discrimination through sex-bias is seen at a prenatal stage to ensure that daughters are not birthed. The symbolic violence towards daughters is tangible in terms of preferential treatment towards sons, and even before daughters have a chance to make their way in the world, they endure violence based on their sex.

Zones of Social Abandonment: Neglected Daughters in Social Institutions

According to Marrow and Lurhman, the "zone of social abandonment" is "a life where the fundamental goods of social life do not exist" (Marrow and Lurhman 2012). Among these 'goods,' the authors analyze family and the social abandonment that comes with being excluded from and rejected by kin. The social abandonment discussed by Marrow and Lurhman is more closely related to the stigma surrounding mental illness, but the authors briefly touch on Indian society and the treatment of women. The authors discuss the fear of public perception regarding family members and how it shapes the treatment of certain individuals (i.e., people with mental illnesses). The constant concern with public perception regarding gender undoubtedly fuels a family's desire for a son — especially when the birth of a son is considered to be "auspicious." Families that have multiple girls and are unable to produce a son are indisputably judged by society for their "unluckiness," which can result in public shame and embarrassment. If a daughter is born to a family that idealizes son preference, it is likely

that the daughter will be ostracized and not given proper nutrition, healthcare, or education. In some cases, after birth, female infants will be killed (infanticide) because of their sex. If the daughter survives the possibility of abortion and infanticide, studies have shown that by the age of 5, 6% more daughters in comparison to sons are severely stunted, and 13% more daughters in comparison to sons are unvaccinated (Pande and Malhothra 2006). This same study found that birth order matters as well: girls with two or more brothers and no older sisters are less likely to be neglected, girls with two or more older sisters are most likely to be neglected, and girls that are born to families that already have a daughter are less likely to be nurtured (Pande and Malhothra 2006). These levels of treatment prove that there are different stratifications or zones of social abandonment based on birth order and sex, and different degrees of treatment on the same basis. As these daughters age, many of them are not permitted to go to school to receive an education. According to the 2022 Global Gender Gap report, women rank lower in comparison to their male counterparts with regards to education and skills. For example, the attainment percentage of males versus females in engineering, manufacturing, and construction is 69.17% for males and 30.83% for females (Global Gender Gap Report 2022). For agriculture, forestry, fisheries, and veterinary skills, the attainment percentage for males is 72.50%, while for females it's 27.50% (Global Gender Gap Report 2022). Females in leadership positions also remain low in terms of percentage - firms with majority female ownership lie at 2.80%, while firms with females as top managers stands at 8.90% (Global Gender Gap 2022). Overall, India ranked 135th in 2022 (62.9%) in terms of gender parity in South Asia (with gender parity being the percent of the gender gap that has been closed).

As described by Marrow and Lurhman, "Parents feel they should invest their efforts in their healthy children, rather than 'waste' any effort on the handicapped child" (Marrow and Lurhman 2012). The same reasoning used for the disabled can be used for daughters — since they are not seen as an asset to families, precious time, money, and resources are not poured into securing an educational future for them. While boys are sent to school, their female siblings will remain at home, tending to stereotypical jobs such as cooking, cleaning, and looking after the household (Pande and Malhothra 2006). These skills are considered more important than education for women when it comes time for them to become married. This ostracization from educational and social environments creates another sphere of social abandonment both with respect to family and peers, as well as to their future opportunities. Without education, daughters are more likely to grow up to be illiterate and are unable to attain high paying jobs. This forces them to be dependent on the men in the family, which further adds to public perception of daughters being a "burden" (Patel 1996).

The caste system is another way in which daughters are often ostracized and secluded from family. Higher castes uphold more "rigid gender stratification systems," where girls are put under more restrictions and are subject to more seclusion (Pande and Astone 2006). This contrasts with some lower castes, where girls must work and earn a living due to severe economic pressures. If a girl from a lower caste marries into a family of an upper caste, she may be put into a zone of abandonment with the limitation in freedoms she may experience. She may be limited to cooking, cleaning, and childbearing, and treated poorly due to her status as a daughter-in-law.

Menstrual cycles are also used as weapons of social ostracization and create periodical zones of social abandonment within certain families. A natural occurrence that is highly stigmatized, nearly every religion (with the exception of Sikhism) views menstruation as "unsanitary" (Bhartiya 2013). Menstruating women are not permitted in holy spaces such as temples, whether they be public or private. In other parts of India (with rules differing from family to family), women are not permitted to stay with family members while menstruating and must reside in a separate section of the house. She must also prepare her own food and eat it alone (Bhartiya 2013). In some parts of the country, women must undergo "ritual cleansings" after the birth of a child or must reside in "menstrual huts" away from the family during menstruation (Bhartiya 2013). Failure to comply may lead to familial or societal ostracization. Since a menstrual period is unique to females (and because there is no equivalent occurrence for a male), this could further deter families from wanting to "deal with" a daughter. This specific and "periodical" zone of social abandonment physically ostracizes girls from their families, while they are often treated as "unclean" and not fit to be in the presence of others. This violent cycle renews itself each month, and enforces the stigma that girls require extra maintenance in comparison to their male counterparts.

Conclusion

This paper aims to understand violence enacted on daughters based on son preference through the following: the perpetuation of gender violence and discrimination through the lens of symbolic violence; symbolic violence enacted on prenatal females on the basis of sex-selective abortion; zones of abandonment executed on unwanted daughters. The phenomenon of son preference puts young girls at a disadvantage early

in life, as well as reinforces the power held by their male counterparts. With men being revered and cherished from the moment they are born, they may feel entitled to exercise power and violence over women who do not adhere to certain roles and expectations. This may be a display of masculinity, or a way to "protect the honor of the family." Regardless, women and girls are subjected to actions of violence, whether it be through covert or overt forms. Gender perceptions and the pressure to uphold certain stereotypes of masculinity all culminate in manifestations of violence in the everyday — further contributing to the cycle of gender discrimination and power differentials. Although son preference is now more covertly present and can manifest less severely in progressive families, there are still regions in India where it exists more bluntly and in the open. Policies present for decades such as PCPNDT and the criminalization of dowries (among many others) have attempted to enact consequences on sex determination and sex-selective abortion but have not achieved the magnitude of effective and positive changes that they aimed for. The violence endured by women and girls in India due to power-related dynamics as well as social and familial neglect have gravely injured notions of equity and equality, to the point where this type of violence is accepted as the norm.

To address the issue of son preference, policies must be put into place in order to reduce gender based discrimination. Although a shift in culture and mindset is pertinent to the wellbeing of girls and women, it is necessary to note that drastic cultural shifts may only occur as a result of policy enactment. Gender equality must be strongly promoted, with an emphasis on equal rights and opportunities for girls and women. Governments can show their support by promoting women's access to leadership roles. Another vital consideration is strengthening a woman's financial independence and social status - this can be achieved in the form of equal wages, access to property inheritance, and improved pension and social security schemes (UNFPA 2020). In order to prevent discriminatory behavior in a prenatal sense, bans on sex-selective abortions, sex determination and advertisement, late-term abortions (that are not needed as a result of medical complications) can be enacted. Overall, gender equity needs to be heavily promoted and focused on, whether it be in the form of policy, awareness campaigns, or through stigma remediation.

Additionally, up-to-date studies must be done to determine the current standing of son preference in India. Studies should be extended to different nations as well, to assess the presence and degree of son preference within families that have immigrated to other countries and are no longer residing with extended family. Ethnographic accounts should be taken from sons and daughters, to explore the effects of sex-based preference on children. Another interesting avenue could be the differences in gender-based perception in North and South India. Since cultures drastically vary between the North and the South, studies should be done to assess the differences in discriminatory attitudes, as well as differences within rural, suburban, and rural regions of India.

References Cited

Bhartiya, Aru.
2013 Menstruation, Religion and Society. International Journal of Social Science and Humanity 3, no. 6: 523.

Kusum, Kusum.
1993 The Use of Pre-Natal Diagnostic Techniques for Sex Selection: The Indian Scene. *Bioethics* 7, no. 2-3.

Marrow, Jocelyn, and Tanya Marie Luhrmann.
2012 The Zone of Social Abandonment in Cultural Geography: On the Street in the United States, Inside the Family in India. *Culture, Medicine, and Psychiatry* 36, no. 3: 493-513.

Milazzo, Annamaria.
2014 Why are Adult Women Missing? Son Preference and Maternal Survival in India. *Journal of Development Economics* vol. 134: 467-484.

Pande, Rohini P., and Nan Marie Astone.
2007 Explaining Son Preference in Rural India: The Independent Role of Structural Versus Individual Factors. *Population Research and Policy Review* 26, no. 1: 1-29.

Patel, Rita.
1996 The Practice of Sex Selective Abortion in India: May You Be the Mother of a Hundred Sons. *Carolina Paper Series*. No. 20 Chapel Hill: Center for Global Initiatives, University of North Carolina.

Priya, Nanda, Gautam Abhishek, Verma Ravi, Khanna Aarushi, Khan Nizamuddin, Brahme Dhanashri, Boyle Shobhana, and Kumar Sanjay.
2014 Study on Masculinity, Intimate Partner Violence and Son Preference in India. New Delhi, International Center for Research on Women.

Ramanamma, Asha, and Usha Bambawale.
1980 The Mania for Sons: An Analysis of Social Values in South Asia. Social Science & Medicine. Part B: *Medical Anthropology* 14, no. 2: 107-110.

Robitaille, Marie-Claire.
2020 Conspicuous Daughters: Exogamy, Marriage Expenditures, and Son Preference in India." *The Journal of Development Studies* 56, no. 3: 630-647.

Scheper-Hughes, N., Bourgois, P. I., Bourgois, P., & Wacquant, L.
2002 Symbolic Violence. In Violence in War and Peace: An Anthology, pp. 272–271. Blackwell.

Scheper-Hughes, Nancy, and Margaret M. Lock.
1987 The Mindful Body: A Prolegomenon to Future Work in Medical Anthropology. *Medical Anthropology Quarterly 1*, no. 1: 6–41. http://www.jstor.org/stable/648769.

Tandon, Neha Pruthi, Sumitra Bachani, Shreya Kaura, Rupali Dewan, and Renu Arora.
2020 The Unmet Needs of PCPNDT Act in the Women of the General Population in North India. *International Journal of Community Medicine and Public Health 7*, no. 12: 5044.

UNFPA.
2020 Preventing Son Preference and Undervaluing of Girls in Eastern Europe. https://eeca.unfpa.org/sites/default/files/pub-pdf/uf_eecaro_gbss_16-online.pdf.

World Economic Forum
2022 Global Gender Gap Report 2022. World Economic Forum.

Did Neanderthals Go Extinct Because of Cognitive Differences?: A Critical Multi-Disciplinary Investigation

Andrew Scicluna, *University of Western Ontario*

Abstract

Ever since the discovery of a fossil specimen in 1856 in Feldhofer Cave, Germany, paleoanthropologists have hotly debated whether, and to what extent, the specimen should be interpreted as representing a taxonomically distinct category from Anatomically Modern Humans (AMH). Early researchers typically argued for a strong "splitting" view, specifically positing the former outcompeted and drove to extinction the latter because of their superior cognitive abilities. However, in recent decades, this view has become increasingly challenged and rejected. This article critically evaluates some of the evidence provided by both sides, and argues cognitive differences remain to be demonstrated. Attempts to infer cognitive abilities from biological data – such as the morphology of remains and reconstructed genomes – have been plagued by numerous methodological issues and a scarcity of data. Furthermore, when situated in their cultural and historical context, such efforts appear to put the cart before the horse. The narrative of a superior species inevitably outcompeting an inferior one reflects a colonialist worldview. Furthermore, linguistic competence as the essential defining feature of AMH is culturally particular. In sum, the discourse about Neanderthal-AMH differences is not merely an objective analysis of the material record, but also an illustration of the social construction of knowledge – or perhaps more accurately, of ideas about what it means to be human in the first place.to gender violence within Indian society. As the existing power-differential between sons and daughters draws on symbolic violence to create discriminatory gender relations in society, the zones of social abandonment created because of this phenomenon further perpetuates the neglectful ostracization of daughters.

Introduction

For over a century, many scholars considered Neanderthals unsophisticated brutes, categorically distinct from Anatomically Modern Humans (AMH). Observable physical differences in material remains were interpreted as implying unobservable mental differences. Furthermore, many scholars interpreted the disappearance of Neanderthals from the fossil record as the inevitable consequence of their interactions with AMH populations, precisely because of the aforementioned posited species-level differences (Villa and Roebroeks 2014:1-2). These conclusions often reflected inherited presuppositions and cultural attitudes, rather than inferences from material evidence (Schlager and Wittwer-Backofen 2015:1019-1029). However, despite popular culture historically reproducing these negative representations, an increasing number of scholars are now rejecting them (Breyl 2020:4). This article critically evaluates the historical context and current debate over the evidence for Neanderthal and AMH cognitive differences. This article specifically focuses on a hypothesis which is arguably as old as paleoanthropology: whether such cognitive differences, if present, played a significant role in Neanderthal disappearance. For much of the disciplinary history of paleoanthropology, both subjects were inextricable, because the former was assumed to have caused the latter.

Early Archeology

Debates over the meaning of observable differences between humans and Neanderthals started, quite literally, with the discovery of the first Neanderthal in 1856, and its revelation to the broader scientific community in 1857, by Johann Fuhlott and Hermann Schaaffhausen. This specimen, called Neanderthal-1, was the first recognized non-AMH fossil hominid. Even before this discovery (let alone the publication of On the Origin of the Species two years later), intellectuals were already questioning the degree to which human beings (like themselves) differed from other animals (Schwartz 2006:228-229; Schlager and Wittwer-Backofen 2015:1020). In fact, this kind of speculation was initially targeted towards the non-European AMH populations contacted since at least the age of discovery (Schwartz 2006:231-232).

Before evolutionary theory, several pseudo-scientific practices like phrenology played a key role in constructing unequal social categories, such as race and ability. Often, these categories would be used to justify exploitative and oppressive relationships. For example, the phrenology textbook Crania Americana was a key justification for Andrew Jackson's Indian Removal policy (University of Cambridge 2014). These pseudo-sciences would frequently homogenize and attribute characteristics to non-European populations, "othering"

them. These characteristics frequently involved moral behaviour under the predominantly (at least superficially) Christian culture. A pre-occupation with morality would be evident in the earliest mainstream depictions of Neanderthals, such as the 1921 novel "The Grisly Folk" by H.G. Wells (DePaolo 2000:418-419).

However, evolutionary theory provided white colonists a systematic framework to facilitate the colonial project. Exploitative and oppressive relationships could now be justified as the inevitable consequence of social evolution, which was associated with the emergent colonial project (Stoneking 2008:S47-48). This is perhaps best illustrated by the choice of characteristics more frequently defining racialized categories. These characteristics were often derived from one of two metaphorical sources: children and animals. In both cases, an implicit metaphorical association is the requirement for external (patronising) influence.

Interpretations of Neanderthals tended to follow similar patterns as contemporary interpretations of racialized AMH populations. In some cases, both were even directly compared, often drawing upon pseudo-scientific methods to derive inconsistent results. For example, in a comparative analysis of a Neanderthal skullcap and that of an Australian aboriginal, Aldous Huxley interpreted what he perceived as similar morphological features to indicate different "levels of evolution" – ironically considering the former "more evolved" than the latter (Schwartz 2006:225, 231, 234).

The first full analysis of a Neanderthal specimen came from Marcellin Boule in 1910. Boule followed the popular scholarly belief that Neanderthals were a categorically distinct species from AMH, and were inevitably outcompeted. This prima-facie belief was reflected in Boule's reconstruction of Neanderthal physiology, which was based solely on the "Old Man of La Chapelle" specimen and was visually depicted by artist František Kupka. Like other researchers, Boule attributed traits which were either impossible to infer from the material evidence or were inferred inconsistently. For example, Neanderthals were attributed a full coat of hair – as if intentionally positioning them closer to apes than to humans. Furthermore, Boule assumed the unique vertebral deformations of the "Old Man of La Chapelle" specimen was a species-wide trait, constituting evidence of an inferior locomotor pattern. Ironically, modern paleoanthropologists typically interpret this specimen as evidence of care for the disabled. Despite such absurdities, these representations have proven massively influential, even to this day; many stereotypes about "cavemen," such as walking with a stooped posture, derive from this representation (Schlager and Wittwer-Backofen 2015:1020-1024; DePaolo 2000:419).

Starting in the 1920s, archeologists began unearthing increasingly ancient fossil hominins, highlighting the underappreciated similarities between AMH and Neanderthals. Furthermore, excavations at several sites associated with Neanderthals, such as Shanidar cave in 1957, produced evidence of behaviours commonly described as "human-like." These included care for the elderly and disabled, and the possible practice of ritual burial. As a result, many researchers focused more on how Neanderthals and AMH differed with respect to non-morphological, imperceptible behavioural traits, such as their social organisation and technological abilities (Schlager and Wittwer-Backofen 2015:1027-1028). Over time, a more flattering picture of Neanderthals was painted by archeologists and biological anthropologists. Although Neanderthals were definitely different from contemporary AMH, they were at least not brutal monsters. Furthermore, unlike decades prior, researchers would develop better techniques for analysing material evidence more systematically (DePaolo 2000:424-426). By understanding these prehistoric differences, humans could perhaps better understand ourselves in the present.

As several commentators have observed, discourse about AMH-Neanderthal differences always seemed to serve a social function, at least incidentally. One cannot help but wonder to what degree these researchers objectively described what made us distinctly human, as opposed to merely prescribing what they wanted to believe makes us special (Schlager and Wittwer-Backofen 2015:1019-1020).

Modern Archeology

After the great synthesis in evolutionary biology resolved key questions about the heritability of traits, researchers became increasingly interested in where and when archaic human beings would have evolved into AMH. During this period, an African origin for such archaic humans became increasingly accepted. The most ancient fossil remains remained exclusively in Africa, and even the racist (especially by modern standards) nineteenth century anatomists were forced to acknowledge the undeniable morphological similarities between AMH and extant African Apes. However, the models of these researchers typically continued the tradition of treating Neanderthals as categorically distinct from AMH, either considering them an evolutionary precursor or a distant, estranged cousin – either way, lacking the species-wide traits which essentially defined AMH as a distinct species (Stoneking 2008:S47-S49; López, van Dorp and Hellenthal 2015:57). Moreover, researchers continued assuming Neanderthals were, in some sense, inferior to human beings – albeit instead of being morally inferior, the former were now considered inferior in terms of

their ability to survive when placed in direct competition with AMH. And lastly, researchers commonly explained the reduced survivability of Neanderthals by positing that they were inferior to AMH in terms of imperceptible traits such as intelligence and culture.

Developments in molecular biology provided further evidence for not only an African origin for AMH, but a relatively recent one. An influential 1987 paper titled Mitochondrial Eve forwarded the eponymous model, which dated AMH African dispersal to as early as 200 thousand years ago (kya) based on mtDNA analysis (Stoneking 2008: S49-S50). Furthermore, in 2001, the published results of the Human Genome Project corroborated the mitochondrial eve model by demonstrating the genetic similarity of modern AMH populations worldwide. As a result, a Replacement model called Out of Africa (OOA) became predominant, which considered Neanderthals one of many replaced hominids (López, van Dorp and Hellenthal 2015:57; Villa and Roebroeks 2014:1). It was under this backdrop that scholars theorized about the details of these replacement event(s).

Following OOA models, the last common ancestor of AMH and Neanderthals is estimated to have diverged around 800-500 kya (Rogers, Harris, and Achenbach 2020:1, 4), with the Neanderthal lineage arriving in Eurasia around 400-300 kya. During this period, scholars argued that both lineages accumulated some combination of traits, ranging from biological to cultural (Chazan 2019:209-210). Then, sometime between 135 to 45 kya, at least one wave of AMH migrated OOA, arriving in the Arabian Peninsula at least 125 kya, and Eurasia around 50-30 kya. AMH and Neanderthal populations would occupy the same geographic area for approximately 10,000 years until the latter disappeared from the fossil record. Nearly all scholars posited a causal relationship, with most arguing for extinction. Such scholars commonly considered extinction the inevitable consequence of fitness differences derived from traits accumulated in AMH populations while (relatively) reproductively isolated from Neanderthals (Conroy and Pontzer 2012:517, 534-535; Villa and Roebroeks 2014:1-2).

Three Models of Neanderthal Cognitive Inequality and Disapperance

Debates over AMH-Neanderthal differences, and the disappearance of the latter, predominantly occurred under the auspices of reconstructing AMH evolution. Most scholars agreed both taxa differed with respect to some combination of innate cognitive abilities and some notion of culture. However, scholars were far less sure about which set of traits proved more significant in determining Neanderthal extinction, how the different sets of traits related to each other, and exactly how the possession of such inter-related traits resulted in enough fitness differences for extinction to eventually occur. According to Francesco d'Errico and Chris Stringer, scholars tended to support one of three models: Evolution, Revolution, and Ecological (d'Errico and Stringer 2011:1060-1061; Villa and Roebroeks 2014:1-2). These positions will be explicated further in the following subsections.

Evolutionary Models

Evolutionary models typically hold that AMH differed from Neanderthals because the former uniquely possessed some innate biological trait(s) which provided them sufficient evolutionary advantage to outcompete the latter taxa. Many evolutionary models identify differences in linguistic competence as a strong candidate for this trait. According to linguists such as Noam Chomsky from the Generativist school of thought, all AMH possess an innate, species-wide linguistic competence called Universal Grammar (UG) which allows them to, in principle, generate an infinite number of sentences from a finite number of linguistic elements (Dor 2015:6-7). The most recent formulation of the generativist paradigm – Minimalism – claims that Universal Grammar is instantiated in AMH using a single cognitive operation called merge (Lieberman 2007:39, 50).

Generativists typically doubted the forces of natural selection could have played a meaningful role in the formation of the language organ – they simply did not believe there could have been enough time for evolutionary pressures to act on archaic human populations to drive the evolution of merge in AMH in the first place. Instead, they essentially considered language a fluke coincidence that just happened all at once. However, several other researchers, including Philip Lieberman, were not satisfied by this explanation. Such researchers typically argued that AMH and Neanderthal differences could be explained by positing that the brains of the former, and not the latter, possess a language organ which biologically implements the merge operation in a manner which is more efficient – improving the speed and accuracy in which they could communicate complex information which may ultimately contribute to the capacity of the organism to maximize its reproductive success. Researchers endorsing such evolutionary models sought to identify the biological substrata of this biological language organ – and compare differences in it between both species. The following is perhaps the most well-known illustrative example of such an evolutionary model. In 2002, abnormal mutations surrounding the FOXP2 gene locus during embryonic development were associated with

developmental verbal dyspraxia, causing a wide array of language-related deficiencies, ranging from raw motor coordination to difficulty following grammatical rules. Several researchers, such as Lieberman, considered specific mutations in FOXP2 as a strong candidate for the type of biological mutation they had been expecting to find. These researchers hypothesized a selective sweep of FOXP2 mutations occurred in AMH, driving their speciation with Neanderthals, providing the former with its characteristic linguistic competence, and resulting in the former outcompeting the latter. The results of a comparative study of the FOXP2 mutations between sequenced chimpanzees and AMH genomes appeared to confirm this hypothesis. With respect to the gene locus in question, both species only differed by a small number of relatively simple mutations. Subsequently, the researchers argued it would be biologically plausible to suggest that such mutations occurred prehistorically, and played some role in the speciation of not only chimpanzees and the last common ancestor of AMH and Neanderthals – but also between AMH and Neanderthals themselves. The researchers then estimated the AMH specific mutations to have occurred 100-200 kya – the time period Neanderthals were believed to have diverged from AMH. Later studies also compared the genomes of various archaic hominins and found the FOXP2 locus in AMH appears largely unaffected by admixture from those archaic hominins – including Neanderthals – which is consistent with a selective sweep (Lai et. al. 2001:519, 522; Lieberman 2007:51; Fisher 2019:R65).

However, a follow-up study was conducted after the Neanderthal genome was fully sequenced in 2010. This study found that both taxa ended up sharing many of the same FOXP2 mutations after all, and likely inherited them from their last common ancestor. Moreover, those researchers failed to confirm the evidence that a selective sweep occurred when it came to some of the candidate mutations identified by the former team (Fisher 2019:R66-R67).

This was not the only evolutionary model proposed by Lieberman. He also proposed a second one, which usefully serves as a second illustrative example of an evolutionary model. He sought out biomechanical and anatomical traits which he theorized would have improved the mechanical efficiency of linguistic communication to such an extent that language-use would eventually become essentially second nature to AMH (Lieberman 2015:1-2; Lieberman 2007:50-51). Several computer modelling studies have used correlations between various anatomical measurements amongst various fossil hominins and extant primates, at different developmental stages, to attempt to reconstruct the Neanderthal supra-laryngeal vocal tract or SVT (Lieberman 2007:45-47; Lieberman and McCarthy 2013:9-10, 13-15). Lieberman's reconstruction of the Neanderthal SVT exhibited reduced articulatory abilities relative to AMH. Allegedly, the Neanderthal neck was not as elongated as that of AMH (Lieberman 2007:45), preventing the amount of laryngeal and tongue lowering required to produce velar consonants (Lieberman 1992:410; Lieberman 1993:57-59). Furthermore, this prevented pharyngeal expansion, which allegedly affords a voluntary oral-nasal distinction (Conroy and Pontzer 2012:554-555; Lieberman 1992:410). Lastly, these adaptations allegedly reshape the SVT, which is necessary for quantal vowel production. Quantal vowels are significant because, with little articulatory effort from native speakers, native listeners reliably detect strong phonemic contrasts, rarely misidentifying them. This is because they reduce the frequency of misidentifications occurring due to the natural SVT variability inherent to any population of AMH. As a result, quantal vowels arguably serve as the most reliable phonemic boundaries for any vowel space a particular language ends up with (Lieberman 2007:40-41; Lieberman 1993:57-59; Lieberman and McCarthy 2013:8-10). Lieberman considers a large phonemic repertoire, combined with reduced rate of misidentification, significant because, when combined with the inherently increased speed of vocal communication, significantly more information would be reliably transmitted (Lieberman 1992:409; Lieberman and McCarthy 2013:12).

However, much like the previous example, several scholars have also challenged Lieberman's reconstruction – in this case, for overly relying on the "Old Man of La Chapelle" specimen, which they argue can not be assumed to be representative of the species as a whole. Furthermore, he has been accused of privileging certain correlations in the data over others and, therefore, expressing more certainty in his conclusions than was warranted (Lieberman 2007:45-46; Lieberman and McCarthy 2013:13; Boë et. al. 2007:566-567, 576-578). He has been specifically accused of privileging the significance of auditory production over perception. According to several scholars, the AMH auditory perception system is fine-tuned to pick up on quantal vowels via a "magnet effect" (Boë et. al. 2007:566; Lieberman 2007:46). However, according to a recent study carrying out CT scans of 5 Neanderthal specimens, the researchers found that Neanderthals and AMH possessed equivalent inner-ear measurements, and therefore may have exhibited an equivalent "magnet effect" (Conde-Valverde et. al. 2021:3-4). Ultimately, these studies have remained highly divisive and inconclusive (Lieberman and McCarthy 2013:8, 10; Conde-Valverde 2021:1).

Revolutionary Models

Unlike evolutionary models, revolutionary models typically hold that AMH populations outcompeted Neanderthals as a result of their possession of superior culture as opposed to their possession of more adaptive biological trait(s). Compared to evolutionary models, revolutionary models were less interested in the efficiency of bare-minimal language use and more interested in AMH's capacity for general-purpose, abstract, symbolically-mediated thought and behaviour. Unlike instances of spoken language use, the outcomes of such behaviour could be inscribed in the hominid fossil record (d'Errico and Stringer 2011:1061; Lieberman and McCarthy 2013:4). Scholars supporting revolutionary models moreover sought to contextualize the cognitive abilities underlying such symbolically-mediated thought and behaviour into observable (even if indirectly) human evolutionary (pre-) history. A general picture emerged, in which AMH populations progressively accumulated traits implying the presence of corresponding behaviours – which were typically taken to be pro-social in nature. Inscriptions of these traits were considered to be preserved in material remains associated with such specimens – such as the aforementioned evidence of "human-like" care for the elderly and the disabled found in Shanidar cave.

However, such traits were not limited to the distribution of bodies and various kinds of (pre-historic) technologies – they could also be inferred from the morphology of the bodies of individual members of the species. Paleontologists generally believe AMH followed an evolutionary trend common amongst fossil hominins in which infants were increasingly altricial, birth intervals were reduced, developmental periods and overall life spans were elongated, and adults exhibited an overall more neotenous morphology (Somel, Tang, and Khaitovich 2012:26). Many of these traits are not only believed to be inter-connected, but interconnected ways which imply certain behaviour patterns were present. For example, prolonged life spans (which were uniquely post-menopause for females) may have been necessary for successfully collectively rearing increasingly altricial offspring (Somel, Tang, and Khaitovich 2012:33). Furthermore, social groups may have become increasingly complex to meet these increasing childrearing needs, increasing the opportunities offspring had for social learning (Somel, Tang, and Khaitovich 2012:29). These offspring, perhaps becoming increasingly better "educated" then their prior generations, may have then been able to contribute further to childrearing efforts by developing more advanced tools, solving previously unsolved problems, etc. This, in turn, may have allowed their communities to handle even greater childrearing demands, supporting the childrearing of offspring which would be even more altricial. This would ultimately form a feedback loop which would drive infant cranial size – which is presupposed to be entailed by increased adult encephalization, and to correlate with greater cognitive abilities (Somel, Tang, and Khaitovich 2012:37). Several other biological adaptations may play more subtle roles in this overall process. For example, the uniquely white and enlarged sclera of AMH may have been an adaptation to facilitate communication via pointing. Notably, many researchers of language origins consider pointing a crucial yet underappreciated precondition for the evolution of modern languages (Dor 2015:37-38). It should be self evident how the evolution of language would make parenting significantly easier.

Under the (inter-related) Social Intelligence hypothesis, a significant driver of primate cognitive evolution has been the demands of living in increasingly complex social groups, which are necessary for their survival. In hominid lineages eventually becoming AMH, such demands may have been even more intensified. As a result, some have proposed expanding the Social Intelligence Hypothesis into a Cultural Intelligence Hypothesis to explain the unique traits of AMH (Herrmann et. al. 2007:1360).

Biological anthropologists generally believe that, at some point in human evolution, it became impossible for most hominids to survive without the aforementioned patterns of behaviour. Adults would not only become incapable of raising their extremely altricial infants, but they would not even be able to survive themselves. For this reason, hominids are sometimes described as occupying a culturally constructed niche (Stout and Hecht 2017:7861). Michael Tomasello draws an analogy between the cumulative nature of biological evolution, and what we can colloquially call cultural development. He argues the latter case, called Cumulative Cultural Evolution (CCE), is driven by developments called "ratchets," which provide affordances necessary for future developments (Tomasello 1999:510-512). An illustrative example is how cooking requires intentional fire control.

Because AMH as a species has been dependent on culture for their individual survival, revolutionary theorists argued that it might not be unreasonable to suggest that cultural differences might correspond with differences in evolutionary fitness – especially if one accepts group selection as a valid evolutionary mechanism. In fact, some biological anthropologists and archeologists have even sought to extend the boundaries of what constitutes cognition to include tools – a trend which has been quite popular and influential in the cognitive sciences. There is not always a clear distinction between an external tool, on one hand, and associated

sensory-motor and cognitive traits to utilize the tool, on the other. Traits corresponding with regular tool use may even become canalized to some extent, literally blurring the boundary between the tool and tool user. These may even include the sophisticated products of CCE, which themselves serve as "ratchets" for other developments. Perhaps the most illustrative, albeit controversial, example of this phenomenon may prove to be language competence and its associated developmental critical periods (Monaghan 2016:21-22; Barrett 2020:920-922). For this reason, both evolutionary and revolutionary models can be quite compatible, if not complimentary. Certain variants of revolutionary models may even merely reverse evolutionary models, positing increasingly sophisticated cultural behaviours as a selector for biological traits corresponding to improved cognitive abilities (Slimak 2019:331), rather than the other way around (Mithen 1996:174)1.

Archeologists supporting revolutionary models expected to uncover evidence in the material record of a "cultural revolution" occurring in AMH but not in Neanderthals. Therefore, traces of these traits in the material record were expected to geographically follow inferred hominin migratory routes out of the continent of Africa (Greenbaum et. al. 2018:316-317). However, a notable difficulty of these models has been a lack of agreement about which proxies for culturally-enabled behaviours would be most appropriate for inferring corresponding cultural differences. Much of the problem is theoretical: without an unambiguous yet holistic theory of cultural evolution and its relationship to AMH cognition, judgements about which traits are significant, or how they combine or ratchet, may be ad-hoc, if not anthropocentric (Breyl 2020:3-4).

As an illustrative example of this problem, consider how some revolutionary theorists interpret the material record of stone tools as evidence for their revolutionary models. In fact, not only do revolutionary models typically begin with this kind of analysis as their starting point – but the traditional methodology of archeological research is arguably predicated on it. Traditionally, archeologists have organized stone tools into elaborate typologies of categories based on whether the tool possesses various properties – typically morphological and functional traits. And traditionally, archeologists have assumed – implicitly or explicitly – that these morphological and functional traits should be interpreted as proxies for the presence of cultural or cognitive traits they assumed would be present in their manufacturers and users. For example, the manufacturing technique and specialised function of a tool can provide clues about the technological knowledge and subsistence strategies of its user.

It must be stressed, however, that there have been almost as many typologies of stone tools as there have been stone tools to be organized. For example, while the highest set of these categories will be referred to as "techno-complexes" in this paper for the sake of convenience, the taxonomies present in the archeological literature have also inter-changeably used the terms "industries," "material cultures," and "traditions."

Stone tool-based revolutionary models typically predict that pre-migratory AMH techno-complexes in Africa were technologically superior (possessing an overall broader functional envelope when taken together) to those of Neanderthals. Furthermore, AMH population migration should coincide with the appearance of an "upper paleolithic (UP) revolution" in which Neanderthal "middle paleolithic (MP)" techno-complexes would be expected to slowly begin to resemble the incoming AMH UP techno-complexes. This would presumably reflect the diffusing of cultural traits from AMH populations to Neanderthal populations (d'Errico and Stringer 2011:1060-1061; Mithen 1996:171-172). During this diffusing, "transitional industries" may emerge, representing "intermediary" stages of the hypothetical CCE (Villa and Roebroeks 2014:2-3). For much of the history of archeology, archeologists have operated under the assumption that these predictions have already been confirmed. However, as more sites have been discovered and excavated, and as new technological developments have allowed researchers to squeeze more information from them, an increasing number of archeologists have begun to question whether their professional forebearers merely read into the data what they already expected to see (d'Errico and Stringer 2011:1062-1064).

Several researchers have found evidence of complex stone tools associated with Neanderthals predating AMH arrival (Greenbaum et. al. 2018:316-317). For example, researchers have identified biomarkers for natural adhesives on the surface of several flakes and scrapers, morphologically categorized as MP Mousterian techno-complexes. However, they were likely components of complex hafted tools, which are generally associated with UP techno-complexes. Furthermore, the manufacturing process for certain natural adhesives like birch bark tar was complex and involved multiple steps, possibly including intentional fire use. The oldest flakes dated to 191 ka, and several date from 60-80 ka (Niekus et. al., pp. 22081-22084). Notably, these tools also imply the occurrence of sophisticated behaviours such as hunting strategies.

Techno-complexes have not been the only proxies for culture (via the constituent behaviours inferred from the physical properties of the tools). Archeologists have also historically investigated artifacts with no obvious pragmatic function, and other material

evidence which indirectly implies the occurrence of behaviour with no obvious pragmatic, utilitarian end (d'Errico and Stringer 2011:1060-1061). Such remains have frequently been interpreted as evidence for the presence of abstract, symbolically-mediated thought – which some revolutionary theorists have considered strong evidence of a cognitive difference which may have conferred evolutionary fitness benefits.

However, several of the complex artifacts associated with Neanderthals have also lacked any obvious pragmatic function. And moreover, many appear to predate AMH migrations into the region. For example, a seashell discovered at an Italian Neanderthal site displayed evidence of intentional modification, including transportation over 100 km, intentional breakage of a whorl, and the presence of red-ochre pigment inside micro-pits (Peresani et. al. 2013:1, 11). Several white-tailed eagle claws, discovered at a Croatian site, exhibit evidence of systematic intentional modification via abrasion and parallel linear engravings with smoothed edges, never occurring along the blade, talon, or planar surface (Radovčić et. al. 2015:3, 10-11).

Probably the most damning case of a failed prediction made by revolutionary models has been the continued lack of evidence for "transitional industries." As noted earlier, revolutionary models have predicted that such industries should appear in the material record, signifying the specific places in which cultural revolutions actually occurred. However, the material record does not contain any non-controversial examples. Traits which are theorized to belong to different developmental periods sometimes coincide together, and expected developmental pathways sometimes even occur in reverse! While some revolutionary theorists continue to insist on their own harmonisations of these incongruencies, many archeologists consider this practice to put the cart before the horse (Villa and Roebroeks 2014:2-3; Greenbaum et. al. 2018:316-317). Analogously to technological differences between European colonists and American Natives, scholars increasingly recognize the complexities involved in directly comparing techno-complexes because of differing ecological contexts (Slimak 2019:330-331). While revolutionary models struggle to factor in such contextual differences, ecological models have more-or-less been fine-tuned to handle them.

Ecological Models

Ecological models treat the postulated differences between Neanderthals and AMH not as causes or conditions for the disappearance of the former from the material record, but rather, as effects reflecting the differences in their respective population's local environments – i.e., their local selection pressures. As a result, ecological models do not necessarily predict a clean replacement of Neanderthal by AMH, let alone one which is sudden. Rather, ecological models predict inscriptions of cultural traits upon material remains may appear and disappear from the record sporadically, with variable tempo and speed. Culturally significant behaviour need not have gradually accumulated in Africa exclusively amongst AMH populations and need not follow clean and straightforward migratory routes or other plausible diffusion pathways (d'Errico and Stringer 2011:1060-1061). Instead, it predicts that AMH populations typically inhabited more favorable ecological conditions then Neanderthals, which in turn provided them the conditions necessary for accumulating enough technical-cultural abilities and large enough population sizes to survive more effectively in their shared environments when the two taxa crossed paths and were therefore exposed to the same selection pressures.

AMH populations plausibly possessed favourable ecological and demographic conditions for CCE. Between 200 and 50 kya, the geographic region occupied by MP AMH populations was 30 million km2. Even if we assumed that all of Europe could be habituated (which is very far from true), that number could not exceed 15 million km2 for Neanderthals. Therefore, AMH almost certainly possessed significantly larger population numbers (Chazan 2019:13). Furthermore, the periodic ecological disasters in MP Europe probably caused routine Neanderthal population bottlenecks, limiting population growth while also reducing genetic variability and overall fitness for surviving populations (Breyl 2020:10). Not only might the rate of CCE decline, but significant developmental ratchets may have even been lost (Chazan 2019:210-212; Breyl 2020:7). As mentioned in section 3.2, several archeologists argue the Neanderthal material record exhibits such non-linearity. This is prima-facie consistent with the ecological observations. Moreover, as implied throughout this entire article, Neanderthals never-the-less successfully adapted to their rather inhospitable climates. Although perhaps lacking in numbers, they occupied a rather inhospitable geographic area for at least 400,000 years3. As mentioned earlier, Neanderthals constructed a wide variety of tools using complex manufacturing techniques such as hafting. Using these tools, Neanderthals engaged in numerous hunting strategies to capitalize on a diverse and ever-changing pool of potential prey (Villa and Roebroeks 2014:4; Breyl 2020:8-9). For example, Neanderthals occupying a Spanish site approx. 55-40 kya may have selectively and strategically hunted equid prime adults and cervids of all ages (Marín et. al. 2017:1, 12, 17) to minimize hunting competition, maximize animal

resource exploitation (Marín et. al. 2017:2, 4, 19, 28), and preserve population stability in order to not exhaust that resource (Marín et. al. 2017:32-34).

There is also evidence that Neanderthals practiced sophisticated forms of social organization – which would undoubtably improve their ability to adapt in the face of harsh and ever-changing ecological conditions. As noted earlier, Neanderthals engaged in several seemingly non-pragmatic ritual activities, including intentional burials and personal ornament manufacturing. Other notable examples include drawing cave-art, collecting rare objects, and possibly even manufacturing musical instruments (Breyl 2020:9; d'Errico and Stringer 2011:1064-1066). As implied earlier, many Neanderthal ornaments were constructed from rare materials relative to their place of deposition, implying at least some long-distance trade. Furthermore, as alluded to earlier, paleoanthropological and osteological analysis of remains imply the presence of some form of medical care for the wounded and elderly (Breyl 2020:5).

However, as mentioned earlier, Neanderthals likely possessed significantly smaller population sizes and reduced genetic variation relative to AMH. Therefore, any selection pressures and subsequent population thinning acting equally on both populations – such as those conditioned by the harsh climate of MP Europe – would have driven the smaller population to extinction first, all else being equal. However, all else may not have been equal because reduced genetic variation conditions the accumulation of deleterious mutations – which do not necessarily have to correspond with so-called "human-like" traits such as cognitive abilities. Combined with reduced population numbers, very minor fitness disadvantages may have disproportionately large negative effects on reproductive success (Petr et. al., pp. 8-9).

One such potential maladaptive trait would be a lack of disease resistance. Because inter-breeding occurred between AMH and Neanderthals, it is plausible that both lineages made enough contact to act as disease vectors. In fact, some scholars argue Neanderthal introgression in the AMH genome is strongly associated with genomic regions associated with the immune system. This is interpreted as evidence of positive selection pressures for improved immune systems in those Neanderthal individuals (Greenbaum et. al. 2018:2).

The idea that Neanderthal populations assimilated into AMH is so far consistent with the genetic data available. Although Neanderthals and Denisovans likely share a common ancestor which diverged from AMH around 500-800 kya (Rogers, Harris, and Achenbach, 2020:1, 4), younger Neanderthal mtDNA more closely resembles AMH mtDNA then Denisovan. Therefore, some argue Neanderthal mtDNA and Y chromosomes originally resembled those of Denisovans but were completely replaced through gene-flow (Petr et. al., pp. 3, 9-10).

Conclusion

Out of all three models, ecological models make the most accurate predictions. However, over the years, researchers have seemingly disentangled questions of Neanderthal cognitive abilities from those about their disappearance from the material record, while also avoiding framing such questions in terms of one-dimensional differences – i.e., so-called "inferiority" or "superiority." Contrary to initial framings, Neanderthal disappearance may be largely accounted for through demographic and ecological factors such as population size, genetic variability, relatively inhospitable climatic conditions, and disease. However, despite how harsh their ecological conditions were, Neanderthal populations successfully occupied them for over 400,000 years by strategically employing a wide array of sophisticated adaptive behaviours not unlike AMH would once they began to cohabitate with them. Contrary to the predictions of revolutionary models, Neanderthals derived much of these strategies independently from migrant AMH, and in some cases the latter may have even learned them from the former. Although evolutionary models obviously should not be entirely ignored, they frequently share the same problematic underlying presuppositions as revolutionary models. However, unlike revolutionary models, it is not obvious how one could disconfirm these presuppositions while working exclusively within evolutionary models. Unlike the stone tools contained in "techno-complexes," or the artifacts interpreted as ritual objects, instances of language use simply do not fossilize. And moreover, even if one could demonstrate non-controversially that differences in cognitive competences were present at a particular time and place between both species, it would be impossible to determine whether such differences were causes or effects – in other words, whether revolutionary models drove the observations predicted by evolutionary models, or whether the reverse was the case.

However, there is one final problem which has plagued all three models, which must now be explicated: all cases have been plagued by the inherent communicative problems associated with heavily inter-disciplinary and multi-disciplinary research – especially those stretching across the wide chasm between the sciences and social sciences. Researchers of Neanderthal cognition and disappearance have come from a myriad of disciplinary backgrounds, including linguistics, archeology, paleoanthropology, skeletal biology, and genetics. Although the primary data set (the hominid fossil record) has been inherently limited, these researchers

have attempted to work together to squeeze as much information from it as possible. However, this strategy contains a notable weakness: each discipline inevitably serves as a blind spot for another; a problem which may be exacerbated by inter-disciplinary researchers over-estimating their intellectual limits, and multi-disciplinary teams failing to effectively communicate. Furthermore, these weaknesses have arguably been exacerbated by the inherent limitations of the scientific method, which demands rigorous and prolonged discourse, and ideally broad agreement, to overturn previously established paradigms (Breyl 2020:5-6). In short, sometimes the rate of out-dated or simply false information dissemination simply outpaces that of updated information. As a semi-related illustrative example, consider the continued attribution of a stooped posture to the stereotypical caveman media image (not to mention, the stereotype's continued existence in popular media). It is often easy to forget that the Neanderthal genome was not even sequenced until 2010 – a full 154 years after the first remains of a Neanderthal specimen were discovered. Before that study, biological anthropologists simply did not possess numerous crucial pieces of information, such as the fact that Neanderthals and non-African AMH probably interbred since both share around two percent of their genomes (Gross 2019:R105). Perhaps the debate over Neanderthal-AMH differences can serve as a productive cautionary tale over how easily even the most rigorous academic research can be subtly influenced by extraneous influences with a political dimension.

Perhaps in some round-about way, the study of Neanderthals fulfilled its original goal by inadvertently revealing to us what it is that makes us human: our profound cognitive limitations, our understandable ignorance which could only follow from those limitations, and our tragic continued reliance on various cultures and traditions because of such ignorance – for better and worse. Although I am currently betting on ecological models, I hope revolutionary models ultimately prove to be the most accurate. However, it remains to be seen whether AMH will prove itself superior to Neanderthals when it comes to how well our cultures can proactively respond to ecological crises.

References Cited

Barrett, H. Clark.
2020. The Search for Human Cognitive Specializations. *Evolutionary Neuroscience*, 917–929. DOI:10.1016/b978-0-12-820584-6.00039-8, accessed January 25, 2023

Bennett, Edward. L., Marion C. Diamond, David Krech, and Mark R. Rosenzweig.
1964. Chemical and Anatomical Plasticity of Brain: Changes in brain through experience, demanded by learning theories, are found in experiments with rats. *Science*, 146(3644): 610–619. DOI:10.1126/science.146.3644.610, accessed January 25, 2023.

Boë, Louis-Jean., Jean-Louis Heim, Kiyoshi Honda, Shinji Maeda, Pierre Badin, and Christian Abry.
2007. The vocal tract of newborn humans And Neanderthals: Acoustic capabilities and consequences for the debate on the origin of LANGUAGE. a reply to Lieberman (2007a). *Journal of Phonetics*, 35(4): 564-581. DOI:10.1016/j.wocn.2007.06.006, accessed January 25, 2023.

Breyl, Michael.
2020. Triangulating Neanderthal cognition: A tale of not seeing the forest for the trees. WIREs *Cognitive Science*, 12(2). DOI:10.1002/wcs.1545, accessed January 25, 2023.

Chazan, Michael.
2019. Rachets and Replacement: The Potential Role of Cultural Accumulation in the Replacement of Neanderthals by Modern Humans. In *Learning Among Neanderthals and Palaeolithic Modern Humans Archaeological Evidence*, edited by Y. Nishiaki & O. Jöris, pp. 207-212. Singapore: Springer Singapore.

Coelho Mollo, Dimitri.
2017. Functional individuation, mechanistic implementation: the proper way of seeing the mechanistic view of concrete computation. *Synthese*, 195(8): 3477–3497. DOI:10.1007/s11229-017-1380-5, accessed January 25, 2023.

Conde-Valverde, Mercedes., Ignacio Martínez, Rolf M. Quam, Manuel Rosa, Alex D. Velez, Pilar Jarabo, José María Bermúdez de Castro, Eudald Carbonell, and Juan Luis Arsuaga.
2021. Neanderthals and homo sapiens had similar auditory and speech capacities. *Nature Ecology & Evolution*. DOI:10.1038/s41559-021-01391-6, accessed January 25, 2023.

Conroy, Glenn. C., & Herman Pontzer.
2012. *Reconstructing human origins: A modern synthesis.* New York: W.W. Norton.

DePaolo, Charles.
2000. Wells, Golding, and Auel: Representing the Neanderthal. *Science Fiction Studies*, 27(3): 418-438. http://www.jstor.org/stable/4240921, accessed January 25, 2023.

d'Errico, Francesco., and Christopher B. Stringer.
2011. Evolution, revolution or saltation scenario for the emergence of modern cultures? *Culture Evolves*, 215-232. DOI:10.1093/acprof:osobl/9780199608966.003.0013, accessed January 25, 2023.

Dor, Daniel.
2015. *The instruction of imagination: language as a social communication technology*. Oxford University Press.

Evans, Vyvyan., and Melanie Green.
2015. *Cognitive linguistics: an introduction*. Routledge, Taylor & Francis Group.

Fisher, Simon. E.
2019. Human genetics: The evolving story of foxp2. Current Biology, 29(2). DOI:10.1016/j.cub.2018.11.047, accessed January 25, 2023.

Gibbons, Ann.
2020. How Neanderthals lost their Y chromosome. *Science* 24 September. https://www.sciencemag.org/news/2020/09/how-neanderthals-lost-their-y-chromosome, accessed January 25, 2023.

Greenbaum, Gili., Wayne W. Getz, Noah A. Rosenberg, Marcus W. Feldman, Erella Hovers, and Oren Kolodny.
2018. Disease and Introgression explain the Long-lasting contact zone of modern humans and Neanderthals and its eventual destabilization. DOI:10.1101/495515, accessed January 25, 2023.

Gross, Michael.
2019. Mingling With Neanderthals. *Current Biology*, 29(4). DOI:10.1016/j.cub.2019.01.070, accessed January 25, 2023.

Haney-Lopez, Ian.
2015. *Dog whistle politics: How coded racial appeals have reinvented racism and wrecked the middle class.* New York: Oxford University Press.

Herrmann, Esther., Josep Call, Maria Victoria Hernandez-Lloreda, Brian Hare, and Michael Tomasello.
2007. Humans have evolved specialized skills of social cognition: The cultural intelligence hypothesis. *Science*, 317(5843): 1360-1366. DOI:10.1126/science.1146282, accessed January 25, 2023.

Kersten, Luke.
2020. How to be concrete: mechanistic computation and the abstraction problem, *Philosophical Explorations*, 23:3, 251-266, DOI:10.1080/13869795.2020.1799664, accessed January 25, 2023.

Lai, Cecila. S. L., Simon E. Fisher, Jane A. Hurst, Faraneh Vargha-Khadem, and Anthony P. Monaco.
2001. A forkhead-domain gene is mutated in a severe speech and language disorder. *Nature*, 413(6855): 519-523. DOI:10.1038/35097076, accessed January 25, 2023.

Lieberman, Philip.
1992. On neanderthal speech and neanderthal extinction. *Current Anthropology*, 33(4): 409-410. DOI:10.1086/204092, accessed January 25, 2023.
1993. *Uniquely Human: The Evolution of Speech, Thought, and Selfless Behavior*. Cambridge u.a.: Harvard Univ. Pr.
2007. The evolution of human speech. *Current Anthropology*, 48(1): 39-66. DOI:10.1086/509092, accessed January 25, 2023.

Lieberman Philip., Robert C. McCarthy.
2013. The Evolution of Speech and Language. In: *Handbook of Paleoanthropology,* edited by Henke W., Tattersall I. Springer, Berlin, Heidelberg. DOI:10.1007/978-3-642-27800-6_79-1, accessed January 25, 2023.

López, Saioa., Lucy Van Dorp, and Garrett Hellenthal.
2015. Human dispersal out of Africa: A Lasting Debate. *Evolutionary Bioinformatics*, 11s2. DOI:10.4137/ebo.s33489, accessed January 25, 2023.

Nilsson, Nils. John.
2010. *The quest for artificial intelligence: a history of ideas and achievements*. Cambridge University Press.

Marín, Juan., Palmira Saladié, Antonio Rodríguez-Hidalg, Eudald Carbonell.
2017. Neanderthal hunting strategies inferred from mortality profiles within the Abric Romanı´ sequence. PLoS ONE 12(11). DOI:10.1371/journal.pone.0186970, accessed January 25, 2023.

Miller, George. A.
2003. The cognitive revolution: a historical perspective. *Trends in Cognitive Sciences,* 7(3): 141–144. DOI:10.1016/s1364-6613(03)00029-9, accessed January 25, 2023.

Mithen, Steven.
1996. *The Prehistory Of The Mind*. Thames & Hudson.

Monaghan, Padraic.
2016. Canalization of language structure from environmental constraints: A computational model of word learning from multiple cues. Topics in *Cognitive Science*, 9(1): 21-34. DOI:10.1111/tops.12239, accessed January 25, 2023.

Peresani, Marco., Marian Vanhaeren, Ermanno Quaggiotto, Alain Queffelec, and Francesco D'Errico.
2013. An Ochered Fossil MARINE shell from the mousterian of FUMANE Cave, Italy. PLoS ONE, 8(7). DOI:10.1371/journal.pone.0068572, accessed January 25, 2023.

Radovčić, Davorka., Ankica Oros Sršen, Jokov Radovčić, and David W. Frayer.
2015. Evidence for Neandertal jewelry: modified white-tailed eagle claws at Krapina. PloS one, 10(3). DOI:10.1371/journal.pone.0119802, accessed January 25, 2023.

Rogers, A. R., Harris, N. S., & Achenbach, A. A.
2020. Neanderthal-Denisovan ancestors interbred with a distantly Related hominin. *Science Advances*, 6(8). DOI:10.1126/sciadv.aay5483, accessed January 25, 2023.

Schlager, Stefan., and Ursula Wittwer-Backofen.
2015. Images in Paleoanthropology: Facing our Ancestors. In *Handbook of paleoanthropology,* edited by W. Henke & I. Tattersall, pp. 1-23. Berlin: Springer Reference.

Examining the Function of Ceramic Pans at Bledsoe's Lick in Sumner County, Tennessee (40SU14) with Stable Isotope and Trace Element Analysis

Kaitlynn M. Millichamp, Paul N. Eubanks, Tiffany B. Saul, *Middle Tennessee State University*

Abstract

From 2017 to 2019, Middle Tennessee State University excavated at Bledsoe's Lick in the Middle Cumberland Drainage of north-central Tennessee. This lick, which is part of the Castalian Springs Mound Site (ca. AD 1200-1350), yielded numerous ceramic artifacts including several hundred sherds from large, fabric-impressed pans. While fabric-impressed pans are often associated with salt production, the low salinity of the springs at Bledsoe's Lick raises the possibility that the pans from this site served a different function. Here, we present two alternative, non-exclusive possibilities: that the pans were used to concentrate mineral waters from the nearby springs and that they were used to cook maize or other foods. Testing of the fabric-impressed pans for trace elements and organic carbon content via ICP-OES and TOC-IRMS did not provide conclusive evidence for either possibility. However, future testing of carbonized residue via lipid extraction techniques may provide more definitive results.

Introduction

In the summers of 2017 through 2019, Middle Tennessee State University (MTSU) held a field school at the Castalian Springs Mound Site (40SU14) in Sumner County, Tennessee (Eubanks and Smith 2018, 2019) (Figure 1). This site is home to several low salinity mineral springs, which are known collectively as "Bledsoe's Lick" (ca. AD 1200-1350). This lick is barely saline, with a nearby well containing about 1 gram of salt (sodium chloride) per 9 liters of water in addition to other minerals containing sulfur and magnesium (Clanton and Eubanks 2018:Figures 4 and 6). In this paper the terms "salt" and other variations of it, such as "saline", are used to refer only to sodium chloride and no other minerals. The low salinity of these springs appears to have remained consistent over the past few hundred years, as in the late 1700s, the lick was officially declared by the State to be "entirely unfit for the purpose of manufacturing salt" (Clark 1906:31-33). Thus, it is also likely the lick was only slightly saline during its Mississippian occupation. Nevertheless, of the thousands of pottery sherds recovered from this site, about five percent are fabric-impressed pan fragments (Eubanks and Smith 2018). This type of pottery is traditionally associated with the production of salt and is commonly called a "saltpan," which can be defined as "a basin-shaped ceramic container used to evaporate brine into salt." So, to be a saltpan, a ceramic vessel must have the shape of the pan and have been used to make salt.

Background

Saltpans were some of the largest prehistoric ceramic vessels made in the Southeast, often being over one centimeter thick and up to (or in excess of) one meter in diameter (Brown 1980). These vessels needed to be thick because they had to be able to survive sitting on top of a fire for many hours while their wide openings would have served to facilitate the evaporation of brine. However, their large sizes meant that making them would have been challenging, as they were too large to be made the traditional way, which involved rolling and stacking clay coils on top of each other. Thus, pans had to be formed in subterranean pits in order to prevent them from falling apart before they were fired (Brown 1980: Figure 6; Bushnell 1908:1). Prior to the pans being formed, the pit would be lined with fabric to prevent the vessel from sticking to the walls. As a result, many saltpans have fabric impressions on their exteriors, which sometimes results in all fabric-impressed vessels or vessel fragments being called "saltpans" or "saltpan sherds" (Figure 2).

To produce salt in central Tennessee, more strongly saline springs could have been used such as the French Lick (40DV5) in Davidson County where salt production debris is much more abundant (Eubanks et al. 2021; Guidry and McKee 2014). Because Bledsoe's Lick has such low salinity, it probably would not have been economical to concentrate brine to produce salt here. However, the importance of the lick is evident by its close proximity to the mounds and plaza at Castalian Springs as well as its rich assortment of feasting debris and ceremonial artifacts, including pieces of copper-stained wood, fragments of incised effigy vessels, mica, and crystalline and bone jewelry (Eubanks et al. 2021;

Moore et al. 2014; Smith and Beahm 2008). The recovery of utilitarian pan sherds in these contexts leads to the question of what purpose the vessels served at this site.

One possibility is that the pans were used in the "nixtamalization" process. This involves soaking and boiling maize in an alkaline solution for several hours to make the plant more digestible and nutritious. Populations with maize reliant foodways would have needed to either supplement their diet with additional nutrients or nixtamalize maize to allow for improved digestibility of essential amino acids, or they would have succumbed to pellagra, which is a wasting disease also known as "corn sickness" (Briggs 2016:23). The process of boiling and simmering maize could last anywhere from two to twelve hours with longer times sometimes being preferred, however, boiling for longer periods may allow the soaking step to be omitted from the nixtamalization process altogether (Briggs 2017). In her dissertation, Rachel Briggs (2017) found that Mississippian standard jars were ideal vessels for this process because of their ability to be suspended over hot coals and their uniform wall thicknesses, which allowed them to withstand long term heat exposure. Producing salt through evaporation uses similar techniques of heating for long periods. Unlike jars, pans are flat and shallow, which is why they were often the preferred vessel form for evaporating brine. However, there are some scenarios where pans may have been favored over taller jars for boiling or simmering food. If the minerals in the spring water were necessary or wanted for cooking (e.g., for flavoring), then the best way to concentrate them would be in a shallow pan and not a jar. Further, if this was a protracted process and they wanted to use the vessel numerous times, then again, a thick-walled pan form would be preferred as it may have been prohibitively difficult to create a tall cooking jar with walls similar in thickness to that of a pan. In other words, if a potter wanted to make an exceptionally heavy and durable cooking pot, then the ideal form would need to be low to the ground (like a pan) and capable of supporting its own weight. Both pans and jars, however, are present at Bledsoe's Lick, and both are almost always tempered with shell. This temper, especially when coarsely ground, would have made these two vessel forms more than capable of being used for cooking, as shell has been shown to have a high resistance to thermal stress (Bronitsky and Hamer 1986; Steponaitis 2009).

Another possibility is that the pans were used to concentrate water from the springs to be consumed during a cleansing or purification ritual, as the magnesium- and sulfur-rich tonic would have had a purgative or diarrheic effect on those who drank it (Eubanks et al. 2021). If this idea is correct, then mineral waters at Bledsoe's Lick may have been analogous to the famous "Black Drink," a type of tea brewed from the leaves of the yaupon holly, also known as Ilex vomitoria. This beverage was often consumed during the Green Corn Ceremony or as part of purification rituals, as it caused those who drank it to purge themselves through vomiting. However, the main ingredient of the Black Drink, Ilex vomitoria, is not native to Tennessee (Emerson 2018:Figure 4.1), thus making the Bledsoe's Lick mineral water a potential alternative.

Methods

To begin investigating these possibilities, analyses were performed at the Metals, Environmental and Terrestrial Analytical Laboratory (METAL) at Arizona State University (ASU) in Tempe, Arizona under the direction of Dr. Gwyneth Gordon over the course of a 7-day period in the fall of 2021. A sample set of pan sherds collected from Bledsoe's Lick during the 2017-2019 field schools were selected from the Wiser-Patten Laboratory on the MTSU campus for analysis. The samples were selected by visual inspection for the possibility of having carbonized food residue prior to their transfer to ASU.

Dr. Gordon and the primary author developed a water leaching technique to analyze the sherds for trace elements and stable carbon isotopes ($\delta^{13}C$). At METAL, Kimmswick fabric impressed sherds were cut to the size of two-centimeter squares (Figure 3). While six sherds were large enough to yield only a single sample, five were large enough to produce two individual pieces for sampling. Having two standardized samples from these five larger sherds allowed for the analysis of both an internal surface and an external surface to compare. Three samples of comparable material unlikely to have been involved in cooking or nixtamalization were selected to serve as a control. These included a piece of daub, a Mississippian Plain bottle neck, and a Mississippian Plain Wide Intermediate handle.

After preparing a total of 19 samples, including the three control samples, each one was placed with either the internal or external surface side down in 18MΩ-cm ultrapure water in a fired glass petri dish. The samples were loosely tented with foil and allowed to soak for three hours to leach out any possible residue associated with the use of pans. The solution was then collected and analyzed for trace elements and stable carbon isotopes ($\delta^{13}C$). Numerous trace elements were tested for by Inductively Coupled Plasma- Optical Emission Spectrometry (ICP-OES) including sulfur, magnesium, sodium, and phosphorus. Organic carbon ($\delta^{13}C$) was tested for by Total Organic Carbon- Isotope Ratio Mass Spectrometry (TOC-IRMS) analysis.

Analysis results that would support the hypothesis that the Kimmswick fabric-impressed pans were used either to boil corn or to concentrate brine

would be expected to exhibit higher concentrations of elements such as sulfur on the internal surface of the sherds than the external surface. Higher carbon concentrations on the internal surface rather than the external surface would also be expected and could indicate that food was cooked in the fabric-impressed pans. The concentrations of carbon and minerals on the samples of daub, Mississippian Plain bottle neck, and Mississippian Plain Wide Intermediate handle would be expected to be lower than the fabric-impressed sherds since they are not presumed to have been used in cooking or concentrating brine. A result of no discernable difference could be the result of issues with the analysis technique or could indicate that these vessels were not used for nixtamalization or concentrating brine.

Results

ICP-OES showed that there were low levels of several elements with sodium, magnesium, aluminum, phosphorus, sulfur, potassium, and calcium. There was no differentiation in trace element concentration between the internal and external surfaces of the samples. A similar result was also found with the TOC-IRMS analysis. Organic carbon ($\delta^{13}C$) was found in low levels, however there was some differentiation in concentration between the internal and external surfaces of some sherds. A small number of sherds were found to have more carbon on the external surface which could be residual soot from a fire. This suggests the pans may have been used in some sort of cooking or brine boiling activity and were not used only as serving platters. The daub, Mississippian Plain bottle neck, and Mississippian Plain Wide Intermediate handle, which are not believed to have been used in cooking or concentrating brine exhibited low concentrations of elements and carbon and showed no discernable difference in concentrations from the Kimmswick fabric-impressed pan sherds.

The similarities in analysis results between the pan sherds and the control samples could be attributed to a few issues. The presence of the elements on the pan sherds could be due to the original use, the archaeological context, or their clay composition. It was presumed that using a water leaching method might not give desirable results as the age and context of the pottery might have allowed for the significant elements to be dissolved in ground water long ago, however no existing research was found to have executed any type of solution leaching method on pottery samples. Developing this protocol has provided a baseline that can be improved upon in the future by experimenting with different leaching solutions and/or longer leaching periods.

Future Directions

To further elucidate the original use of the ceramics, the analysis of lipids in absorbed organic residue on the pottery may provide more insight into the function the pans served. In particular, testing pan sherds for the presence of the biomarker n-dotriacontanol (see Reber et al. 2004) might prove especially useful, as this long-chain alcohol is abundant in panicoid grasses such as maize. In addition, ceramic samples can be analyzed in the future for the presence of carbonized food residues, which can be tested to measure stable carbon and nitrogen isotopes, and perhaps even detect plant microfossils associated with maize. Although this project only evaluates one site, researching this topic has the potential to change our understanding of how fabric-impressed pans were used throughout Tennessee and the broader Southeast. There are numerous other sites, including many in the Middle Cumberland Drainage, such as Rutherford-Kizer (40SU15), East Nashville Mounds (40DV4), Brentwood Library (40WM210), Fewkes Mound Group (40WM1), Travelers Rest (40DV11), Gordontown (40DV6), Brick Church Pike Mounds (40DV39), and Kelley's Battery (40DV392), among others, that either have low salinity mineral springs or are devoid of springs altogether but have yielded examples of fabric-impressed pans (Barker and Kuttruff 2010; Brown 1980, 2003; Drooker 2003; Eubanks et al. 2021; Jones 2017; Meyers 2021; Moore 2005; Moore and Smith 2001; Myer 1928).

If fabric-impressed pans were being made and used at non-saline sites, then this raises the possibility that not all fabric-impressed ceramics that we consider "saltpans" were used for processing salt. In addressing this possibility, this study and future studies on this topic will be among the first in the Southeast that have the potential to assign a secondary function to these ceramic vessels. At present, the potential functions for the fabric-impressed pans at Bledsoe's Lick seem much more likely to be concentrating mineral spring water or processing maize or other foods rather than salt manufacture given the low salinity of its mineral springs. Future studies on this topic would also contribute to our understanding of Mississippian foodways, which involves not only what was being made in the pans, but how the food was being prepared, and the social circumstances surrounding its preparation. These pans were designed to withstand long periods of heating, so tending to the pans for an extended time may have been an essential task that provided opportunity for people to converse with each other and develop skills through instruction. Whether the purpose of the pans was to cook maize or other foods or concentrate mineral-rich brine, the products would have been central to the various social and ritual activities that occurred at the Castalian Springs mound site and Bledsoe's Lick.

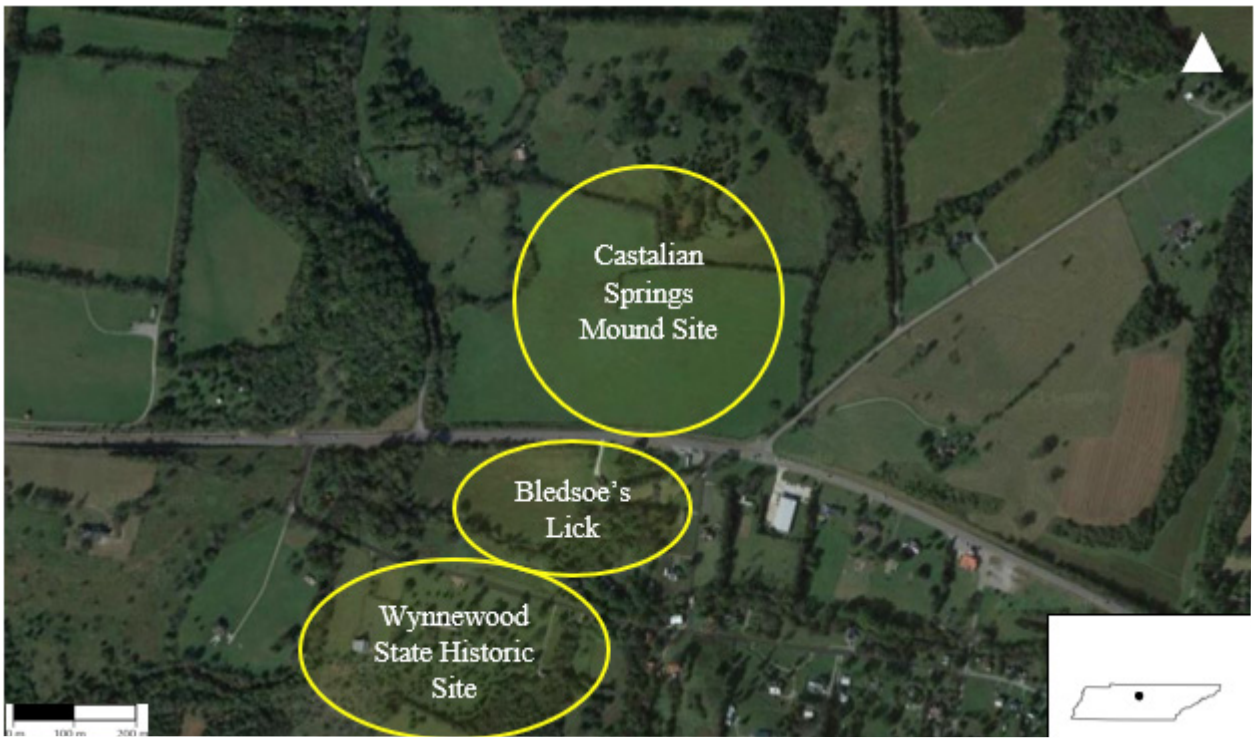

Figure 1. Aerial map of Bledsoe's Lick and the Castalian Springs Mound Site (Map Data ©2023 Google Earth).

Figure 2. Kimmswick fabric-impressed pottery sherd excavated from Bledsoe's Lick in Castalian Springs.

Figure 3. Example of a sample cut to standardized 2x2 centimeter squares. The samples labeled "A" were tested for the internal surface while the samples labeled "B" were tested for the external surface. The samples here show the external surface.

References Cited

Barker, Gary, and Karl Kuttruff
2010 A Summary of Exploratory and Salvage Archaeological Investigations at the Brick Church Pike Mound Site (40DV39), Davidson County, Tennessee. *Tennessee Archaeology* 5(1):5-30.

Boyd, M., T. Varney, C. Surette, and J. Surette
2008 Reassessing the Northern Limit of Maize Consumption in North America: Stable Isotope, Plant Microfossil, and Trace Element Content of Carbonized Food Residue. *Journal of Archaeological Science* 35(9):2545-2556.

Briggs, Rachel V.
2016 The Civil Cooking Pot: Hominy and the Mississippian Standard Jar in the Black Warrior Valley, Alabama. *American Antiquity* 81(2):316-332.

2017 From Bitter Seeds: A Historical Anthropological Approach to Moundville's *Origins*. Tuscaloosa, AL.

Bronitsky, Gordon and Robert Hamer
1986 Experiments in Ceramic Technology: The Effects of Various Tempering Materials on Impact and Thermal-Shock Resistance. *American Antiquity* 51(1), 89-101.

Brown, Ian W. (editor)
1980 Salt and the Eastern North American Indian: An Archaeological Study. Lower Mississippi Valley Survey Bulletin No. 6. Peabody Museum, Harvard University, Cambridge.

2003 Bottle Creek: A Pensacola Culture Site in South Alabama. The University of Alabama Press, Tuscaloosa.

Bushnell, David I., Jr.
1908 Primitive Salt-making in the Mississippi Valley, II. Man No. 35.

Clanton, Shonda L., and Paul N. Eubanks
2018 An Elemental Analysis of the Mineral Springs at Castalian Springs in North-Central Tennessee. *Journal of Undergraduate Research in Anthropology* II:9-14.

Clark, Walter (editor)
1906 The State Records of North Carolina. Volume XXV, Laws 1789-1790. Nash Brothers, Goldsboro, North Carolina.

Drooker, Penelope B.
2003 Matting and Pliable Fabrics from Bottle Creek. In Bottle Creek: A Pensacola Culture Site in South Alabama, edited by Ian W. Brown, pp. 180-193. The University of Alabama Press, Tuscaloosa.

Emerson, Thomas E.
2018 The Prehistory and History of Black Drink. In *Baking, Bourbon, and Black Drink: Foodways Archaeology in the American Southeast*, edited by Tanya M. Peres and Aaron Deter-Wolf, pp. 63-80. The University of Alabama Press, Tuscaloosa, AL.

Eubanks, Paul N., and Kevin E. Smith
2018 Preliminary Report of Middle Tennessee State University's 2017 Excavations at Castalian Springs (40SU14), Sumner County, Tennessee, with contributions by Derek T. Anderson, Shonda L. Clanton, Amanda L. Couch, Desirée Goodfellow, and Madeline B. Laderoute. Report No. 10, Manuscript submitted to the Tennessee Division of Archaeology, Nashville, Tennessee.

2019 Preliminary Report of Middle Tennessee State University's 2018 Excavations at Castalian Springs (40SU14), Sumner County, Tennessee, with contributions by Madeline B. Laderoute and Christopher A Lane. Report No. 11, Manuscript submitted to the Tennessee Division of Archaeology, Nashville, Tennessee.

Eubanks, Paul N., Kevin E. Smith, Hannah Guidry, and Larry McKee
2021 Prehistoric Uses of Salt and Mineral Springs in the Middle Cumberland Region of North-Central Tennessee. In *Salt in Eastern North America and the Caribbean: History and Archaeology*, edited by Ashley A. Dumas and Paul N. Eubanks, The University of Alabama Press, Tuscaloosa, AL.

Guidry, Hannah, and Larry McKee
2014 Archaeological Investigations of the Ballpark at Sulphur Dell, Nashville, Davidson County, Tennessee. Nashville, Tennessee. Report submitted to Capital Project Solutions by TRC Environmental Corporation. TRC Project No. 212578, Nashville, Tennessee.

Jones, J. Scott
2010 The Kelley's Battery Site (40DV392): Archaeological Investigations at a Middle Cumberland Mississippian Village. *Tennessee Archaeology* 5(1):5-30.

Meyers, Maureen S.
2021 Creating Social Meaning: The Role of Salt in Multicrafting. In *Salt in Eastern North America and the Caribbean: History and Archaeology*, edited by Ashley A. Dumas and Paul N. Eubanks, pp. 138-152. The University of Alabama Press, Tuscaloosa, Alabama.

Moore, Michael C.
2005 The Brentwood Library Site: A Mississippian Town on the Little Harpeth River, Williamson County, Tennessee. Tennessee Department of Environment and Conservation, Division of Archaeology, Research Series No. 15 (revised 2012).

Moore, Michael C., and Kevin E. Smith
2001 Archaeological Excavations at the Rutherford-Kizer Site: A Mississippian Mound Center in Sumner County, Tennessee. Tennessee Department of Environment and Conservation, Division of Archaeology, Research Series No. 13 (revised 2016).

Moore, Michael C., Kevin E. Smith, Aaron Deter-Wolf, and Emily L. Beahm
2014 Distribution and Context of Worked Crystalline Artifacts from the Middle Cumberland Region of Tennessee. *Southeastern Archaeology* 33(1):25-41.

Myer, William E.
1928 Two Prehistoric Villages in Middle Tennessee. Bureau of American Ethnology Forty-first Annual Report for 1923-1924, edited by J. Walter Fewkes, pp. 525-611. Smithsonian Institution, Washington, D.C.

Reber, Eleanora A., Stephanie N. Dudd, Nikolaas J. van der Merwe, and Richard P. Evershed
2004 Direct Detection of Maize in Pottery Residues via Compound Specific Stable Carbon Isotope Analysis. *Antiquity* 78(301):682-691.

Smith, Kevin E., and Emily L. Beahm
2008 Preliminary Report of the 2005 Archaeological Field Season at The Castalian Springs Mounds (40SU14). Report of Archaeological Investigations No. 3. Manuscript on file, Department of Sociology and Anthropology, Middle Tennessee State University, Murfreesboro.

Steponaitis, Vincas P.
2009 Ceramic Technology. In *Ceramics, Chronology, and Community Patterns: An Archaeological Study at Moundville*, pp.17-45. University of Alabama Press.

The Objectification and Sexualization of Models in Clothing Advertisements by Gender

Lucy G. Griswold, *University of Central Arkansas*

Abstract

This study investigates if women continue to be more objectified than men in the most viewed Fall and Spring 2021 clothing advertisements. Based on Hatton and Trautner's (2011) coding scheme, a 21-point scale was applied to quantify sexualization in clothing advertisements by examining ad content, including clothing/nudity, touch, pose, body parts, head vs. body shot, sex act, and sexual role play. Results indicate that advertisements are increasingly using sexualized males and non-gender binary models; however, women are not only sexualized more than men and non-binary gender, but only women are also hypersexualized in the advertisements. Despite advancements in gender equality, women continue to be more sexualized than men, reinforcing a subservient form of femininity which reinforces persistent patriarchal ideals.

Introduction

Through the use of advertising, companies often create visually appealing images to entice consumers to purchase their products. One way advertisements are strategically created is through the lens of objectification. The use of objectification in advertising is not a new concept, rather it is used to encourage consumer production (Rohlinger 2002). Various carefully schemed "appearance-based interactions," enable the idea of seeing a person as an object, instead of a person who has power (Sherman et al. 2020:225). Along with objectification comes sexualization, because sexualization involves using an individuals' overarching beauty to entice customers and encourages sexual association (Fasoli et al. 2017). Different levels of sexualization can be indicative of how much a person is objectified (Fasoli et al. 2017). Research since at least the 1960s has shown women are more sexualized than men (Hatton & Trautner 2011; Sherman et al. 2020). More recently, men have become more sexualized in advertisements (Hatton & Trautner 2011). This has to do with the economic shifts based on the women's movements in which advertisements have begun to appeal to the idea of the liberation of women, as well as "the new male customer" (Rohlinger 2002:61).

Another change in culture has been people moving beyond the gender binary. Historically, gender has been strictly binary; those who step out of the binary by performing their gender incorrectly were punished (Butler 2020). According to Butler (2020), gender consists of socially constructed scripts of sanctions, acts, gestures, and postures of performance associated with women and men to have appearance match societal assignments of gender. As Butler defines it, gender is "a stylized repetition of acts"—a performance (Butler 2020:519). Current advertisements have begun to be more inclusive of people whose appearance blurs the line between women and men. As such, this study explores the differences in objectification among women and men in current clothing advertisements, as well as those who do not clearly represent a binary gender or where gender was unknown. For this study, models from the 2021 Spring and Fall collections of fashion campaigns found on papermag.com were examined.

Literature Review

Objectification and Sexualization

The art of objectification is a delicate balance of exploring the submissive feminine image of woman while maintaining the hegemonic masculine image of man through various levels of sexualization. Fasoli et al. (2017) noted sexualization and sexual objectification are not the same; however, they go hand in hand. Hatton and Trautner (2011) noted the level of sexualization infers the level of sexual objectification, i.e., more sexualization equates to more objectification. Fasoli et al. (2017) found revealing bodies, showing more skin, enacted an idea of sexual objectification, especially combined with other contributing factors such as posing, facial expression, self-touch, and accentuated body parts. Sherman et al. (2020) investigated sexualization in Halloween costumes and also acknowledged how contributing factors to the degree of sexualization were influenced by posing; emphasizing mouth, genitalia, and touch. Sexualization of men and women in images promotes different social meanings but the bodies of both are still being reshaped to be objectified (Rohlinger 2002).

Women

The different social meanings of objectification between women and men are prevalent in advertisements. This is because of the hierarchical idea that the strong male

body is of higher status than the weak feminine body (Rohlinger 2002). Both Hatton and Trautner (2011) and Sherman et al. (2020) found that there was a high correlation between sexualization and women, whether they are on the cover of a magazine or if they are on an advertisement. This infers that the high levels of sexualization of women promote an idea they are the same as an object or merely "instruments of sexual pleasure and visual passion for a heterosexual male audience" (Hatton & Trautner 2011:273). It should be noted that this trend is not found just in adults. There were high levels of sexualization in Halloween costume advertisements for women and girls of all age groups (Sherman et al. 2020). Objectification and sexualization starts from a young age for women. Nelson (2020) and Sherman et al. (2020) both looked into children's costumes and found that, even with younger children's costumes, the girl costumes inevitably succumbed to more sexual scrutiny through the reinforcement of femininity. This promotes the idea that females are to be viewed as no more than an object—at the submission of a man's pleasure.

According to Butler being female has no meaning; whereas being a woman means that one's body must conform to a "historical idea of 'woman' to induce the body to become a cultural sign, to materialize oneself in obedience to an historically delimited possibility" (Butler 2020:522). This is because the category of woman has been socially constructed into a situation of oppression (Butler 2020). Wolf (1991) argues society places valuation on women's appearance, inevitably lessening women's power. Hatton and Trautner (2011) noted that over time, magazines have increased the sexualization of women in images from sexualized to the hypersexualized category. Rohlinger (2002) discusses how there have been shifts in femininity through the women's movements on liberation; however, Rohlinger (2002) and Barber and Bridges (2020) found that when it comes to consumption, the focus has been to entice women by increasing more sexualization of men rather than lessening the sexualization of women.

Men

On the other side of the spectrum, the rigidness of masculinity defines the boundaries of how sexualized a man can be without crossing too far into the perceived femininity of consumption. The masculine role of gender has been based on power (Rohlinger 2002). Therefore, if a man is sexually objectified in images, his masculinity is still likely to be maintained. The body of a man can be a display of his "power and dominance," which is shaped by performing gender that maintains masculinity (Fasoli et al. 2017:347). However, it should be noted that because of the liberation of women, which started to change the rigidness of femininity, the idea of masculinity also changed, creating new boundaries of what constitutes masculinity (Barber & Bridges 2020; Rohlinger 2002).

Rohlinger found that "the erotic male is increasingly becoming the depiction that dominates mainstream ideas of masculinity" (Rohlinger 2002:70). This has led to the increasing objectification of male bodies. With this shift, Hatton and Trautner (2011) found that there has been an increase in representations of sexualized men over time, just not to the same extent as women. Fasoli et al. (2017) found that both women and men are subjected to sexual objectification; however, the sexualization of men suggests a potential decrease in perceived masculinity. Thus, even with this change of masculinity, a man cannot be over sexualized, or they risk tainting the expectation of what is traditionally masculine and possibly crossing into femininity. Barber and Bridges (2020) explain in the advertisements they investigated, to counteract the promotion of products associated with femininity, the surroundings of the male promoters are hypermasculinized. Additionally, the male promoters in the advertisements are well known for being masculine. To ensure masculinity does not cross into the realm of femininity, advertisements may poke fun at femininity, inevitably reinforcing hegemonic masculinity (Barber & Bridges 2020). In knowing how masculinity and femininity are shaped through objectification based on degrees of sexualization, do current clothing advertisements objectify genders in the same way?

Methods

Data

The data collected is from the most viewed 2021 Fall and Spring fashion clothing advertisements ("See All the Fall 2021 Fashion Campaigns Here" 2021; "See All the Spring 2021 Fashion Campaigns Here" 2021). A thorough search for clothing advertisements revealed that the sites previously mentioned provided the most comprehensive ads for a variety of companies marketed to the United States compared to the other websites found under the current search parameters. This website presented a multifaceted view of how brands interpreted trends during 2021, and continued to update the lists as campaigns developed for a more exemplary investigation of how clothing advertisements are objectifying gender.

In total, there were 217 models from 194 images/advertisements. Some advertisements contained more than one model. When the ad had two or more models, and a model was clearly in the forefront or the central figure, only central models were coded. When the ad had two or more models, and all were represented equally, each was analyzed and coded separately. Advertisements

that did not meet the criteria of containing a model were eliminated from the study. Of the 217 models, 98 were from the Fall and 119 were from the Spring.

Measures

Gender

Gender is measured based on West and Zimmerman's concept of doing gender. This involves the recognition of "masculine and feminine gender displays" for men and women (West and Zimmerman 1987:130). Differentiation in doing gender can be noticed in facial hair, breasts, shoulders, and hands (West & Zimmerman 1987). Other factors contributing to gender would be the style of: clothing; hair; makeup; physical attributes, such as a defined jawline or Adam's apple; and how the individual holds themselves. Interrater reliability of gender was coded based on what the rater first saw without hesitation based on West and Zimmerman's (1987) definition of doing gender. There was originally no intention to code for non-binary individuals as Hatton and Trautner's (2011) investigation did not address this. However, a more extensive investigation of the advertisements revealed there was a greater frequency of models who could not be coded into the gender binary as they did not portray a definitive woman or man based on West and Zimmerman's (1987) definition or the identifying descriptors previously mentioned. In accordance with this recognition, the models were categorized as 'unknown gender' as opposed to treating the data as missing. The coder marked the model as 'unknown' if they could not identify the model as male or female based on the previous identifying descriptors, along with West and Zimmerman's (1987) definition of doing gender. Among the advertisements, there were 6 (4 in Fall and 2 in Spring), which were originally rated differently between the two raters (91% interrater accuracy). Of the images where gender was coded differently between the raters, the gender of the model was discussed and agreed upon.

Degree of Sexualization

The degree of sexualization was categorized based on how many points the image accumulated: 0-2 points were considered nonsexualized; 3-7 points were considered sexualized; and 8+ points were considered hypersexualized.

Clothing/Nudity (0–5 points): The image was rated accordingly as the clothing becomes more revealing by showing necklines, shoulders, arms, midriffs, or excessive tightness of clothing to practically no clothing. This scale ranged from 0-5; where unrevealing clothing was a 0, while completely naked was a 5.

Touch (0–3 points): The image was rated on whether the intention of touch, or lack thereof, was exhibited. This scale ranged from 0-3; where no touching was a 0, to explicit sexual touching was a 3.

Pose (0–2 points): The image was rated on how sexually posed the model was. This scale ranged from 0-2; where posing that was not rated as sexual activity was a 0, while overtly sexual posing was a 2.

Mouth (0–2 points): The image was rated on the suggested sexual activity of the mouth. This scale ranged from 0-2; where no suggestion of sexual activity from the mouth was a 0, while the distinctive suggestion of sexual activity from the mouth was a 2.

Breasts/Chest, Genitals, and Buttocks (0–2 points each): The image was rated on if the breasts/chest, genitals, or buttocks were intended to be a focal point. This scale ranged from 0-2 for each area; where if none were visible or acted as "a focal point" was a 0, while one of these as "a focal point" was a 2 for that area (Hatton & Trautner, 2011, p. 264).

Head vs. Body Shot (0–1 point): The image was rated based on how much visibility there is of head to body ratio. This scale ranged from 0-1; where only a headshot was a 0, and body showing was a 1.

Sex Act (0–1 point): The image was rated on if there is an engagement of sex acts. This scale ranged from 0-1; where no engagement of sex acts was a 0, and engagement of sex acts was a 1.

Sexual Role Play (0–1 point): This image was rated on the suggestion of sexual role play. This scale ranged from 0-1; where no suggestion of sexual role play was a 0, and suggestion of sexual role play was a 1.

All of the variables above, aside from the gender variable, are from Hatton and Trautner's (2011) coding scheme to measure the degree of the sexualization of men, women, and unknown gender. The frequency distribution for each of the coding categories can be found in Table 1.

Analytic Strategy and Example of Coding Scores

Women

In Figure 1, each of the images of women scored the highest possible score within each category of sexualization. Image 1, Coach "With Friends" Fall 2021 Campaign, is non-sexualized and received 1 point. The model is not posed in a sexual manner; does not wear revealing clothing, have her mouth open, or engage in self-touch; and there is no indication of emphasizing her chest, genitalia, or buttocks. Image 2, Jimmy Choo Fall 2021 Campaign, is sexualized and received 7 points. The model is posed in a partially sexual manner with some emphasis on her breasts; wearing revealing clothing; and

is engaging in some self-touch. Image 3, Jimmy Choo Fall 2021 Campaign, is hypersexualized and received 12 points. The model is posed in a sexual manner emphasizing her breasts and buttocks; wearing highly revealing clothing; and is engaging in self-touch with a slightly open mouth.

Figure 1. (Image 1.) Examples of Non-Sexualized, Sexualized, and Hypersexualized Female Models in Advertisements

Figure 1. (Image 2.)

Figure 1. (Image 3.)

Men

Both of the images below of men scored the highest possible score within each level of sexualization. Figure 2 demonstrates the differences in the sexualization categories for men. Image 4, Versace, is non-sexualized and received 1 point. The model is not posed in a sexual manner; does not wear revealing clothing, have his mouth open, or engage in self-touch; and there is no indication of emphasizing his chest, genitalia, or buttocks. Image 5, Prada Fall 2021 Campaign, is sexualized and received 7 points. The model is in revealing clothing and posed in a slightly sexual manner with his chest emphasized. There were no hypersexualized ads of men using any male models.

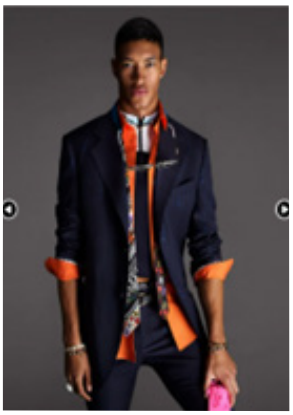

Figure 2. (Image 4.) Examples of Non-Sexualized and Sexualized Male Models in Advertisements

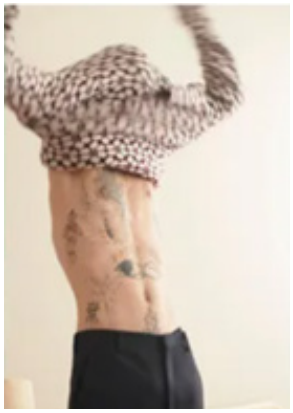

Figure 2. (Image 5.)

Unknown Gender

Both of these images below of unknown gender scored the highest possible score within each level of sexualization. Sexualization differences for unknown gender is presented in Figure 3. Image 6, Dolce & Gabbana Fall 2021 Campaign, is non-sexualized and received 1 point. The model is not posed sexually; does not wear revealing clothing, does not engage in self-

touch, or use their mouth in a sexual manner; and there is no indication of emphasis on their chest, genitalia, or buttocks. Image 7, CHRISHABANA Fall 2021 Campaign, is sexualized and received 6 points. The model is in slightly revealing clothing while in a minor sexual pose with their buttocks emphasized. There were no hypersexualized ads of unknown gender using any nonbinary models.

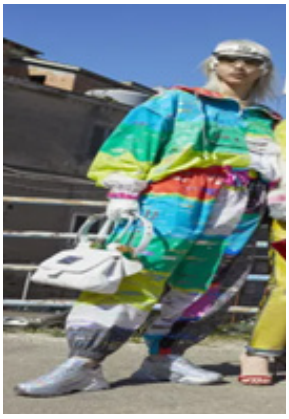

Figure 3. (Image 6.) Example of Non-Sexualized and Sexualized Unknown Gender Models in Advertisements

Figure 3. (Image 7.)

Results

Most Viewed 2021 Fall Clothing Advertisements

To investigate the frequency of overall sexualization, and more importantly, because only women were hypersexualized (n=4), both the sexualized and hypersexualized categories were combined in all data sets. For the 2021 Fall advertisements, there was a significant relationship between sexualization and gender; women were more sexualized than men and unknown gender, and men were more sexualized than unknown gender ($p = .005$). Within this collection, 53.1% of women were sexualized, 26.1% of men were sexualized, and 9.1% of those with unknown gender were sexualized, as indicated in Table 2.

Most Viewed 2021 Spring Clothing Advertisements

In the 2021 Spring advertisements, there was not a significant relationship between the degree of sexualization and gender. While not significant, Table 2 shows substantive findings, in that, 55.1% of women were sexualized, compared to 25% of men, and interestingly, 50% of those with unknown gender were sexualized.

Most Viewed 2021 Fall and Spring Clothing Advertisements Combined

When both the Fall and Spring advertisements are combined, creating a larger sample of 217, there is a greater significant relationship between sexualization and gender, ($p = .001$). The larger sample is preferred as it fits the data better ($X2 = 13.971$, 2 df). Overall, based on this larger sample size, women are more sexualized compared to men and unknown gender, and unknown gender are more sexualized than men. As noted in Table 2, 54.2% of women were sexualized, 25.6% of men were sexualized, and 28.6% of those with unknown gender were sexualized. As previously mentioned, only women were hypersexualized.

	Coded as "0"			Coded as "1"			Coded as "2"		
	W	M	U	W	M	U	W	M	U
Clothing/Nudity	n = 77 (50.3%)	n = 38 (88.3%)	n = 14 (66.6%)	n = 42 (27.4%)	n = 3 (6.9%)	n = 6 (28.5%)	n = 11 (7.1%)	n = 1 (2.3%)	n = 1 (4.7%)
Touch	n = 96 (62.7%)	n = 27 (62.7%)	n = 15 (71.4%)	n = 51 (33.3%)	n = 1 (2.3%)	n = 6 (28.5%)	n = 6 (3.9%)	-	-
Pose	n = 92 (60.1%)	n = 36 (83.7%)	n = 14 (66.6%)	n = 46 (30.0%)	n = 5 (11.6%)	n = 6 (28.5%)	n = 15 (9.8%)	n = 2 (4.6%)	-
Mouth	n = 125 (81.6%)	n = 40 (93.0%)	n = 18 (85.7%)	n = 28 (18.3%)	n = 3 (6.9%)	n = 3 (14.2%)	-	-	-
Breast/Chest	n = 123 (80.3%)	n = 42 (97.6%)	n = 21 (100.0%)	n = 27 (17.6%)	-	-	n = 3 (1.9%)	n = 1 (2.3%)	-
Genitals	n = 152 (99.3%)	n = 43 (100.0%)	n = 21 (100.0%)	n = 1(< 1%)	-	-	-	-	-
Buttocks	n = 148 (96.7%)	n = 43 (100.0%)	n = 19 (90.4%)	n = 4 (2.6%)	-	n = 1 (4.7%)	n =1 (< 1%)	-	n = 1 (4.7%)
Head vs. Body	n = 18 (11.7%)	n = 3 (6.9%)	n = 5 (23.8%)	n = 135 (88.2%)	n = 40 (93.0%)	n = 16 (76.1%)	-	-	-
Sex Act	n = 153 (100.0%)	n = 42 (97.6%)	n = 21 (100.0%)	-	n = 1 (2.3%)	-	-	-	-
Sexual Role Play	n = 152 (99.3%)	n = 43 (100.0%)	n = 21 (100.0%)	n = 1 (< 1%)	-	-	-	-	-

	Coded as "3"			Coded as "4"			Coded as "5"		
	W	M	U	W	M	U	W	M	U
Clothing/Nudity	n = 16 (10.4%)	n = 1 (2.3%)	-	n = 6 (3.9%)	-	-	n = 1 (< 1%)	-	-
Touch	-	-	-	-	-	-	-	-	-
Pose	-	-	-	-	-	-	-	-	-
Mouth	-	-	-	-	-	-	-	-	-
Breast/Chest	-	-	-	-	-	-	-	-	-
Genitals	-	-	-	-	-	-	-	-	-
Buttocks	-	-	-	-	-	-	-	-	-
Head vs. Body	-	-	-	-	-	-	-	-	-
Sex Act	-	-	-	-	-	-	-	-	-
Sexual Role Play	-	-	-	-	-	-	-	-	-

Table 1. Frequency distribution of coding categories for Women (W), Men (M), and Unknown Gender (U).

	Fall				**Spring**				**Both**			
	Nonsexualized		Sexualized		Nonsexualized		Sexualized		Nonsexualized		Sexualized	
	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n
Women	46.9%	30	53.1%	34	44.9%	40	55.1%	49	45.8%	70	54.2%	83
Men	73.9%	17	26.1%	6	75.0%	15	25.0%	5	74.4%	32	25.6%	11
Unknown	90.9%	10	9.1%	1	50.0%	5	50.0%	5	71.4%	15	28.6%	6
X^2	10.543*				5.902				13.971**			
df	2				2				2			
N	98				119				217			

* p < .05, ** p < .005, *** p < .001.

Table 2. The sexualization of models from the most viewed 2021 Fall and Spring clothing advertisements.

Discussion

Following the same pattern as Hatton and Trautner (2011) and Sherman et al. (2020), this study found women were more sexualized than men. This study also found women were more sexualized in comparison to unknown genders in clothing advertisements. Further, only women were hypersexualized. This follows Hatton and Trautner's (2011) findings where hypersexualization is associated with women, despite a ten year gap between Hatton and Trautner's (2011) study and this one. Women are more sexualized than men and unknown gender as a means of seeing them more like an object and devaluing their power in society, "when women come too close to masculine power, someone will draw critical attention to their bodies" (Wolf 1992:4). Gender is a script and those who perform gender "correctly" will have reassurance from society while nonconforming gender performance will be punished (Butler 2020). The women who present themselves through hypersexual mannerisms perform to the highest societal gender expectation of being a woman and display femininity to the greatest degree. The intensity of hypersexualization, which is only found for women in this study, indicates a myriad of sex signals; consequently, making women more inclined to be seen as sexual objects (Hatton & Trautner 2011) and devaluing their power (Wolf 1991). Women are sexualized starting from a young age as seen in Nelson's (2020) and Sherman et al. (2020) studies. These studies find that women are objectified starting in their youth, as sexualization is reinforced through femininity and inevitably places girls in a subservient position compared to boys and men from a young age.

Hatton and Trautner's (2011) longitudinal study found increasing degrees of sexualization for women over time. While Barber and Bridges (2020) argue this infers a shift in femininity in which femininity is being reconstructed, the reconstruction appears to be in line with greater sexualization, not less, reinforcing hegemonic masculinity. This shift in femininity is from the liberation of women where consumption tried to bridge the gap of gender inequality by trying to entice women and increase the sexualization of men in media; thus, reshaping what has historically been known as masculine (Rohlinger 2002). Although this coincides with shifts of women's status from the women's liberation movement to today's increasing gender equality, it seems as though this shift toward gender equality has increased the sexualization of women and men, and by doing so, may say more about the reconstruction of masculinity than femininity, as argued by Rohlinger (2002). Despite advancements in gender equality, women are still more sexualized than men and unknown gender because of persistent patriarchal ideals that value women for their bodies and looks (Wolf 1991). However, Rohlinger (2002) notes that the sexualization of women promotes a different meaning compared to the sexualization of men, one in which women's sexualization still conforms to a woman's subservient role to the patriarchy.

Men were sexualized, showing conclusively that both men and women can be objectified (Fasoli et al. 2017). The sexualization of men is partly influenced by the idea of being demasculinized from objectification (Fasoli et al. 2017). This implies that if a man is too sexualized, he loses part of his masculinity because he has succumbed to being an object—like a woman. Thus, a man cannot be hypersexual as he would not be doing gender correctly if he did not maintain power and dominance (West & Zimmerman 1987). The hypersexualization of a man would not match societal assignments, that is, the performance associated with men where appearance aligns with gender (Butler 2020). Rohlinger (2002) notes the sexualization of men is a delicate balance as advertising is trying to reach multiple audiences. Advertisers are trying to convince new viewers such as homosexual males and heterosexual females to "imagine the male body in any sexual situation" all the while trying not to offend the original "heterosexual male viewers" (Rohlinger 2002:71). An explanation for the increased sexualization of men may be attributed to Barber and Bridges's (2020) argument that masculinity follows changes of femininity, with gender becoming more fluid and progressive ideas veering away from traditional ones. Thus, men are being forced to explore new bounds of masculinity and gender performance.

Society has begun to increase the incorporation of non-binary individuals within media, a concept this study investigated that Fasoli et al. (2017), Hatton and Trautner (2011), and Sherman et al. (2020) did not. By including unknown gender in the study, as opposed to excluding it as missing data, the concept of non-binary shifts the understanding of sexualization previously known only for women and men. According to findings based on the larger data set, unknown gender was more sexualized than men. While the sexualization of unknown gender could be less penalized in comparison to models who are definitively men because there is not as much of a need to police the objectification of models who do not fit the binary gender narrative, this warrants further study. The very concept of unknown gender supports Butler's (2020) claim that the reality of gender is only real "to the extent that it is performed" (Butler 2020:527). Punishment for not doing gender (West & Zimmerman 1987) or gender performance (Butler 2020) is not as applicable when gender is not clearly acknowledged. Unknown gender are more sexualized compared to men because men are expected to perform acts that demonstrate power (Fasoli et al. 2017; Rohlinger 2002)

and dominance (Fasoli et al. 2017; West & Zimmerman 1987) to achieve traditional masculinity. Men have a principle of hegemonic masculinity that cannot overstep too far into femininity for fear of being sexualized enough to be perceived as an object or subservient — like a woman (Barber & Bridges 2020). However, unknown gender is not more sexualized than women. This is because women are expected to do femininity which involves sexual posing, mouth gestures, touching, and wearing clothing that accentuates their bodies. All of these attributes combined, as noted by Hatton and Trautner (2011), Fasoli et al. (2017), and Sherman et al. (2020), promote greater degrees of sexualization, thus more objectification. Despite how non-binary individuals have rejected traditional masculinity and femininity and reconstructed the binary of sexualization, they are inevitably categorized between women and men to, once again, make sense of gender and reinforce a hierarchy of gender.

Conclusion

This research was intended to investigate the objectification of women, men, and unknown gender in current clothing advertisements using degrees of sexualization. The degree of sexualization can confer how much a person is objectified. Women have been, and still are, sexualized to a greater extent than men but also in comparison to unknown gender. Thus, women are objectified most often. Women are more sexualized because this reinforces a traditional, subservient femininity within a patriarchal system. Masculinity is associated with power and dominance while femininity is associated with weakness and submission. Thus, it is easier to place women in sexual poses, use mouth gestures, indulge in self-touch, and wear clothing that accentuates their bodies than it is to place men in that way, and take them seriously, i.e., making fun of femininity.

In this study, the larger data set found that overall, men were the least sexualized group which implies that maintaining masculinity polices the objectification of men. However, men are being objectified, and this means masculinity is being redefined to some extent. Unknown gender deviates from doing traditional gender expectations and performance which means they are not as forced to do femininity and be as sexualized as women, but they do not exude enough power to be less sexualized as men.

Limitations and Future Research

Due to time constraints, a limitation of the study is the data consists of only the Fall and Spring 2021 most viewed advertisements which means ads not in this data set may have sexualized women, men, and unknown gender differently.

Future research could extend the investigation of clothing advertisements over time. Race within the sexualization of genders could be investigated to see if one race is more or less sexualized compared to others. The objectification of genders going beyond clothing advertisements, such as, music covers, movie posters, sports action shots, and more could also be investigated.

References Cited

Barber, K., & Bridges, T.
2020 Marketing Manhood in a "Post-Feminist" Age. In *The Kaleidoscope of Gender: Prisms, Patterns, and Possibilities*, edited by C. G. Valentine, M. N. Trautner, and J. Z. Spade, pp. 231-235. Thousand Oaks, CA: Sage Publications, Inc.

Butler, J.
2020 Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory. In *Feminist Theory Reader*, pp. 353-361. Routledge.

Fasoli, F., Durante, F., Mari, S., Zogmaister, C., & Volpato, C.
2017 Shades of Sexualization: When Sexualization Becomes Sexual Objectification. Sex Roles 78(5–6), 338–351.

Hatton, E., & Trautner, M. N.
2011 Equal Opportunity Objectification? The Sexualization of Men and Women on the Cover of Rolling Stone. *Sexuality & Culture: An Interdisciplinary Quarterly* 15(3):256–278.

Nelson, A.
2020 The Pink Dragon is Female: Halloween Costumes and Gender Makers. In *The Kaleidoscope of Gender: Prisms, Patterns, and Possibilities*, edited by C. G. Valentine, M. N. Trautner, and J. Z. Spade, pp. 224-230. Thousand Oaks, CA: Sage Publications, Inc.

Rohlinger, D. A.
2002 Eroticizing Men: Cultural Influences on Advertising and Male Objectification. Sex Roles 46:61–74.

See All the Fall 2021 Fashion Campaigns Here.
2021 *Paper Magazine*, November 15. Retrieved February 22, 2022, from https://www.papermag.com/fashion-campaigns-fall-2021-chris-habana-2653871540.html

See All the Spring 2021 Fashion Campaigns Here.
2021 *Paper Magazine*, January 11. Retrieved February 22, 2022, from https://www.papermag.com/spring-2021-fashion- campaigns-2649876879.html?rebelltitem=138#rebelltitem138

Sherman, A. M., Allemand, H., & Prickett, S.
2020 Hypersexualization and Sexualization in Advertisements for Halloween Costumes. Sex Roles 83, 254–266.

West, C., & Zimmerman, D. H.
1987 Doing Gender. *Gender & Society* 1(2):125-151.

Wolf, N.
1991 *The Beauty Myth: How Images of Beauty Are Used Against Women*. New York, W. Morrow. Retrieved July 23, 2023, from https://www.alaalsayid.com/ebooks/The-Beauty-Myth-Naomi-Wolf.pdf

1992 A Woman's Place [Commencement Address, May 17]. *Gifts of Speech*. Retrieved July 23, 2023, from http://gos.sbc.edu/w/wolf.html

Interracial Relationships and Parent-Child Bonds

Ian Lee Ang, *University of Pennsylvania*

Abstract

Attitudinal data suggests that children in interracial relationships have parents of generations less tolerant towards interracial union. While studies show the increasing importance of parent-child bonds throughout early adulthood, it is unclear how children's involvement in interracial relationships (which are historically stigmatized) may affect those bonds. Using data from the National Longitudinal Study of Adolescent to Adult Health (AddHealth), I find that individuals in interracial relationships have worse quality of relationships with parents than their peers in same-race relationships, with parent-child relationships worsening more with fathers than with mothers. I thus conclude that involvement in an interracial relationship may weaken children's bonds with parents. These findings have important implications for research on interracial relationships and family bonds.

Introduction

The transition from teen to adult has slowed dramatically in the past few decades. Scholars have noted the emergence of a life stage defined as "early adulthood," a period in young adults' lives marked by semi-independence, wherein individuals still rely on their parents for financial and emotional support (Furstenberg et al. 2004). Indeed, with economies moving towards a dichotomy of high skill, higher paying "good jobs" and service-oriented, lower paying "bad jobs" coupled with the disappearance of union-protected, blue-collar jobs, adults are spending more time studying and training to possess the traits necessary to enter a demanding labor market, resulting in a longer transition to independence and adulthood (Kalleberg 2011). Parents have become increasingly central to their children's transition out of "early adulthood," with many continuing to give financial, emotional, and social support to children throughout their 20's (Fingerman et al. 2009). Thus, stable and positive ongoing relationships with parents retain material salience for individuals in the stage of "early adulthood."

Along with achieving financial independence from their family of origin, entering into serious intimate relationships (especially marriage) has historically indicated an individual's transition into adulthood (Furstenberg et al. 2004). These unions potentially threaten an individual's relationship with their parents, as romantic relationships can reduce the time and energy an individual spends with their parents (Gerstel and Sarkisian 2006), reducing parent-child relationship quality. Given the historical legacy of anti-miscegenation and white anxieties over racial mixing in the United States, individuals who enter interracial relationships may have strained relationships with parents in comparison to peers who enter same-race relationships.

Although scholars have often used interracial union as a proxy for racial tolerance in the United States, these unions remain stigmatized (Steinbugler, 2012). Indeed, interracial unions have long roused racialized anxiety among white people, who have long controlled and oppressed sexuality among people of color. Throughout history, non-white people (especially non-white men) have been terrorized and subjugated when accused of sexual predation of white women. These anxieties led to the lynchings of thousands of Black people, particularly Black men, and contributed to the Chinese Exclusion Act in 1882. White anxiety over racial mixing has been most notable recently as when President Trump described Mexican immigrants as "rapists" in his campaign launch in 2015.

Since the landmark Supreme Court case Loving v. Virginia in 1967 barring state laws against interracial marriage, attitudinal data regarding interracial union in the United States reveal huge changes over time, with younger generations progressively more tolerant of interracial union than previous generations; 48% of the general public in 1985 said interracial dating was acceptable, compared to 83% of the public saying interracial dating is acceptable in 2010 (Pew Research Center 2012). White individuals remain the racial group most likely to disapprove of interracial union, with Black individuals the most tolerant of interracial union. Attitudes are stratified by gender, however, with research suggesting white women involved in interracial relationships face dual penalties as gender deviant and as violating white social norms, resulting in lower social status (Stillwell and Lowery, 2021). Age is a hugely stratifying factor; in a 2012 survey conducted by Pew Research Center, 28% of adults aged 65 and over approved of interracial marriage, while 35% of adults aged 50-64 approved, 45% of adults aged 30-49 approved, and 61% of adults aged 18-29 approved. Children in interracial unions are likely

to confront more prejudice regarding their interracial status from older adults, such as parents, than they are from peers. I thus expect that parent-child relationship quality will decrease for children involved in interracial relationships, as parents are of generations less tolerable to interracial union.

Literature Review

Interracial Relationships

Interracial relationships have commonly been used as a proxy for measuring assimilation of minoritized groups and racial tolerance among white people in the United States. Indeed, much of the literature focuses on attitudinal data on interracial dating and interracial marriages across the United States. Herman and Campbell (2006) have distinguished between "global" and "actual" attitudes towards intermarriage, particularly for white women, who condone interracial dating and marriage for others but not themselves. Studies have pointed out that Black individuals have been and remain the most open to interracial marriages, while white individuals have been and remain the least open to interracial marriages; older people are also less tolerant of intermarriage than younger people (Pew Research Center 2012). Other studies have focused primarily on the experience of multiracial children of interracial marriages, arguing that "the children will suffer" in interracial relationships (Campbell and Boeck 2006). Some have focused on the interactions between partners in interracial relationships. In Beyond Loving (2012) Steinbugler found individuals in interracial relationships expended extra emotional energy in completing "racework;" by interviewing interracial partners, she found they still faced a lasting stigma in the United States, challenging popular views of a "post-racist" society.

Despite the growing percentage of interracial marriages, such unions still lag behind other cross-demographic marriages, such as interfaith marriages, indicating the continuing relevance of race in the United States (Qian 2005). Still, while attitudes have improved, the majority of marriages occur within partners' own racial groups (Curington, Lundquist, Lin 2021). Interracial relationships are also more likely to be cohabiting relationships rather than marriages, and individuals decrease their involvement in interracial relationships as they age (Joyner and Kao 2005). Indeed, Lin, Lundquist, and Curington (2021) describe romantic relationships as one of the last places in American society in which "racial preferences" are deemed normative and acceptable.

Previous work looking at the role of parents on children's interracial relationships suggest white men who reported closeness with their mothers in childhood were less likely to be in an interracial relationship in adulthood, while parents having more control over Black and Hispanic female children made them more likely to be in interracial relationships (Zhang and Sassler, 2019). Qualitative research has suggested children in interracial relationships may have weaker ties with their parents than children in same-race relationships (Nemoto 2009, Killian 2013). Less is known how specific gender of parents may influence children's experiences in interracial relationships, or, conversely, how involvement in an interracial relationship differentially affects relationships with mothers versus fathers.

Prevailing literature thus far has focused on attitudes towards interracial relationships as a conduit to understand racial tolerance and assimilation in the United States. While attitudes have improved and interracial dating and marriage have become more common, interracial relationships remain stigmatized in the United States.

Parent Child Relationships

Delays in the transition to adulthood have resulted in parental support of children extending into "early adulthood," a period of semi-autonomy for adult-aged children in their 20s (Furstenberg et al. 2004). Individuals in this life stage are often students and still live at home with their parents. Scholars such as Lareau have pointed out how economic stratification results in poor and working-class children transitioning to adulthood faster than their middle- and upper-class counterparts, who continue to rely on parents throughout their twenties, often through a child's college years (Lareau 2011). These middle- and upper-class children, who receive intensive parenting throughout their lives giving them the skills necessary to navigate the modern economy, remain dependent on parents longer than children born into working-class families. Thus, financial and emotional support of adult-aged children has become an important part of preparing children to enter the demanding and highly competitive modern workforce, underscoring the importance of children retaining close relationships to parents even in adulthood.

Thus, parent-child relationships retain their saliency for individuals transitioning into adulthood, a period marked by economic independence. However, it is unclear how involvement in interracial relationships (which have been historically stigmatized) among adult-aged children will affect these increasingly relevant parent-child relationships. This study aims to clarify this gap.

Research Questions and Hypotheses

This study will add to the existing literature on interracial relationships by asking two main research questions: 1) how does involvement in an interracial relationship relate to quality of relationships with parents and 2) do

white individuals in interracial relationships have lower quality of parent-child relationships than Black individuals in interracial relationships? My first hypothesis predicts that those in interracial relationships will have lower quality of relationships with parents in comparison to their same-race peers, as attitudinal data suggests that generational differences will result in children that have parents of generations that are less tolerant of interracial union. My second hypothesis predicts that, because white people as a group are the least tolerant of interracial union and Black people are historically open to interracial union, white people in interracial unions will have lower quality of relationships with their parents than Black people in interracial unions.

Data and Methods

The public use version of the National Longitudinal Study of Adolescent Health was used for this study. Add Health is a nationally representative longitudinal survey on adolescents enrolled in 7th through 12th grade in the 1994-1995 school year (Chen and Harris 2020). To obtain a nationally representative sample, the study utilized a design of stratified random sampling. Respondents were first identified and surveyed as adolescents in grades 7-12 in 1994 and 1995, and were subsequently followed up in 1996 (Wave II), 2001-2002 (Wave III), and 2008-2009 (Wave IV). Individuals in the data set come from a large diversity of racial and ethnic backgrounds; Add Health specifically oversampled middle-class Black Americans, Cubans, Puerto-Ricans, and Chinese individuals. Because Add Health is nationally representative of racially minoritized groups, the dataset provides ideal information regarding cross-racial intimate relationships among individuals transitioning to adulthood during the years of the Great Recession (2008-2009). While a focus of this study is to analyze the differences specifically amongst white and Black individuals in interracial relationships, because of Add Health's ample and diverse sampling, conclusions may also be drawn for other racial groups, such as Asians, Latinos, and Native Americans.

This study utilized public-use data from Wave I and Wave IV of Add Health. The public-use sample from Wave I numbered 6,500 adolescents in grades 7-12, while the public-use sample from Wave IV numbered 5,118 adults between the ages of 26 and 34. The independent variable, involvement in an interracial relationship, utilizes respondent's reported race in Wave I and race of partner in Wave IV. The dependent variable, relationship quality with parents, is drawn from Wave IV.

Independent Variable

Involvement in interracial relationship. Respondents reported the race of their partner(s) in Wave IV; respondents could only indicate one racial category for their partner(s). Hispanic/Latino status and race were asked as two separate questions, with Hispanic/Latino status asked before race. Regardless of reported race, partners that had Hispanic/Latino marked were coded as Hispanic/Latino for their race. Respondents were able to report multiple past and ongoing relationships, resulting in a multitude of different partners per respondent; those who indicated multiple ongoing relationships were dropped and not included in the analysis (n=267). Involvement in an interracial relationship is dummy coded (0=same-race relationship, 1=interracial relationship); respondents are marked as involved in an interracial relationship if their partner's race is not equal to their own race.

Dependent Variable

Parental Relationship Quality. At Wave IV, respondents were asked a series of questions regarding their relationships to their self-reported "mother figure" (alpha value 0.7617) and "father figure" (alpha value 0.7729), including "you are satisfied with the way your (mother figure/father figure) communicate with each other," and "how close do you feel to your (mother figure/father figure)." Questions regarding relationships with father figures and mother figures were asked separately during the survey, giving distinct data for relationships with mother figures versus father figures. Responses answering whether or not a respondent was "satisfied with the way your mother/father figure communicate with each other" ranged from 1 to 5 with high scores indicating more agreement. Responses for self-perceived closeness to parental figure ranged from 1 to 5, and included "not at all close," "not very close", "somewhat close", "quite close" and "very close." Satisfaction with communication and perceived closeness were summed to produce the variable Parental Relationship Quality, a continuous scale with a possible range of 2-10. This variable was created for both mothers and fathers. Observations for quality of relationship with mother figures had 277 missing values, while observations for quality of relationship with father figures had 818 missing values. The terms "mother figure", "mother", and "mom" are used interchangeably throughout the text.

Covariates

Age. Age is determined by birth year in Wave I subtracted from the year of the interview in Wave 4.

Sex. Sex is determined in Wave I and is dummy coded as 0 for male and 1 for female.

Race. Race data were collected in Wave I. While respondents were able to choose more than one category in Wave I, respondent's race was coded in accordance with Add Health guidelines, wherein anyone marking Hispanic or Latino are coded as Latino; subsequently,

anyone marking Black is coded as Black. Respondents marking more than one race are thusly coded as one race from the following prioritization: Hispanic/Latino-Black-Asian-Native American-Other-White.

Highest Educational Attainment.

Respondents indicated highest degree earned in Wave IV. Responses were collapsed into the following five categories: less than high school, high school, some vocational or completed vocational, some college, and bachelor's degree or grad school or beyond.

Relationship Type

In Wave IV, respondents were asked about current and past relationships. Respondents first indicated the type of relationship with the following categories: "marriage," "cohabitation," "pregnancy", "current dating," and "most recent." Individuals who indicated they were in a marriage, pregnancy, or cohabiting relationship were then asked whether or not their relationship was current. Partners of respondents who indicated they were currently married, cohabitating, pregnant, or currently dating were kept in the sample; individuals indicating they were in multiple current relationships were dropped (n=267. 4.2% of sample). Individuals indicating "most recent" relationship were recoded as single.

Family Structure

In Wave I, individuals indicated family structure, with 13 different types of family structures possible; these categories were condensed into the following four categories using guidelines previously described by Cavanagh (2008): "two biological parents", "any stepparent", "single parent", and "other."

Distance from Mother

In Wave IV, respondents were asked "how far do you and your (mother figure) live from one another," with possible responses of "live together," "within 1 mile," "1 to 10 miles," "11 to 50 miles," "51 to 100 miles," "101 to 200 miles," and "more than 200 miles." These categories were condensed into the following three categories: live together, 1-50 miles apart, and 50+ miles apart; 295 observations in total were missing from the dataset (5.7% of sample).

Distance from Father

In Wave IV, respondents were asked "how far do you and your (father figure) live from one another," with possible responses of "live together," "within 1 mile," "1 to 10 miles," "11 to 50 miles," "51 to 100 miles," "101 to 200 miles," and "more than 200 miles." These categories were condensed into the following three categories: live together, 1-50 miles apart, and 50+ miles apart; 896 observations in total were missing from the dataset (14.2% of sample).

Analyses

First, descriptive statistics were generated to demonstrate key demographic characteristics between single people, people in a same-race relationship, and people in an interracial relationship. Descriptive statistics were also generated to describe differences in mean relationship quality with mother and father figures between respondents of differing race, sex, educational attainment, relationship type, and distance from parents. T-tests were used to determine significant bivariate differences between people in interracial relationships and people in same-race relationships and their relationship quality with father and mother figures.

Then, a series of ordinary least square regression analyses were generated to predict relationship quality with parental figures amongst single people, people in same-race relationships, and people in interracial relationships. Ordinary least squares regression was used as relationship quality with mother and relationship quality with father are calculated as continuous variables on a scale from 2-10, with 2 indicating worse quality of relationship and 10 indicating higher quality of relationship. Respondents were included in the regression if relationship quality data were available from both Wave I and Wave IV (N= 3,369 for respondents with mother figure data available in both waves; N= 2,492 for respondents with father figure data available in both waves). Women, Black people, and Hispanic people were less likely to report having a father figure in Wave IV, and Black people and Native American people were less likely to report having a mother figure in Wave IV.

The first model conducted only used the main independent variable, involvement in an interracial relationship or not, to predict the main dependent variable, relationship quality with parents. The second model introduced main demographic characteristics, including age, sex, and race. The third model introduces additional covariates including educational attainment, relationship type, family structure of origin, and distance from mother and father. After regressions were completed, coefficients for the interracial component of each regression between predicted relationship quality with mother figure and relationship quality with father figure were compared to determine whether interracial relationship status affected relationship quality with parents differently. Lastly, an ordinary least squares regression predicting relationship quality with both mothers and fathers among those in an interracial relationship was run to test the second hypothesis, namely, if Black people in interracial relationships had

higher quality of relationships with parents than white people in interracial relationships. All tests and statistics were generated using the statistical software program Stata.

Results

Table 1 on the following page shows the descriptive statistics for the sample, as divided by single individuals, individuals in a same-race relationship, and individuals in an interracial relationship. All statistics are weighted. Most strikingly, same-race couples and interracial couples differ greatly in relationship type; 57% of same-race relationships are marriages, whereas only 47% of interracial relationships are marriages. Individuals in interracial relationships are more likely to be cohabiting, 30% compared to 24% in same-race relationships. Although white individuals comprised a majority of the total sample, 68% of total respondents, they were a sizable minority of individuals involved in interracial relationships, with 42% of individuals in an interracial relationship reporting white as their race. Indeed, white individuals comprised a solid majority of same-race relationships, with 76% of same-race relationships composed of a white person partnered with another white person. Out of the whole sample, 22% of respondents were single, 64% were in a same-race relationship, and 14% were in an interracial relationship.

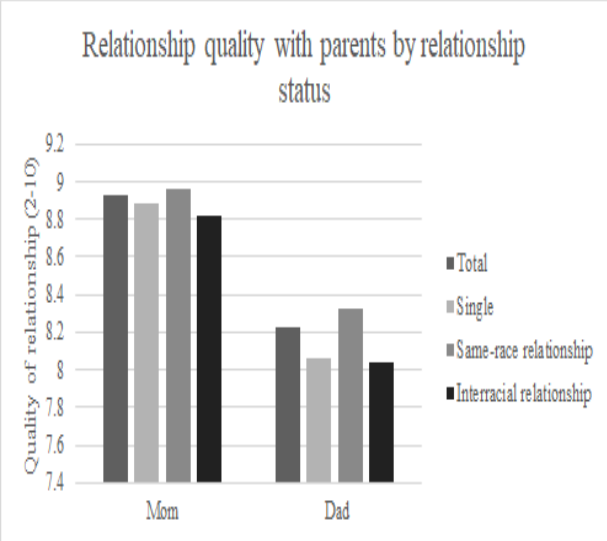

Figure 1.0. Relationship quality with parents by relationship status (single, involved in same-race relationship, and involved in interracial relationship. This figure demonstrates the mean differences of relationship quality among single people, people in a same-race relationship, and people in an interracial relationship (N= 1,047, N=3,069, N= 731, N= 4,847, respectively). All individuals regardless of involvement in a relationship have better quality of relationships with their mother figures than with their father figures. Individuals in same-race relationships have the highest quality of relationships with both mothers and fathers, and individuals in interracial relationships have the worst quality of relationships with mothers and fathers.

	Total *n=4,847*	Single *n=1,047*	Same-race *n=3,069*	Interracial *n=731*
Age	28.9	28.8	28.9	28.9
Standard Error	0.1176	0.13606	0.12532	0.14679
Sex				
Male	0.5	0.57	0.48	0.5
Female	0.5	0.43	0.52	0.5
Total	1	1	1	1
Race				
White	0.68	0.64	0.76	0.42
Black	0.15	0.2	0.14	0.12
Asian	0.03	0.03	0.02	0.07
Hispanic	0.11	0.1	0.08	0.24
Native American	0.02	0.02	0	0.11
Other	0.01	0	0	0.03
Total	1	1	1	1
Highest Educational Attainment				
High school or less	0.26	0.29	0.25	0.26
Some vocational or completed vocational	0.1	0.1	0.1	0.08
Some college	0.33	0.33	0.32	0.37
Completed college (bachelor's degree')	0.19	0.16	0.21	0.18
Graduate school and beyond	0.12	0.11	0.12	0.11
Total	1	1	1	1
Relationship Type				
Marriage	0.43	0	0.57	0.47
Cohabitation	0.19	0	0.24	0.3
Pregnancy	0.01	0	0.01	0.02
Current dating	0.14	0	0.18	0.21
Single	0.22	1	0	0
Total	1	1	1	1
Distance from Father				
Live together	0.11	0.25	0.07	0.1
1-50 miles	0.53	0.42	0.55	0.56
3 50+ miles	0.36	0.34	0.37	0.34
Total	1	1	1	1
Distance from Mother				
Live together	0.16	0.33	0.1	0.15
1-50 miles	0.52	0.39	0.56	0.55
3 50+ miles	0.32	0.28	0.34	0.31
Total	1	1	1	1
Outcomes				
Relationship Quality, Mom	8.929	8.888	8.966	8.82
Standard Error	0.0382	0.06854	0.04329	0.07004
Relationship Quality, Dad	8.228	8.062	8.322	8.037
Standard Error	0.04009	0.07503	0.04684	0.1052

Table 1.0. Descriptive Statistics for the sample. All values are weighted.

	Model One Relationship Quality, Mother	**Model Two** Relationship Quality, Mother	**Model Three** Relationship Quality, Mother
Is Interracial	-0.239**	-0.162*	-0.146
	(-3.25)	(-2.04)	(-1.81)
Age		-0.0227	-0.0186
		(-1.28)	(-1.00)
Female		-0.0977	-0.0834
		(-1.40)	(-1.24)
White		0	0
		(.)	(.)
Black		0.351***	0.430***
		(4.54)	(5.46)
Asian		-0.396*	-0.492*
		(-2.14)	(-2.57)
Hispanic		0.0124	-0.00766
		(0.13)	(-0.08)
Native American		-0.706*	-0.746*
		(-1.99)	(-2.28)
Other		0.563*	0.522*
		(2.45)	(2.21)
Less than high school			0
			(.)
High school graduate			-0.00781
			(-0.05)
Some vocational or completed vocational			-0.0822
			(-0.41)
Some college			0.0168
			(0.08)
Bachelors or beyond			0.0646
			(0.33)
Biological Parents			0
			(.)
Any Stepparent			-0.394***
			(-3.77)
Single Parent			-0.356***
			(-4.80)
Other			-0.566*
			(-2.60)
Marriage			0
			(.)
Cohabitation			0.0295
			(0.35)
Pregnancy			0.0242
			(0.11)
Currently dating			-0.0548
			(-0.68)
Live with mother			0
			(.)
1-50 miles from mother			-0.358***
			(-4.08)
50+ miles from mother			-0.411***
			(-4.12)
_cons	8.979***	9.743***	10.06***
	(227.04)	(17.52)	(15.16)
N	3369	3369	3369

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.0. OLS Regressions predicting relationship quality with mother figures.

	Model One Relationship Quality, Father	**Model Two** Relationship Quality, Father	**Model Three** Relationship Quality, Father
Is Interracial	-0.400**	-0.371*	-0.322*
	(-3.08)	(-2.60)	(-2.35)
Age		-0.0375	-0.0325
		(-1.47)	(-1.11)
Female		-0.241**	-0.271**
		(-2.76)	(-3.04)
White		0	0
		(.)	(.)
Black		0.0951	0.153
		(0.70)	(1.02)
Asian		-0.135	-0.334
		(-0.66)	(-1.75)
Hispanic		-0.0863	-0.101
		(-0.50)	(-0.56)
Native American		-0.397	-0.345
		(-1.02)	(-0.92)
Other		1.076***	0.826**
		(3.76)	(2.63)
Less than high school			0
			(.)
High school graduate			0.185
			(0.56)
Some vocational or completed vocational			0.644
			(1.95)
Some college			0.354
			(1.23)
Bachelors or beyond			0.671*
			(2.25)
Biological Parents			0
			(.)
Any Stepparent			-0.731***
			(-5.00)
Single Parent			-0.109
			(-0.53)
Other			-0.940*
			(-2.56)
Marriage			0
			(.)
Cohabitation			0.0682
			(0.60)
Pregnancy			-0.155
			(-0.39)
Currently dating			-0.137
			(-0.96)
Live with father			0
1-50 miles from father			-0.323*
			(-2.06)
50+ miles from father			-0.590***
			(-3.59)
_cons	8.479***	9.928***	9.902***
	(166.74)	(13.31)	(11.74)
N	2492	2492	2492

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.1. OLS Regressions predicting relationship quality with father figures.

Table 2 shows a series of ordinary least square regressions predicting relationship quality with mothers, showing the impact of demographic characteristics and theoretical controls. Model One is a bivariate regression model predicting relationship quality with mother figures based solely on involvement in an interracial relationship; echoing the descriptive findings, individuals in an interracial relationship are found to have worse quality of relationships with mothers than their same-race peers. Model Two, which includes demographic data including age, sex, and race, also finds that individuals in an interracial relationship have lower quality of relationships than individuals in a same-race relationship. After educational attainment, family structure, and distance from mother figure are factored into Model Three, the effect of involvement in interracial relationship on relationship quality with mothers no longer retains statistical significance.

In a similar vein, Table 2.1 shows a series of ordinary least square regressions predicting relationship quality with fathers. Model One, a simple bivariate regression, shows individuals in an interracial relationship have worse quality of relationships with father figures ($p< 0.01$). Statistical significance decreases when age, sex, and race are taken into account in Model Two ($p <0.05$); however, individuals in interracial relationships are still found to have worse quality of relationships with fathers than individuals in a same-race relationship. Similarly, incorporating educational attainment, relationship type, and distance from father in Model Three still results in statistical significance; individuals retained worse quality of relationships with fathers.

	Model One	Model Two	Model Three
	Relationship Quality, Father	Relationship Quality, Father	Relationship Quality, Father
Is Interracial	-0.400**	-0.371*	-0.322*
	(-3.08)	(-2.60)	(-2.35)
	Relationship Quality, Mother	Relationship Quality, Mother	Relationship Quality, Mother
Is Interracial	-0.239**	-0.162*	-0.146
	(-3.25)	(-2.04)	(-1.81)

Figure 2.0. Comparison of coefficients for the interracial variable among the three models run in Tables 2.0 and 2.1. (N=3,369 for regression predicting relationship quality with mothers, N=2,492 for regression predicting relationship quality with fathers)

Comparing the coefficients between the regressions run in Table 2.0 and Table 2.1 for predictions of relationship quality with mothers and fathers, respectively, I find that involvement in an interracial relationship has a bigger, more negative effect for relationships with fathers than for relationships with mothers. Across all three models, the coefficient representing the impact of interracial involvement on relationship quality with father figures is nearly half the size of the coefficient representing the impact of interracial involvement on relationship quality with mother figures (-0.4 compared to -0.239 in Model One, -0.371 compared to -0.162 in Model Two, and -0.322 compared to -0.146 in Model Three, respectively). These results suggest that involvement in interracial relationships decreases quality of relationships with fathers more so than it does quality of relationships with mothers.

	In Interracial Relationship	
	Relationship Quality, Mother	Relationship Quality, Father
White	0	0
	(.)	(.)
Black	0.0392	0.355
	(0.24)	(1.08)
Asian	-0.531	0.116
	(-1.86)	(0.33)
Hispanic	-0.274	0.0533
	(-1.24)	(0.16)
Native American	-0.912*	-0.366
	(-2.52)	(-0.81)
Other	0.334	1.085**
	(1.23)	(3.30)
_cons	8.926***	8.042***
	(83.35)	(43.65)
N	649	478

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2.2. OLS regressions predicting relationship quality with parents among respondents in interracial relationships.

Table 2.2 shows the results of ordinary least squares regression predicting relationship quality with parents among those who reported being in an interracial relationship. While Black people in interracial relationships had higher relationship quality with mothers and fathers than white people in interracial relationships, this difference was not statistically significant. Native American individuals in an interracial relationship reported lower quality of relationships with mothers than white individuals in interracial relationships ($p<0.05$); although they had worse quality relationships with their fathers, this was not statistically significant. Asian and Hispanic individuals in interracial relationships had worse quality relationships with their moms than white people in interracial relationships, but this was not statistically significant.

Discussion

Confirming my first hypothesis, analyses showed that individuals in interracial relationships do indeed have worse quality of relationships with parents than individuals in same-race relationships. Addressing my second hypothesis (Black individuals in interracial relationships would have higher quality of relationships with parents than white individuals in interracial relationships), I found that overall Black individuals had higher quality of relationships with both mothers and fathers in comparison to white individuals, yet it was inconclusive as to whether Black people in interracial relationships had better relationships with parents than white people in interracial relationships as my regressions did not find significant results. While individuals in interracial relationships had lower quality of relationships with parents overall, this difference was more dramatic in decreasing quality of relationships with fathers than it was with mothers. Fathers may be more critical of their children's dating and marriage patterns than mothers, potentially due to the history of patrilineage in the United States. Female respondents reported worse relationship quality with their fathers; future studies could look at the interaction between gender and race in predicting relationship quality with fathers, breaking down results by race as prior literature has suggested white women in particular face social penalties for interracial dating (Stillwell and Lowery, 2021). It should be noted, however, that many respondents did not report relationship quality with fathers, complicating these results.

The study presented large limitations in studying the interactions of interracial relationships across race using the data from Add Health. Respondents needed to have information on relationship quality with parents from both Wave I and Wave IV to be included in the regression, resulting in large numbers of individuals excluded from the analyses. Many respondents had missing data on their relationships with fathers. Black individuals are underrepresented in the analytic sample as they were less likely to report information on mother and father figures in Waves I and IV, making comprehensive analysis of relationship quality with parents difficult for Black individuals in Add Health. Across all races, the criteria for inclusion in the analytic sample (respondent possessing relationship data on parents in both Waves I and IV) resulted in large reductions of the sample population. Individuals were able to report multiple partners in the relationship section of the survey for Wave IV; however, any individual reporting multiple ongoing relationships was dropped from my analyses (N=267).

Conclusion

This study focused on how parent-child bonds differed amongst individuals in interracial relationships compared to those in same-race relationships, finding that children in interracial relationships had lower quality of relationships with parents. This paper adds to existing literature suggesting that interracial relationships are indeed still stigmatized; involvement in an interracial relationship affects an individuals' social network. The mean age of individuals in this study was 29, a time in which adults are becoming increasingly independent and making major life decisions, such as entering marriage and bearing children. Recent research has suggested the growing importance of parental support for children in "early adulthood," who, throughout their 20s, continue to struggle to gain full independence. Thus, parental support of children and parent-child bonds retains salience for adults in their 20s. This paper suggests that involvement in an interracial relationship may in part jeopardize or challenge these important bonds for adult-aged children.

While this study utilized a causal framework predicting that involvement in an interracial relationship would result in lower quality relationships with parents, it is possible that individuals with lower quality relationships with parents are more likely to enter into interracial unions in the first place. Future studies could look at change in relationship quality with parents over time and how entering an interracial relationship would change the trajectory of relationships with parents to more directly assess how interracial union affects relationships with parents. Another avenue of research could focus on how parent-child relationships change over time as children in interracial relationships move from dating to marriage to childbearing to see whether the introduction of children has any effect on parent-child bonds. Additionally, future research could break down parental dynamics among children in respect to both gender and race, as research has shown, for example, that white women face different reactions to involvement in interracial relationships than white men. This study found that involvement in an interracial relationship decreased relationships with fathers more so than for mothers; further research could look at how gender of the child in an interracial relationship differs in their closeness to mothers or fathers to better understand this gendered dynamic.

Interracial relationships are used to interpret the current levels of racial tolerance in the United States, but it is less clear how this impacts relationships with parents and pre-existing family structures. Parents serve as a long-standing support structure for many children in the US, so their opinions regarding their children's partners matters for the long-term survival of these unions.

References Cited

Campbell, Mary E., and Jennifer Eggerling-Boeck
2006 'What About the Children?' The Psychological and Social Well-Being of Multiracial Adolescents. *The Sociological Quarterly* 47(1):147–73. doi: 10.1111/j.1533-8525.2006.00041.x.

Cavanagh, Shannon E.
2008 Family Structure History and Adolescent Adjustment. *Journal of Family Issues* 29(7):944–80. doi: 10.1177/0192513X07311232.

Chen, Ping and Kathleen Mullan Harris
2020 Guidelines for Analyzing Add Health Data. UNC.

Curington, Celeste Vaughan, Jennifer Hickes Lundquist, and Ken-Hou Lin
2021 *The Dating Divide: Race and Desire in the Era of Online Romance*. Oakland, California: University of California Press.

Fingerman, Karen, Laura Miller, Kira Birditt, and Steven Zarit
2009 Giving to the Good and the Needy: Parental Support of Grown Children. *Journal of Marriage and Family* 71(5):1220–33. doi: 10.1111/j.1741-3737.2009.00665.x.

Furstenberg, Frank F., Sheela Kennedy, Vonnie C. McLoyd, Rubén G. Rumbaut, and Richard A. Settersten
2004 Growing Up Is Harder to Do. *Contexts* 3(3):33–41. doi: 10.1525/ctx.2004.3.3.33.

Gerstel, Naomi, and Natalia Sarkisian
2006 Marriage: The Good, the Bad, and the Greedy. *Contexts* 5(4):16–21. doi: 10.1525/ctx.2006.5.4.16.

Herman, Melissa R., and Mary E. Campbell
2012 I Wouldn't, but You Can: Attitudes toward Interracial Relationships. *Social Science Research* 41(2):343–58. doi: 10.1016/j.ssresearch.2011.11.007.

Joyner, Kara, and Grace Kao
2005 *Interracial Relationships and the Transition to Adulthood*. *American Sociological Review* 70(4):563–81. doi: 10.1177/000312240507000402.

Kalleberg, Arne L.
2011 *Good Jobs, Bad Jobs: The Rise of Polarized and Precarious Employment Systems in the United States, 1970s to 2000s*. New York: Russell Sage Foundation.

Killian, Kyle D.
2013 *Interracial Couples, Intimacy, and Therapy: Crossing Racial Borders*. New York: Columbia University Press.

Lareau, Annette
2011 *Unequal Childhoods: Class, Race, and Family Life*. 2nd ed., with an update a decade later. Berkeley: University of California Press.

Nemoto, Kumiko
2009 *Racing Romance: Love, Power, and Desire among Asian American/White Couples*. New Brunswick, N.J.: Rutgers University Press.

PEW Research Center
2012 Chapter 4: Public Attitudes on Intermarriage. *Pew Research Center's Social & Demographic Trends Project*. Retrieved June 23, 2023 (https://www.pewresearch.org/social-trends/2012/02/16/chapter-4-public-attitudes-on-intermarriage/).

Qian, Zhenchao
2005 Breaking the Last Taboo: Interracial Marriage in America. Contexts 4(4):33–37. doi: 10.1525/ctx.2005.4.4.33.

Differential Decomposition in Burned Human Remains

Eliana Gutierrez, Dr. Daniel J. Wescott Ph.D., Texas State University

Abstract

The Charred Body Score (CBS) was created to assess decomposition in burned pig remains. The CBS ranges from 3-32, where 3 represents freshly burned remains and 32 signifies dry bones. The aim of this study was to investigate the decomposition rates in human remains burned in a typical indoor scene. The study recorded the CBS on 30 occasions, and a running accumulated degree day (ADD) total was also noted throughout the study period. The bodies were exposed to thermal heat for 14 minutes past the smoke alarm signal resulting in two at a Crow/Glassman Scale (CGS) of 2 and one at CGS3. The results demonstrated differential rates of decomposition based on the degree of burning. All three bodies decomposed quickly during the first month, but the two bodies at CGS2 remained at CBS 22 throughout the second month, while the body in CGS3 decomposed more rapidly and reached CBS 30 (>50% skeletonization) by 1386 ADD. The other two bodies achieved CBS 30 only after 1956 and 2493 ADD. By the end of the study, all bodies had a CBS of 32. The study suggests caution in estimating the postmortem interval using CBS, as differential rates of decomposition occur based on the degree of burning.

Introduction

Research on fire-related deaths is commonly conducted by forensic scientists, but few studies have examined decomposition rates following burning. In these cases, forensic anthropologists are requested to estimate the postmortem interval (time-since-death) of burned human remains. However, only one previous study (Gruenthal et al. 2011) has examined the rate of decomposition in burned remains using pig surrogates. But, using only data collected from animal remains limits researcher's knowledge of the burning effects on the decomposition of human remains (Dautartas et al. 2018). Also, all of the pigs used by Gruenthal and colleagues (2011) were only charred on one side of the body. The purpose of this study is to document the decomposition of human remains in an outdoor setting after being burned to test the validity of the Charred Body Score (CBS; Gruenthal et al. 2011) in estimating the postmortem interval from burned human remains. The validity of the CBS is examined by observing changes in the score of the charred human remains relative to the accumulated degree days (ADD) and how the hallmark characteristics described by Gruenthal and colleges compared between the humans used in this study and their pigs. Accurate estimation of the postmortem interval is needed to help create a timeline for cases, such as homicides, unexpected occurrences like drug overdoses, accidental deaths, suicides, and other incidents.

The degree of burning of a body is commonly described using the Crow/Glassman Scale (CGS), which is divided into five different levels observed by the destruction (Glassman and Crow 1996). The CGS level one is the equivalent of smoke damage. Remains that are identifiable but the extremities of the body such as hands and feet are charred are scored a GCS of 2. In CGS3 the extremities are completely burned, and overall charring of the body makes it unrecognizable. The next level, CGS4 indicates fragmentation of the skull and more extensive charring. Finally, CGS5, is used when remains are cremated or there is no soft tissue present.

Prior to 2005, research on decomposition primarily focused on broad stages and the number of calendar days it took to start and end each stage. However, in 2005, Megyesi and colleagues developed the Total Body Score to quantify gross decomposition changes and to estimate the ADD (i.e., proxy for the amount of energy that is available for decomposition processes). The TBS is the sum of the decomposition scores given to the head/neck, torso, and limbs. Using the TBS, Megyesi and colleagues (2005) developed a regression equation to estimate the ADD since death. Using local weather data researchers can work backwards from the date of discovery to determine the point estimate date of death based on ADD.

In 2011, Gruenthal and colleagues developed a set of descriptions similar to the TBS for charred remains. They used 48 pigs with half charred to a CGS1 for the head/neck and limbs and a CGS 2 for the torso while the other half was left uncharred. They created the CBS based on observations of the pig carcasses taken at 50 ADD intervals. The CBS is like the TBS in that the head/neck, torso, and limbs are scored separately and then summed. For each area of the body (head, torso, limbs), Gruenthal and colleagues (2011) kept note of obvious progressions and how they correlated to the ADD. They then assigned progressive point values for

each stage of the scale with smaller numbers assigned to early stages and higher numbers to more advanced stages. The charred carcasses were scored using CBS while the uncharred remains were scored using the TBS method (Megysei et al. 2005). The researchers noticed that in the beginning there was a more advanced pattern or rate of decomposition but overall, the decomposition rate wasn't affected too drastically by charring. However, while pigs are often used as a proxy for human remains, TBS can differ between pigs and human due to colonization of insects, desiccation of skin, and difficulties applying TBS to nonhuman carcasses (Dautartas et al. 2018).

Materials and Methods

Six human bodies donated in 2020 to the Forensic Anthropology Center at Texas State's (FACTS) Willed Body Donation Program under the Revised Texas Anatomical Gift Act were used in this study. Donors or next-of-kin provide informed consent for advanced/traumatic research during the donation process. Three of the donors (2020.002, 2020.019, and 2020.026) were burned during the annual fire death investigation course at the Forensic Anthropology Research Facility (FARF) on Freeman Ranch. The three donated remains were placed into "pods" built to represent a typical indoor fire in a hotel room. The fire was burned for 14 minutes past the fire alarm, which is the average national response time for firefighters to successfully arrive and put out a fire. Each pod reached flashover temperatures (~1100°F or 593°C) during the event. After removal from burned structures, the bodies were placed on the ground surface and allowed to decompose. Donor 2020.002 began at a CGS3 due to the extent of destruction and fragmented limbs. Donors 2020.019 and 2020.026 began at CGS2 because they were recognizable but had various levels of charring. The photographs of three other donor bodies (2020.046, 2020.048, and 2020.049) placed unburned on the ground surface around the same time period as the three burned donors were scored using TBS to compare the rate of decomposition between unburned and burned human remains.

The decomposition process was photographically documented and compared to ADD calculated using the daily temperature data recorded for Freeman Ranch. Photographs were captured twice a week two times a day, but as the decomposition was progressing, photographing slowed to once a week and later once a month. Decomposition of the burned remains was scored for each location; the head/neck, torso, and limbs using the charred body scale developed by Gruenthal et al. (2011). Total body scores were collected following a similar pattern for the unburned remains by trained graduate students during the decomposition process and double checked by the lead author.

Daily temperature data collected were used to calculate the ADD from the time of placement to the last CBS/TBS observation for each cadaver. In this study the ADD is based on the average daily temperatures for each day using hourly observations collected by the Meso West weather data collection site. The progression of the CBS was compared to known ADD throughout the experiment and compared to the results of the TBS for the unburned remains and the charred remains observed by Gruenthal et al. (2011)

Results

All three burned bodies' CBS changed rapidly during early decomposition (Figure 1). Both bodies starting at CGS2 reached a CBS of 22 by approximately 650 ADD but then remained at CBS 22 for approximately 800 ADD (ADD 326-940). Gruenthal and colleagues (2011) observed a CBS 22 at approximately 400 ADD at which time decomposition slowed but continued to advance. For the unburned remains, a TBS of 22 was reached between 898 and 1400 ADD (Figure 2). The body in CGS3 (2020.002) decomposed at a more rapid rate than the two bodies in CGS2. It reached a CBS29 by approximately 722 ADD but did not advance to CBS 30 (>50% skeletonization) until 1386 ADD. Donors 2020.019 and 2020.026 did not reach CBS 30 until 1956 and 2493 ADD, respectively (Figure 1). At 1300 ADD the unburned remains had TBS of 20, 26, and 28. By the end of the study period (approximately ADD 4000) all bodies were at a CBS 32. The unburned remains follow as similar pattern of decomposition but slowing considerably after about ADD 250 (Figure 2).

Discussion

Gruenthal and colleagues (2011) examined decomposition rates after burning using pig surrogates. They found no significant difference in the rate of decomposition between the charred and uncharred remains, and that both burned and unburned remains followed a similar pattern of decomposition rate with both plateauing around ADD 500 at around CBS 28 for burned pigs and TBS 25 for unburned pigs. They did, however, observe that decomposition rates were significantly faster in areas with more charring compared to areas of less charring.

While the sample size in this study is too small to conduct statistical tests or to make clear interpretations, it appears that the results of this study only partially support those of Gruenthal et al. (2011). In this study the human remains starting at CGS 2 plateaued around ADD 1500 at CBS 22 while the body starting at a CGS 3 plateaued at approximately ADD 700 at a CBS 29.

This is consistent with Gruenthal and colleagues (2011) results that decomposition was faster as a result of more burning. However, in this study the rate at which burned human remains decompose is slower than the charred pigs observed by Gruenthal et al. (2011), and our unburned remains. In their study, a greater than 50% skeletonization was reached by approximately 500 ADD in the charred pigs as well as the uncharred remains. While we found a similar pattern of decomposition, the burned remains in our study decomposed at a slower rate than the burned remains. Our unburned remains show a similar relationship between TBS and ADD through ADD 500 as Gruenthal et al. (2011) observed.

It may be that burned human remains do not follow the CBS pattern proposed by Gruenthal and colleagues (2011). This may be because the donor bodies used in this study were burned in a simulated hotel fire that went through flashover and resulted in greater burning of the head/neck and limbs than the pigs used by Gruenthal and colleagues. In their study burning was done on one side of the body using a blow torch. All of the donors in this study started with a CBS of greater than 3 because the burning resulted in skeletonization of the head/neck and limbs. However, Donor 2020.002 had a lower beginning CBS than donor 2020.019 due to less skull exposure and no herniation of the torso. But Donor 2020.002 had more extensive charring throughout the body and missing limbs giving it a CGS3.

Another important factor is that stated by Gruenthal and colleagues (2011) is how in the pig carcasses there is a significant difference in level of decomposition in the head/neck, limbs, and torso. The human remains followed a similar occurrence until 2494 ADD, where they all reached an overall CBS of 30. Although Donor 2020.002 may have reached a CBS of 32 fastest, it still followed the same rates of decomposition for each location on the remains. The torsos of each donor were the area that reached the final level of decomposition the fastest, which occurred on 2494 ADD. Only one of the three reached the final level earlier than the others, which correlates to the fact that donor 2020.002 was in CGS3 from the beginning. The next location to reach the final level of CBS was the head at 2612 ADD. Two of the three reached the final level much earlier. Finally, the limbs reached the final level of CBS at 3938 ADD. Only 1 of the three reached the final level earlier than the others, which correlates to the fact that donor 2020.002 was in CGS3 from the beginning.

A factor associated with decomposition that is often mentioned is how the level of charring on a burned individual may affect bug activity (Gruenthal et al. 2011). While evaluating the photographs both donors at CGS2 had a noticeably large number of maggots compared to that of the donor at CGS3. The reduced unburned tissue remaining on the remains may be a reason as to why there was less on donor 2020.002.

This study may have experienced limitations that can be avoided in future studies. The burned remains have to be carefully evaluated since they each began at a different CGS. It may make it easier to analyze if all the subjects begin at the same level of CGS. In order to better understand the rates of decomposition in charred remains it may be useful to take into consideration the donor's original weight and BMI. Having this data can help provide insight onto why certain location may decompose at a faster rate than other parts whether it be the CBS levels of burning, BMI, or insect activity.

Another factor would be controlling the temperatures at which each donor was burned at. Having better management of the intensity of the fire may help make each part of the body burn at an equal rate while also staying consistent for each. The ability to have more consistency is important to create a control variable. However, this is not a realistic scenario in forensic anthropological case work. Finally having a larger sample can help give more statistical value to the observations based on the reoccurrence.

In conclusion, this study, while limited by a small sample size suggest that burning has an effect on the subsequent decomposition pattern and rate, and that caution should be used when using CBS to estimate the postmortem interval.

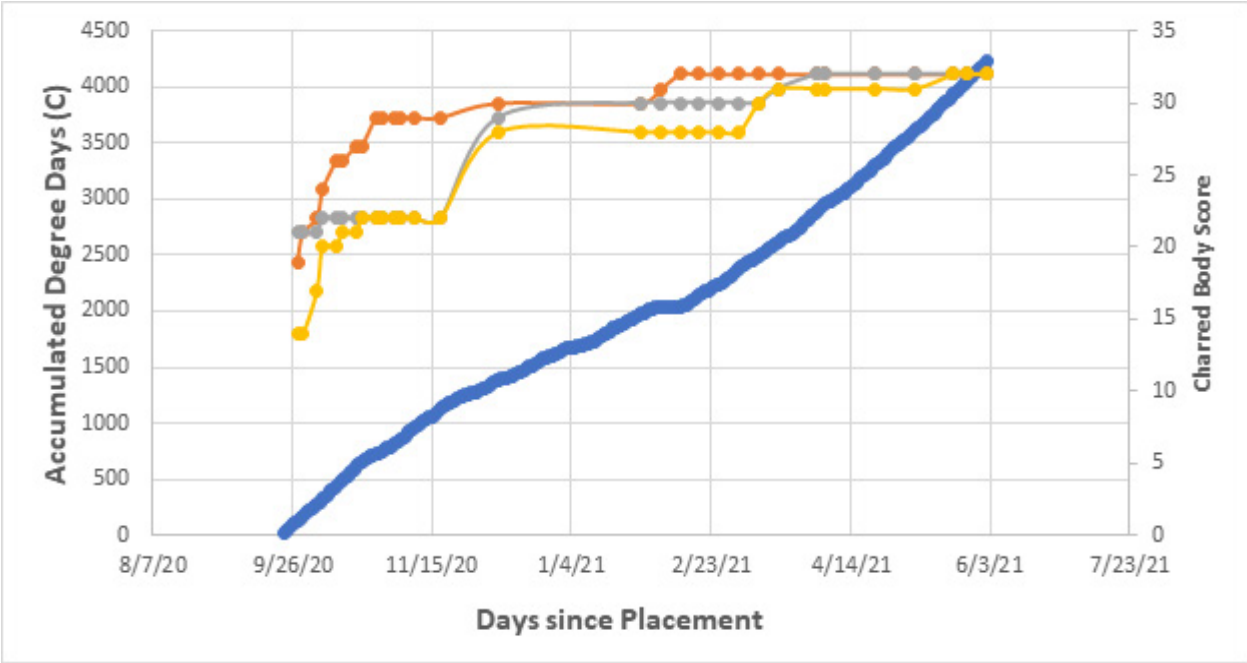

Figure 1. Comparison of the rate of decomposition for the three burned donors (yelloe 2020.036, grey 2020,019, and orange 2020,002 lines) based on Gruenthal et al.'s (2011) method of scoring and ADD (blue line).

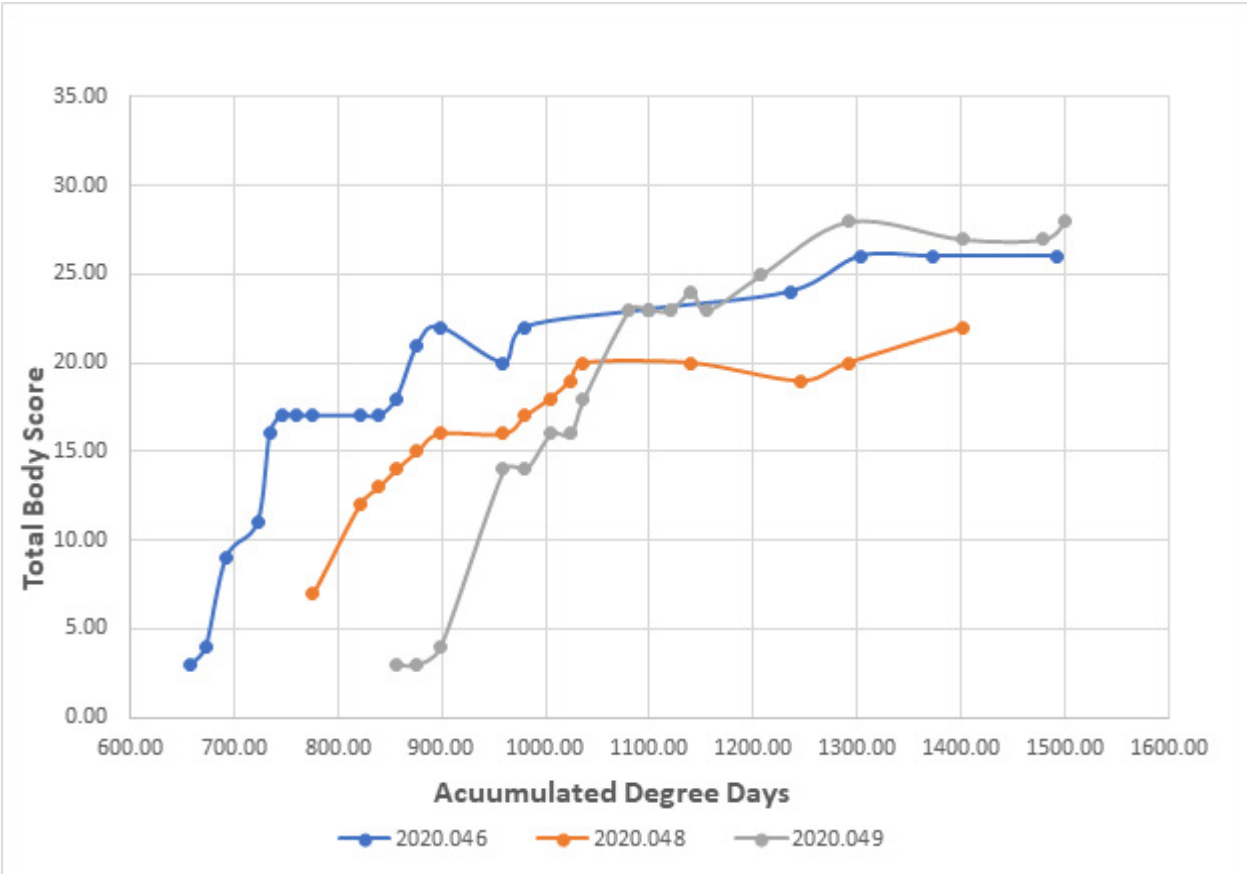

Figure 2. Total body scores by ADD for the three unburned remains.

Glassman and Crow Scale (1996)

Level	Stage	Descriptions
1	Recognizable	Usually associated with smoke death, epidermis blistering and head singeing
2	Often Recognizable	Maybe recognizable, varying degrees of charring, absence of elements like hands and/or feet
3	Not Recognizable	Further destruction with major portions missing from arms and/or legs
4	Immense Fire damage	Extensive burn destruction where the skull is fragmented and absent from body
5	Cremation	Final level, body is cremated with little to no tissue present

Table 1. Glassman and Crow Scale (1996) levels and descriptions.

Charred Body Score Descriptions (2011)
Stages of Decomposition for the charred head and neck

Fresh	
1 point	Freshly burned appearance , dry char, blister circles present, uneven texture.
Early Stage Decomposition	
2 points	Neck bloat with tight skin, moist appearance, blister circles, mottled skin and purging from nose.
3 points	Neck bloat and blister circles retained with drying in the face with mottled skin.
4 points	Neck bloat and blister circles with char sloughing ears and cracking of skin.
5 points	Neck bloat and blister circles retained with more discoloration and dry ears, green mouth discoloration.
6 points	Neck bloat and blisters persist with a desiccated face and leathery texture to neck.
Advanced Decomposition	
7 points	Neck bloat gone and facial skin has mask appearance, loose desiccated/ perforated neck tissue may remain, wet decomposition may persist.
8 Points	Skeletonization of ≤50% of skull and neck , wet decomposition may persist in neck region, "mask" may slip forward; thin black desiccated tissue may be apparent.
9 points	Skeletonization of > 50% of skull and neck, end of wet decomposition in neck region, "mask" may still be present as well as desiccated neck tissue.
Skeletonization	
10 points	Skeletonization of >50% of skull and neck, bones appear greasy or moist.
11 points	Dry Bones.

Table 2. The Charred Body Score by Gruenthal et al. 2011.

Stages of Decomposition of the charred torso

Fresh	
1 point	Freshly burned appearance , tight skin, blister circles are prominent, char appears dry and uneven in texture.
Early Stage Decomposition	
2 points	Bloat with prominent blister circles and possible char aggregation.
3 points	Previous characteristics retained with the addition of skin splitting and gray tissue color beneath char and marbling green stomach discoloration.
4 points	Previous characteristics retained with the addition of bubbling beneath char, deep splits in charred tissue and char/skin sloughing.
5 points	Skin appears leathery and bloat is lost .
Advanced Decomposition	
6 points	Intestinal Herniation through areas of heaviest char, black discoloration, and desiccation of stomach skin may occur. Bloat may be retained.
7 Points	Previous characteristics retained with the addition of desiccation of herniated organs, opening/ collapse of the chest (≤50% rib exposure) and increased maggot mass activity.
8 points	Torso collapse/ opening with increased desiccation of skin and >50% of ribs visible.
Skeletonization	
9 points	Open torso with maggot mass activity causing displacement of ribs, pectoral/pelvic girdle and vertebrae ≤50% skeletonized .
10 points	≤50% of torso through wet decomposition, maggot masses still active throughout torso, ≤50% pectoral/ pelvic girdle and vertebrae skeletonized.
11 points	>50% of torso through wet decomposition, maggot masses only active in localized regions (if at all), > 50% pectoral/ pelvic girdle and vertebrae skeletonized.
12 points	Dry Bones

Stages of Decomposition of the charred limbs.

Fresh	
1 point	Freshly burned appearance: char is uneven and dry, limbs are tight in pugilistic posture, blister circles prominent and uneven coloration of skin
Early Stage Decomposition	
2 points	Tight with pugilistic posture retained, singeing evident on edges of blister circles and hair, char appears even in texture while skin coloration appears mottled/ uneven. Peeling of epidermis may occur.
3 points	Tight with potential char aggregation, splits may occur in tissue, pugilistic posture retained. Peeling of epidermis with wrinkling or sloughing may occur and blisters may be present.
4 points	Limbs appear withered with pugilistic posture retained, coloration appears even across >50% of surface, leathery in texture. Blister circles may be evident but not prominent.
Advanced Decomposition	
5 points	Desiccation of limbs (especially feet), skin on upper portion of leg is leathery but without looseness of skin. Pugilistic posture is retained.
6 Points	Desiccation of limbs (especially feet), skin on upper portion of leg is leathery and perforated; limbs may be detached from torso. Pugilistic posture is still retained.
Skeletonization	
7 points	≤50% Skeletonized, limbs may be detached from torso and desiccated tissue may be adherent. Pugilistic posture retained.
8 points	>50% skeletonized, may have desiccated tissue adherent.
9 points	Dry Bones

Table 2. (cont.)

References Cited

Dautartas, A., Kenyhercz, M. W., Vidoli, G. M., Meadows Jantz, L., Mundorff, A., & Steadman, D. W.
2018 Differential Decomposition Among Pig, Rabbit, and Human Remains. *Journal of Forensic Sciences* 63(6):1673–1683. https://doi.org/10.1111/1556-4029.13784

Glassman, D., & Crow, R.
1996 Standardization model for describing the extent of burn injury to human remains. *Journal of Forensic Sciences* 41(1):152-154.

Gruenthal, A., Moffatt, C., & Simmons, T.
2011 Differential decomposition patterns in charred versus un-charred remains. *Journal of Forensic Sciences* 57(1):12–18.

Megyesi S., Mary, Nawrocki P., Stephen, Haskell H., Neal.
2005 Using Accumulated Degree- Days to Estimate the Postmortem Interval from Decomposed Human Remains, *Journal of Forensic Sciences* 50(3):618-626.