

Exploring Female's Role in Evolution

The evolutionary story of mankind has been described as quite the epic,¹ with the superior intelligence and aggressive nature of males being the key element in driving our species through conflict to arrive at our triumphant place at the top of the animal kingdom. Elaine Morgan pointed out in her work, *The Descent of Woman*, that this has been represented as the dominant theme of our evolutionary story, at least commonly told, with males standing upright to free their hands for weapons and engaging in combat, conflict and competition for females, and hunting. She characterized the historians, anthropologists and popularizers who promoted this version of evolution as “Tarzanists.” She identifies Desmond Morris, whose book *The Naked Ape* was popular, and Robert Ardrey, who authored the *Nature of Man* series, as tarzanists. Morgan argued that this ‘Tarzanist’ version of evolution and much of our current understanding of the processes of evolution are originally grounded in the work of Darwin, notably in his *Descent of Man*, published in 1871, the book that inspired the title of her own work. While in *Descent of Man* Darwin explored the evolutionary journey of mankind in great detail, and despite that his work focused on sexual selection, Morgan argued that he somehow managed to overlook a key figure in our evolutionary history. This greatly influential, but constantly neglected, figure is the female of the species. To be fair, Morgan acknowledged that the female of the species does make her appearance in relation to sexual selection and exercises her “female choice,” but then quickly fades into the background as males take center stage and continue on with the evolutionary tale. As Morgan pointed out, this limited portrayal, or lack of, the female

¹ Gowan Dawson and Bernard Lightman, “The Evolutionary Epic,” ed. David Amigoni and James Elwick, *Victorian Science and Literature* vol 4 (2011): xi-xv.

of the human species has been repeated throughout subsequent accounts of our evolutionary history. The widely accepted version of evolution has implied that females have played only a passive role, and has, by extension, naturalized a passive role for females in society. However, despite the claims of this narrative, a subset of female scholars evolved, who, in reaction to this male centered version of evolution, took it upon themselves to insist that females had played a much more significant role in evolution.

Morgan encourages her readers to take evolutionary ideas presented by her male contemporaries and interpret them in a different way. By taking a different look at evolutionary facts, Morgan challenges the long accepted ideas about women and their role in evolution. However this was not her only goal when writing *The Descent of Woman*. Morgan was also trying to popularize Alister Hardy's Aquatic Ape theory, which addresses how after the Pliocene drought humans emerged as hairless, bipedal organisms. In contrast to the Savannah theory, as promoted by Tarzanists like Desmond Morris, which stated our hairlessness and bipedalism developed due to our forced decent from the trees and man's new hunting methods, the Aquatic Ape theory postulates that we retreated to the water instead of residing in the hot savannah. Morgan attributed many of our traits to our aquatic phase and asserted that when we left the water and returned to land we were much closer to our current evolved state.²

Morgan's notion of females as active drivers of our evolution was not consistent with the accepted belief that human evolution was achieved through man's use of weapons and his cooperative hunting abilities. Themes of male-male bonding and competition

²Morgan, *The Descent of Woman*, 13-33. Hardy never formally published his hypothesis; he only spoke about it in a speech and during an interview for the *New Scientist* magazine. Morgan was the main promoter of the Aquatic Ape hypothesis after she learned about it from its brief mention in Desmond Morris's *The Naked Ape*.

dominated our evolutionary history, and as Morgan noted, were often used to justify political beliefs about woman's lower place in society.³ Considering the political atmosphere of the 1970's, and the beliefs about women as lower class citizens, her ideas were quite controversial. As the historian of science Erika Milam has noted in her critique of Morgan's *Descent of Woman*, Morgan's contribution to the evolutionary debate was not supported by the scientific elite of the time, which included many of the people she had criticized. In addition to her lack of scientific training, Morgan's support of the widely unpopular Aquatic Ape theory was used by scientists as justification for dismissing her work as pseudoscientific. The fact too that she was an outspoken woman with few traditional qualifications also led to her being marginalized by established scholars.⁴ Contemporary anthropologist Adrienne Zihlman has echoed the belief that the Aquatic Ape theory "...does not hold water, anatomically, biochemically, behaviorally, or archaeologically"⁵ after completing a study of the Aquatic Ape theory in 1980.⁶ Due to the dismissal of Morgan's work, the ideas about female's active role in evolution did not receive the scientific attention they deserved.⁷ Despite the rejection she received from the scientific community, the public was quite receptive of her work. The easy to read, conversational tone of her book allowed her ideas to be understood and discussed by people who had no scientific education or background. Her ideas about women as active drivers in our

³ Erika Milam, "Dunking the Tarzanists: Elaine Morgan and the Aquatic Ape Theory," in *Outsider Scientists: Routes to Innovation in Biology*, ed. Oren Harman and Michael R. Dietrich, (Chicago: University of Chicago Press 2013), 226-229.

⁴ Milam, "Dunking the Tarzanists," 224.

⁵ Milam, "Dunking the Tarzanists," 231.

⁶ Milam, "Dunking the Tarzanists," 229-233.

⁷ Milam, "Dunking the Tarzanists," 232-233.

evolution laid the groundwork for other anthropologists and evolutionary biologists to question the androcentric trend in evolutionary history.⁸

Morgan was not the first, or only, woman to question the male bias present in evolution. Eliza Gamble, an American teacher, suffragist and socialist,⁹ was one of the first women to challenge Darwin's ideas concerning women's role in evolution. As a suffragist and socialist she believed that capitalism worked in unison with patriarchy to keep women subservient. Because women had no way to financially support themselves they were forced to marry. Women were not exercising their female choice and selecting the man that was most appealing, they had to select a man for financial reasons. If women had more economic opportunities they would have free choice in their selection of a husband. This lack of female choice disrupted sexual selection by creating an environment in which men did not have to be fit to reproduce and wives were frail and docile.¹⁰ While Gamble originally targeted the Bible and organized Christianity for promoting the oppression of women, she found that Darwin's *Descent of Man* offered much better support for her feminist ideas. Hamlin argued in her work, "*From Eve to Evolution*," that reformers in America, like Gamble, believed that through sexual selection we could direct evolution and control the future of our species.¹¹

Twenty-two years after Darwin published *The Descent of Man*, Gamble published *The Evolution of Women* in response to Darwin's assertion that "man has ultimately become

⁸ Milam, "Dunking the Tarzanists," 224.

⁹ Kimberly Hamlin, "*From Eve to Evolution: Darwin, Science, and Women's Rights in Gilded Age America*," (Chicago: The University of Chicago Press 2014), 128.

¹⁰ Hamlin, "*From Eve to Evolution*," 130.

¹¹ Hamlin, "*From Eve to Evolution*," 129-130.

superior to woman.”¹² In the preface of *The Evolution of Women*, Gamble admits that almost ten years prior to the publication of her book in 1893, she believed females were not inferior to males, however she needed to gather evidence to support her conclusions. After reading Darwin’s *Descent of Man* in 1886, Gamble found the evidence she needed. While reading she argued that Darwin’s logic, when applied correctly, actually supported her belief that females were superior.¹³ She noted that despite the evidence being right in front of them, many male scientists simply ignored any facts that could prove female’s superiority.¹⁴ She observed that “during an era of physical force and the predominance of the animal instincts in man, the doctrine of male superiority should have become firmly grounded...”¹⁵ Gamble asserted that we can also see this type of argument in the theological argument that God made man first. There is no doubt theological arguments also had significant influence in man’s assumption that he was the superior sex. The creation of woman second was easily used as more evidence that a woman’s main purpose is to fulfill the desires of man. To gather evidence for her conclusions, Gamble traced primary traits in each sex that led to our sexual dimorphism and examined how our sexual dimorphism shaped evolution.¹⁶ Gamble began her argument by emphasizing Darwin’s account of women’s active role in sexual selection as a foundation from which to build an argument for females being the superior sex.¹⁷ With this as the basis for her assertion, she went on to explore other ways in which females have exerted their control over our evolutionary

¹² Charles Darwin, *The Descent of Man and Selection in Relation to Sex* second edition, (London: John Murray, 1882), 565.

¹³ Eliza Gamble, Preface to *The Evolution of Women: an inquiry into the dogma of her inferiority to man*, (New York: G.P. Putmans, 1893), v.

¹⁴ Gamble, preface, vi.

¹⁵ Gamble, preface, vii.

¹⁶ Gamble, preface, vi-ix.

¹⁷ Gamble, *Evolution of Women*, 11-15.

development. Gamble's pioneering work set the stage for future feminist writers, like Morgan, to continue exploring alternative theories of evolution in which women played a much more active role. These ideas will be explored in greater depth later in this paper.

In the wake of feminist pioneers like Gamble and Morgan, contemporary anthropologists, evolutionary biologists and primatologists have further investigated the role of females in primate society, and used their findings to speculate about the female's role in evolution. Adrienne Zihlman's work has been particularly significant. Zihlman is a physical anthropologist whose former work to develop the woman-the-gatherer model¹⁸ was published in *Gender and Anthropology* in 1989.¹⁹ She was previously mentioned in Milam's critique of Morgan's *Descent of Woman*, as one of the critics who labeled Morgan's work with the Aquatic Ape theory as pseudoscientific.²⁰ Although she rejected Morgan's Aquatic Ape theory, she too thought that the female had played a much larger role in the evolution of our species than many of her male contemporaries acknowledged. By highlighting women's gathering, sharing habits and role in both sexual selection and reproduction, Zihlman attempted to reconstruct how we view early hominid evolution. Like Morgan and Gamble, she believed females were key figures in our evolutionary history. She emphasized how interactions between mother and child play a much larger role in driving evolution than does the role played by males.²¹ When Zihlman transitioned from the study of the most common species of chimpanzees to the less common pygmy

¹⁸ Donna Haraway, "Adrienne Zihlman: The Paleoanthropology of Sex and Gender," in *Primate Visions: Gender, Race and Nature in the World of Modern Science*, (New York: Routledge, 1989), 332, 335.

¹⁹ Adrienne Zihlman, "Woman the gatherer: The role of women in early hominid evolution," In *Gender and anthropology: Critical reviews for teaching and research*, ed. by Sandra Morgan, (Washington, DC: American Anthropological Association, 1989), 21-40.

²⁰ Milam, "Dunking the Tarzanists," 233.

²¹ Haraway, "Adrienne Zihlman," 336.

chimpanzee, she began to research in more depth the concept of sexual dimorphism. She concluded that pygmy chimpanzees were less sexually dimorphic and wanted to integrate them into our evolutionary history as a model for contemporary hominid's transition from apes.²² Throughout her research she emphasized that sexual dimorphism is difficult to measure and it should be treated as a culmination of traits over time, instead of as a single entity. Zihlman expressed the idea that gender differences could not be used as acceptable evidence for the representation of gender in culture.²³ Donna Haraway offers a commentary on Zihlman's career and work, with the aim of correcting the idea that politics, and not science, explained Zihlman's woman-the-gatherer model.²⁴ According to Haraway, critics of Zihlman used muddled associations of gender, current political atmosphere and science as a way to undermine or marginalize her work and thus avoid having to re-evaluate their male centered evolutionary ideas.²⁵ Readers often misinterpreted or glossed over Zihlman's woman-the-gatherer model and combined it with man-the-hunter model, while failing to realize the broader implications the model had for females. Her model illustrated female mobility, social flexibility and the importance of mother and infant relations. A part of this dismissal can be attributed to the association of her science with feminism. Science as a male dominated field had little room or tolerance for feminist ideas in the late twentieth century. However, the reception of her work in anthropology and primatology had a greater impact than her dismissal in the arena of what Haraway disparagingly calls "fraternity paleoanthropology."²⁶

²² Haraway, "Adrienne Zihlman," 340-342.

²³ Haraway, "Adrienne Zihlman," 340-343.

²⁴ Haraway, "Adrienne Zihlman," 335.

²⁵ Haraway, "Adrienne Zihlman," 335.

²⁶ Haraway, "Adrienne Zihlman," 345-346.

The narrative of women's active and dynamic role in human evolution had other advocates in anthropology as well. Dean Falk, an anthropologist, published *Finding Our Tongues* in 2009. Many of her conclusions about our sociability, as originating from mother and infant bonds, align with Zihlman's opinions. It is worth noting that Falk and Zihlman worked together in 1985 to organize a convention over the "Issues and Controversy in Primate Evolution."²⁷ The scope of Falk's research diverged from Zihlman's when she went into greater depth while exploring the origins of language. Falk argued that for an infant to reach sexual maturity and reproduce they are completely dependent on their mothers for maternal care and socialization. If infants never reach reproductive age they will never have the chance to contribute to the gene pool, making maternal care and socialization crucial to evolution (and, one presumes, that such behavioral characteristics will be inherited and emphasized through natural selection). Falk corrected the long standing belief that language developed for men to better coordinate a hunt by explaining how language has to be acquired by children before it can be used by adults. Since language has to be acquired at a young age, it follows that language would have developed from infant and mother communications. As humans evolved the nature in which infants and mothers communicated changed, and brought us to a stage where vocalizations became a more important mode of communication. A review of her book by Patricia Greenfield acknowledged Falk's contribution to the effort to place women in evolutionary history as

²⁷ Haraway, "Adrienne Zihlman," 347.

active participants. She also noted that Falk's arguments lead us to conclude that both the origin of sociability and language can be attributed to maternal care.²⁸

The importance of sociability and language has long been acknowledged as crucial to our evolution, and language has been cited as one of the qualities believed to make us unique among the animals. Darwin noted that the importance of sociability lies in that it gave rise to our moral sense²⁹ which "of all the differences between man the lower animals... is by far the most important."³⁰ He also asserted that "the habitual use of articulate language is, however, peculiar to man..."³¹ While Darwin acknowledged and supported these claims in his *Descent of Man*, in the majority of the dominant subsequent accounts of our evolution, the origin of sociability and language has been attributed to man and associated with man-the-hunter model by tarzanists.³² This was not Darwin's conclusion, but the conclusion the tarzanists arrived at, based on their own interpretations of Darwin's work. However, in the accounts of our evolution that make an effort to explore the role of women in this process, a different story has emerged, one in which women are the drivers of our sociability, the development of language and our eventual formation of society has come to the fore. To build a solid foundation for this idea I will backtrack to reconsider Darwin's ideas on sexual selection, female choice, and what the new interpretation of Darwin's views implies about the origins of sympathy and language.

²⁸ Patricia Greenfield, "Book review: Finding Our Tongues: Mothers, Infants, and the Origins of Language." *American Journal of Human Biology* 21 (2009): 858-859. Accessed October 12, 2015. doi: 10.1002/ajhb.20990.

²⁹ Darwin, *Descent of Man*, 98.

³⁰ Darwin, *Descent of Man*, 97.

³¹ Darwin, *Descent of Man*, 85.

³² Morgan, *Descent of Woman*, 4-13.

Darwin used sexual selection to both explain and justify his belief that man is the superior sex. In his comparison of the sexes he noted that not only do men have larger brains, but they also have a more “inventive genius” and are “more courageous, pugnacious and energetic than woman.”³³ When examining the morphology of men across different races it can be observed that men physically differ from each other more than women do. From this, we can conclude that men have been modified by natural and sexual selection more than women have.³⁴ We see this in the later development of secondary sex characteristics in men. Women develop their secondary sex characteristics earlier, and they retain morphology that resembles an intermediate between child and adult man.³⁵ While men gain their secondary sex characteristics later than women, Darwin believed this was indicative of a more evolved form that has undergone more rigorous modification, just as we see a greater physical diversity between men. Besides differences in morphology, the sexes also differ in disposition. Due to their maternal instincts, women have a more tender nature and lack the selfishness that men display.³⁶ Darwin clearly believed that the origin of selfishness in man could be attributed to his competitive nature and desire to outperform other men. Not only did men enjoy competition, but it was also necessary for their acquisition of females. To ensure the success of their progeny, men had to employ higher faculties such as “observation, reason, invention or imagination” to stay one step ahead of his enemies, and to keep his family safe and well fed.³⁷ Because man was constantly devising new ways to outsmart his enemies and developing more precise hunting tools, his

³³ Darwin, *Descent of Man*, 557.

³⁴ Darwin, *Descent of Man*, 559-560.

³⁵ Darwin, *Descent of Man*, 557.

³⁶ Darwin, *Descent of Man*, 563-564.

³⁷ Darwin, *Descent of Man*, 564.

mental power became stronger and more developed. Men would have predominately passed on this trait to their sons, and thus through sexual selection, men would have inherited greater mental faculties than women. From this conclusion, Darwin boldly stated: “Man has ultimately become superior to woman.”³⁸ Darwin further explained that even though men no longer engage in physical fights for their wives, the inferiority of woman has persisted. Men still have to struggle to support their family and this fosters the continued mental development that contributes to, or even acerbates, the superiority of men’s mental powers over women.³⁹

In *The Evolution of Women*, Gamble began her response to Darwin’s ideas on sexual selection. From our origins as hermaphroditic organisms we have developed into two distinct lines in which the division of reproduction is divided. This specialization in reproductive organs has been attributed to a higher organization.⁴⁰ In regards to reproduction, the male simply houses the organs that produce and provide sperm, while females house the reproductive organs that house, feed and protect a growing fetus. Female reproductive organs serve many functions, and thus, are more specialized and are indicative of a higher organization than male reproductive organs.⁴¹ Males have non-functioning mammary glands and rudiments of a uterus, demonstrating that they are not advanced enough to actually have function.⁴² Not only do female’s bodies play a more advanced role in bearing young, females also exercise female choice, which is the basis on

³⁸ Darwin, *Descent of Man*, 565.

³⁹ Darwin, *Descent of Man*, 565-566.

⁴⁰ Gamble, *Evolution of Women*, 10.

⁴¹ Gamble, *Evolution of Women*, 11.

⁴² Gamble, *Evolution of Women*, 42.

which secondary sex characteristics in men have emerged.⁴³ Darwin asserted that male's superiority over females emerged when his secondary sex characteristics developed. Through sexual selection females exercise their female choice and select for males with preferential secondary sex characteristics, making females the "primary cause of the very characters through which man's superiority over woman has been gained."⁴⁴ As an example, Gamble cited statistics that showed financially well off families generally gave birth to girls while poorer families gave birth to boys. An increase in male births was also seen after famines, epidemics or wars.⁴⁵ While Darwin considered man's larger size evidence of his higher development, Gamble asserted that despite the size difference males are still predispositioned to organic diseases, live shorter lives and have less endurance than women. Men's greater size is a character, which has been inherited through sexual selection, is actually a hindrance. With the increase in size, men needed to develop an increase in strength and endurance to perform the same activities as someone smaller.⁴⁶ Human's lack of hair separates us from our ape ancestors, however it is worth noting that men retained more body hair than women. If we follow the logic that body hair is indicative of a lower form, we can conclude that men are less developed.⁴⁷ Further, Gamble pointed out Darwin believed variability implied a low organization, yet he also stated that men showed the most variability.⁴⁸ Using Darwin's own logic and observations, Gamble believed she was able to conclude that women are superior to men. From this conclusion Gamble went on to re-examine and re-define women's role in our evolution.

⁴³ Gamble, *Evolution of Women*, 28-31.

⁴⁴ Gamble, *Evolution of Women*, 29.

⁴⁵ Gamble, *Evolution of Women*, 35.

⁴⁶ Gamble, *Evolution of Women*, 37.

⁴⁷ Gamble, *Evolution of Women*, 40-41.

⁴⁸ Gamble, *Evolution of Women*, 29.

To understand the assertions that Gamble responded to later in her book, it is necessary to examine Darwin's views on our development of sympathy, sociability and language, each of which contributed to the formation of a civilized society. Starting with sympathy, Darwin asserted that it is somewhat learned during youth, but is mainly inherited from parental and filial affections, and it is the most important aspect of our sociability.⁴⁹ Both sympathy and sociability are prerequisites for a moral sense and conscience, which he believed were crucial differences that distinguish us from the lower animals.⁵⁰ Once sympathy was inherited from the previously mentioned parental and filial affections, man could progress and become social. To be able to interact in a socially appropriate manner, we also needed the intellectual ability to reason, imitate behaviors and learn from past experiences in social settings. During conflict, members of the victorious group displayed characteristics of sympathy, courage and loyalty. These characteristics created a group in which altruism was practiced instead of selfishness.⁵¹ Darwin believed the number of men who displayed these characteristics was increased through natural selection, and the reciprocal nature of characteristics, like sympathy, increased due to man's reasoning and foresight as he realized that if they helped another man he could expect help in return. With time, man became more self aware of the consequences of his actions and how his actions were perceived by others. Man was able to use reason in making decisions that affected others and learn to alter his behavior in

⁴⁹ Darwin, *Descent of Man*, 137-143.

⁵⁰ Darwin, *Descent of Man*, 97-98.

⁵¹ Darwin, *Descent of Man*, 129-130.

response to social cues and public opinion, and thus, a sense of morals and consciousness developed.⁵²

Concerning language, Darwin noted that man alone has the intellectual capabilities to integrate a broad range of words and ideas into patterns of speech.⁵³ Like the lower animals, humans use distinctive utterances and gestures to convey general emotions such as fear or hunger. And like lower animals, we are very adept at interpreting these utterances and gestures. Darwin cited Daines Barrington, a naturalist, who observed that in birds the young learned to sing from their parents and foster parents. Barrington compared this to language in man and how as humans we have a natural tendency towards speaking, as seen by the babble of babies.⁵⁴ This natural tendency implies that language was not purposefully invented but was developed slowly and unconsciously over time. Language evolved from modification and imitation of natural sounds accompanied by man's instinctive cries and gestures. The first step in the formation of language by imitation was likely to have originated from an ape imitating the sound of a predator to convey to his kin what sort of danger was approaching. As our ancestors began using their vocal cords more and more they would have developed stronger vocal organs which, when paired with our higher than average mental powers, would have allowed us to communicate longer trains of thought through language. Man first used language in the form of song in courtship rituals, which gave them a dimension to express their emotions and impress their potential mate.⁵⁵ According to Darwin, higher apes have vocal cords but they are not intellectually

⁵² Darwin, *Descent of Man*, 130-132.

⁵³ Darwin, *Descent of Man*, 85-86.

⁵⁴ Darwin, *Descent of Man*, 86.

⁵⁵ Darwin, *Descent of Man*, 87-88.

developed enough to use them as adeptly as man has.⁵⁶ With the development of language, members of society could express their opinions and decide what actions were acceptable and beneficial to the community. Through sympathy man was able to align his actions with public opinion and act in a socially acceptable manner.⁵⁷

As we can see the closest Darwin comes to mentioning females in this context is in his statement that sympathy is inherited from parental and filial affections. Building upon her belief that females are the superior sex, Gamble responded to Darwin's ideas about sociability and language from the view that females were the main drivers in their development. Gamble agreed that sympathy was a necessary prerequisite for our development of moral sense and conscious. Our capability to feel sympathy for another is the instinct that gave early tribes the coherence they needed to be successful.⁵⁸ However, Gamble built upon Darwin's assertion that parental and filial affections were the basis for our social instincts. Through the use of examples of different species, Gamble demonstrated how females are generally the parent that cares for offspring.⁵⁹ With few exceptions, paternal relations are absent, and only recently in our evolutionary history have paternal roles in human offspring care emerged.⁶⁰ Men are generally invested in their child's success for reasons of "custom, association, pride, desire for self perpetuation or duplication."⁶¹ To prove the validity of this statement Gamble draws our attention to the fact that children born out of wedlock generally have no relationship with their father. This can be because the father would receive none of the previously mentioned benefits, due to the fact that the

⁵⁶ Darwin, *Descent of Man*, 89.

⁵⁷ Darwin, *Descent of Man*, 99.

⁵⁸ Gamble, *Evolution of Women*, 57.

⁵⁹ Gamble, *Evolution of Women*, 57-58.

⁶⁰ Gamble, *Evolution of Women*, 58-60.

⁶¹ Gamble, *Evolution of Women*, 60-61.

child would not bear his name. Gamble made it clear that, by using Darwin's own logic, we can assume that because females are the ones who are involved in caring for the young they are the parental source from which our sympathetic tendencies are inherited. And because sympathy is the basis for sociability, we can suppose that maternal instincts are at the origin of society.⁶² Man's moral sense and dedication to the welfare of society are simply extensions of the maternal affections.⁶³ Following this line of reasoning, Gamble asserted that the mother-infant bond is the main way in which society is bound together.⁶⁴

In her own exploration of language, Morgan noted that our closest relative, the chimpanzee, cannot speak even though its vocal cords and mouth shape are very similar to our own. Thus, while she believed language to be a uniquely human acquisition, she believed that it had two distinct components. Morgan started by differentiating between the origin of language and the development of "descriptive language."⁶⁵ Morgan cited tarzanist Desmond Morris who stated descriptive language was developed by men who needed a more complex set of vocalizations to coordinate their hunt. A more complex set of gestures was not an option because the men's hands were occupied with weapons, so vocalizations were utilized instead.⁶⁶ In response to this assertion, Morgan cited other evolutionary biologists who point out that many animals are able to hunt in packs without the use of complex vocalizations. One of the examples is of wolves and how they are extremely efficient hunters despite their minimal twenty-one communication signals. Modern day African tribes rely on the element of surprise during the hunt; excessive

⁶² Gamble, *Evolution of Women*, 60-61.

⁶³ Gamble, *Evolution of Women*, 62.

⁶⁴ Gamble, *Evolution of Women*, 60.

⁶⁵ Morgan, *Descent of Woman*, 113.

⁶⁶ Morgan, *Descent of Woman*, 114.

vocalizations would alert the prey to their presence.⁶⁷ Morgan believed a contributing factor in our development of descriptive language was the loss of our sense of smell. Some primates and many animals have highly developed olfactory lobes in their brains that enable them to smell odors that contain information about another animal, sometimes long after the animal has left the area. From smell alone a dog can assess another dog's gender, age, and disposition.⁶⁸ Because we stayed in the treetops for an extended period in our own evolution, we lost that keen sense of smell that other animals possess. Ground dwelling animals have the richest sense of smell because the ground, especially when damp, carries and retains many smells. In accordance with her Aquatic Ape theory, Morgan believed this gave her more evidence for the idea that we retreated to the water, and not the savannah, during the Pliocene period. If we had retreated to the savannah and become ground dwellers our sense of smell should have increased, not decreased.⁶⁹ It is upon the assumption that we spent the Pliocene era in the water that Morgan based her ideas for the development of language. Since water would eliminate any scents and one's body was submerged from the neck down, we had to resort to communications that weren't based on smell or gestures.⁷⁰ Because our heads were the only part of our body that was continually above water we resorted to more complex vocalizations. With time, certain words were associated with certain objects and we became able to speak about an object or an idea even when it was not present.⁷¹

⁶⁷ Morgan, *Descent of Woman*, 115.

⁶⁸ Morgan, *Descent of Woman*, 117-118.

⁶⁹ Morgan, *Descent of Woman*, 118-119.

⁷⁰ Morgan, *Descent of Woman*, 124-125.

⁷¹ Morgan, *Descent of Woman*, 129-130.

Like Gamble, Adrienne Zihlman believed the origins of sociability stem from mother and infant interactions. This belief echoes Gamble's view that females are the parent that Darwin's parental and filial affections were referring to. Through her own research and the research of others, Zihlman was able to assert that primate infants receive most of their parental interactions from their mothers and that men have little involvement in child care.⁷² From the moment an infant is born they spend a majority of their time with their mother, either clinging to her back or being held in her arms. This constant close physical contact allows infants to learn face-to-face communications, such as interpreting facial expressions and body language from their mothers.⁷³ However, this is just the beginning of an infant's socialization process. The physical attachment of infant to mother gives the infant the opportunity to encounter other primates and learn to interact in more complex social networks.⁷⁴ Female primates are very social creatures and often travel in groups with other females.⁷⁵ A child's social status is partly defined by its mother's social status and through their mothers they acquire a social network. The child's social network generally begins with its mother and siblings, but over time it expands to encompass the mother's female companions and their children. With other children the child may participate in social play, which helps develop social bonds that can be maintained throughout life.⁷⁶ Not only does traveling in a social group offer protection for mother and infant, but it allows the infant to learn how to socialize properly with others, under

⁷² Adrienne L. Zihlman, "Women's Bodies, Women's Lives: An Evolutionary Perspective," in *The Evolving Female: A Life-History Perspective*, ed. by Mary Ellen Morbeck et al. (New Jersey: Princeton University Press, 1997), 179.

⁷³ Zihlman, "Women's Bodies, Women's Lives," 189.

⁷⁴ Zihlman, "Women's Bodies, Women's Lives," 188-189.

⁷⁵ Zihlman, "Women's Bodies, Women's Lives," 180.

⁷⁶ Zihlman, "Women's Bodies, Women's Lives," 187.

direction of their mother.⁷⁷ Without this close physical contact the infant would not be able to be part of its mother's social group.⁷⁸ Another evolutionary benefit of traveling in groups is it allows the mother an opportunity to rest while her infant is in the care of a babysitter. Babysitters are often older females or older siblings. Older females help instill social stability through the generations and can also aid in the socialization of a child.⁷⁹

Dean Falk observed that chimpanzee infants are constantly in physical contact with their mothers and as they age they learn to communicate through facial expressions and body language.⁸⁰ While observing chimpanzees mothers generally do not directly respond with a vocalization to their young, rather they respond by giving them attention. In general, chimpanzees are not vocal unless emotionally incited.⁸¹ As we transitioned to bipedalism our anatomy underwent changes, one of which being the narrowing of female's pelvis and birthing canal. Due to this only mothers of small and underdeveloped infants would survive childbirth. This led to a shift in infants being born both smaller and less developed than they previously were before our shift to bipedalism. The underdeveloped infants could not cling to their mothers as their predecessors did, requiring their mothers to carry them. When mothers became tired of holding their infant or needed to perform a task they sat the infant down. This loss of physical contact prompted infants to vocalize.⁸² Upon being removed from their mothers arms infants would cry in protest, prompting the mother to

⁷⁷ Zihlman, "Women's Bodies, Women's Lives," 190.

⁷⁸ Zihlman, "Women's Bodies, Women's Lives," 188.

⁷⁹ Zihlman, "Women's Bodies, Women's Lives," 190.

⁸⁰ Dean Falk, *Finding Our Tongues: Mothers, Infants and the Origin of Language*, (New York: Basic Books, 2009), 14-15.

⁸¹ Falk, *Finding Our Tongues*, 16-17.

⁸² Falk, *Finding our Tongues*, 55.

maintain vocal contact instead of physical contact.⁸³ Falk calls this her “putting the baby down” hypothesis, and intends for it to explain the behaviors that lead to development of protolanguage.⁸⁴ Zihlman reached similar conclusions to Falk concerning the origins of language. She postulated that consistent with other mammalian species, language developed as a survival mechanism for infants.⁸⁵ Because infants were born less developed than their predecessors they were more dependent on their mothers for food, protection and emotional support. As the infant’s social network expanded, vocalizations were directed at other group members on whom the infant depended for survival.⁸⁶

The ability of infants to recognize their mothers voice at birth is an important survival mechanism. Not only does this promote mother infant bonding, but it also encourages infants to respond to their mother’s voices.⁸⁷ When directing vocalizations at their babies, mothers use what Falk calls “motherese.”⁸⁸ Motherese is a form of speech that is higher pitched, uses a simple vocabulary and is spoken melodically. Phrases like “bye-bye” or “doggie” are examples of motherese. Despite the name, mothers are not the only ones who can speak in motherese, it simply describes the type of speech any adult uses when speaking to a young child. However, since infants spend most of their time in the care of their mothers, it is generally mothers that use motherese. The complexity of motherese depends on the child’s comprehension level. For example, a mother would speak to a younger child using very simple vocabulary, and asking questions about the child’s

⁸³ Falk, *Finding Our Tongues*, 58.

⁸⁴ Falk, *Finding Our Tongues*, 99.

⁸⁵ Zihlman, “Women’s Bodies, Women’s Lives,” 196.

⁸⁶ Zihlman, “Women’s Bodies, Women’s Lives,” 196.

⁸⁷ Falk, *Finding Our Tongues*, 75.

⁸⁸ Falk, *Finding Our Tongues*, 100-101.

immediate environment.⁸⁹ Through motherese infants begin to learn how to perceive the different sounds of speech and eventually how words are strung together in a sentence. And by listening to their mothers stream of speech, infants can begin imitating sounds and building a vocabulary.⁹⁰ Motherese includes facial expressions, touching and body language, all of which prepare the child for the complexities of social communication. Not only does it prompt language skills but the melodic quality, which infants have a predisposition to respond to, contributes to their emotional regulation and social maturation.⁹¹

As the dependent stage for infants increased, sleeping in trees became an unfeasible task for mothers. Imagine how difficult it would be for a mother to climb a tree while holding an infant in one arm and then finding a suitable sleeping position that would ensure her infant would not fall out in the middle of the night. Seeing the difficulty in this situation, mothers started sleeping on the ground. As mothers transitioned to ground sleeping the males would have had to follow suit, because ground sleeping would leave the mothers and their offspring vulnerable to predators. With the males joining the females in ground sleeping it offered the group safety in numbers.⁹² Falk noted that our transition to ground sleeping coincided with a change in climate that caused trees to die away.⁹³ So while our ancestors were motivated to sleep on the ground because of changes in anatomy and infant safety, the disappearing trees turned ground sleeping into a permanent practice. As our environment underwent a transformation food became more widely distributed,

⁸⁹ Falk, *Finding Our Tongues*, 72-73.

⁹⁰ Falk, *Finding Our Tongues*, 102.

⁹¹ Falk, *Finding Our Tongues*, 72-73.

⁹² Falk, *Finding Our Tongues*, 65.

⁹³ Falk, *Finding Our Tongues*, 59-60.

forcing our ancestors to travel greater distances for food. This encouraged smaller foraging groups to travel in different directions for hunting or gathering. But because they still needed a large group to sleep with for protection, they would return to a centralized area at night.⁹⁴ This centralized sleeping location was also utilized during the daytime as well. Because carrying a child would have slowed women down when gathering food they began leaving infants in the care of relatives at their sleeping location. These babysitters were typically older siblings or grandparents.⁹⁵ After a long day of gathering they would return to the central sleeping location and bring food back for those who stayed and watched the infants.⁹⁶ This centralized location, which groups established as a spot to return to every night, can be seen as the precursor to human society.

The versions of our evolutionary narrative as told by Gamble, Morgan, Zihlman and Falk all have similar motives, in that they are intended to expose how the masculinist version of evolution has marginalized females. Even though Morgan's Aquatic Ape theory has been acknowledged as inaccurate by some of the scientific elite, her intent was still the same. She, like our other scholars, worked to establish a place for females in the evolutionary narrative as active drivers of our evolution. These accounts assert that the origins of our sociability, language and society can be attributed to females and the mother-infant bond. These conclusions are not meant to negate the role of males in the evolution of sociability, language and society, but to highlight how females can, and did, play an active role in human evolution in arenas other than childcare. Whether or not the scientific claims made by Gamble, Morgan, Zihlman and Falk are true; their critiques of the masculinist

⁹⁴ Falk, *Finding Our Tongues*, 65.

⁹⁵ Falk, *Finding Our Tongues*, 65-66.

⁹⁶ Falk, *Finding Our Tongues*, 66-69.

evolutionary story are valid and have the ability to evoke more discussion concerning the role of females in human evolution.

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