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"Till Death Us Do Part: The Evolution of Monogamy

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"Till Death Us Do Part: The Evolution of Monogamy

Cover Page Footnote

A special thanks to Dr. Brad Stone, Dr. Jeffrey Collins, Dr. Justin Wise, Dr. Michael Rulison and the Philip Weltner Library for all of their help throughout the past couple of years. This would never have been able to have been accomplished without you.

Throughout all cultures across the globe, marriage is a primary event that is seen as a passage into adulthood. Ceremonies themselves may vary but the overall concept of marriage remains the same. Yet despite social norms encouraging individuals to marry, many young adults in western cultures are postponing their first marriage. Young adults in the United States are seen getting married at older ages; between the ages of 25 for women and 28 for men (Copen, Daniels, Vespa, and Mosher 1). It is in this process of deferring marriage that young adults are cohabitating, which is the process of two individuals who are not married but are in a relationship living with one another (Copen, Daniels, Vespa, and Mosher 1). There is an increase of cohabitation becoming the first co-residential union formed among young adults; the timing of this cohabitation taking place roughly during the same point in life that individuals were once getting married (Copen, Daniels, Vespa and Mosher 2). From those couples that are cohabitating, they will either carry on and get married or eventually break up. From the cohabiting couples that do end up getting married, there is a 50% chance that they will end up getting divorce. This statistic increases for these individuals depending on whether or not their parents are divorced ("Divorce in America"). Given the statistics, with cohabitation on the rise, divorce is so much more prevalent in modern day western society than it has been in the past. Out of the top five reasons for getting a divorce, most couples claim that no longer being attracted to one another lead to their separation ("Divorce in America"). With more than 50% of marriages ending in a divorce, is it possible to maintain monogamous relationships?

The rise of divorce has led to numerous debates among social scientists debating the foundation of monogamous marriages, wondering if there is a correlation between monogamy, divorce and cohabitation. With that, the nature of human sexuality has been called into question; are humans naturally monogamous? Considering that naturally is a rather subjective term, in that individuals can always mold the definition to better fit their meaning, it is best understand the evolution of monogamy within human beings. In doing so, it will be able to be determined if humans are capable of having monogamous relationships. In studying the evolution of monogamy, it will be analyzed as a mating pattern and as a marriage pattern. Evolution, as well as culture, allowed for humans to maintain monogamous relationships. The mannerisms of humans are not solely dependent of evolution but on socialization as well. An analysis of the evolution of monogamy will provide the insight needed to determine the future of monogamous marriages.

Because the terminology used in this research can be vague, there should be a defining of terms. Depending on the context of the debate, the definition of monogamy can vary. When speaking of monogamous animals, the definition most

generally used is one that describes two animals of the opposite sex coming together for procreation; though these pair bonds do tend to end once the offspring has matured. More commonly used to describe monogamous relationships amongst humans is a form of relationship in which an individual has only one partner during their lifetime. With this, when monogamy is mentioned through the paper, it will be in reference to human beings evolving the ability of being with one partner throughout their lifetime. In the discussion of marriage and mating patterns amongst humans, terms such as polygyny and polyandry are used. Polygamy is the act of having more than one spouse, regardless of sex. With polygamy come two branches: polygyny and polyandry. Polygyny is used to describe the relationship of one male with multiple females or wives and polygyny is the relationship of one female with multiple males or husbands. With that being said, it is best to first analyze the evolution of monogamy before understanding the socialization of it.

Mating Pattern

Evolution is known to be change over time, in which the transferring of genes throughout generations occurs. Occasionally, there is a transferring of a “mutated gene” which may or may not have provided an environmental advantage. The usage of the term “mutated” does not necessarily mean a grotesque alteration; rather, the terms means the change in structure of a gene, which may or may not be a physical alternation (Haviland, McBride, Prins, and Walrath 37). Examples of such mutations were first noted by Charles Darwin in 1836 during his travels throughout the Galapagos Islands with his observation of finches (Haviland, McBride, Prins, and Walrath 37). Darwin had noted that several finches’ beak size drastically varied; he attributed the difference to the environment that they inhabited (Haviland, McBride, Prins, and Walrath 36). The finches’ beak size varied depending on the different seeds that the birds ate and how they obtained the seeds. It was during this trip that Darwin conceived the concept of natural selection. First noted in 1859, in Darwin’s book *On the Origins of Species*, natural selection is described as “...the principle by which each slight variation, if useful, is preserved...” (Darwin 61).

In terms of sexual activity, our ancestors were rather promiscuous; both male and females copulated with one another without any concerns of pregnancy or paternity. Much like females within the animal kingdom, our ancestral females went into a cycle known as the estrous cycle or also known as being “in heat” (Fisher, *The Sex Contract* 24). When a female goes into heat, it is generally a time period in which she will be sexually active and will be able to conceive (Fisher,

The Sex Contract 24). It is only during the estrous cycle that a female will show any interest in sexual activity; once her heat is over, she will no longer be sexually interested in the opposite sex (Fisher, *The Sex Contract* 24).

The estrous cycle can be seen throughout the entire animal kingdom, with the exception of *Homo sapiens* (Fisher, *The Sex Contract* 24). Human beings have the ability to copulate among themselves at all times, during all hours of the month, during all times of the year. Human females also have the ability to copulate during pregnancy, immediately after pregnancy and during their menstruation, a phenomenon that is not seen in any other mammal (Fisher, *The Sex Contract* 24). In the animal kingdom, all other females have an estrous cycle in which they can only copulate during their set cycle (Fisher, *The Sex Contract* 24). Human females vastly differ from all other female mammals in that they have hidden ovulation and extended receptivity (Fisher, *The Sex Contract* 31).

As seen in most females during their time of heat, their genitalia enlarges, secreting an odor to entice males to copulate with them (Fisher, *The Sex Contract* 30). As mentioned previously, it is only during their estrous cycle that females are known to be sexually active. Once the cycle is complete, the pinkness of her genitalia disappears along with the odor (Fisher, *The Sex Contract* 27). If a female conceives during this cycle, she will no longer be in heat until the infant is born and she will not resume her cycle until the infant is weaned (Fisher, *The Sex Contract* 27). During this process of pregnancy, birth, and weaning the infant, a female will not be sexually active (Fisher, *The Sex Contract* 27). The estrous cycle can be seen throughout most mammals but is generally researched in primates, as they are the closest living relative to human beings (Haviland, McBride, Prins, and Walrath 45). With this knowledge that is acquired through the observation of primates, anthropologist can infer the early stages of our ancestor's evolution. Historically, there is a point in time when our ancestry line did not differ from primates; they slept, ate and copulated with one another. Yet an instance occurred that set the two apart from one another: bipedalism, which is the ability to walk upright. Mutated genes among females, along with bipedalism, laid down the possible foundation for the evolution of monogamy within human beings.

Mutated Genes

During ovulation, female primate's genitalia enlarge and produce a secretion which alerts males of their sexual receptivity (Fisher, *The Sex Contract* 24). Most female's estrous cycles sync with one another allowing for a period of time known as mating season, which is the only time for sexual activity amongst the species (Fisher, *The Sex Contract* 24). During this time frame, an orgy occurs.

Males become aggressive and temperamental, attempting to copulate with as many females as possible (Fisher, *The Sex Contract* 24). By doing so, it ensures the survival of their genes into the next generation; the more females they copulate with, the more likely they are to pass on their genes. In terms of promiscuity, the same is said for females; though they are not aggressive and temperamental, they do attempt to copulate with as many males as possible in pursuit of conceiving (Fisher, *The Sex Contract* 24). Mating seasons are typically ten days, the length of an estrous cycle (Fisher, *The Sex Contract* 24). Towards the end of the season, a female that conceives will no longer continue her cycle until her infant has weaned (Fisher, *The Sex Contract* 24).

Most primates travel in what is known as a “harem” in which there are several females and one alpha male, as seen with gorillas (Fisher, *The Sex Contract* 28). During mating season, the alpha male copulates with his females while warding off all other males (Fisher, *The Sex Contract* 28). Yet, in 1959, a unique trait was spotted in a mating season with gorillas (Fisher, *The Sex Contract* 28). George Schaller traveled throughout Uganda and Zaire following a harem and taking note of their lifestyle (Fisher, *The Sex Contract* 28). He noted that for the entirety of the year, the females had followed in their alpha’s shadow; eating, sleeping and grooming within his company (Fisher, *The Sex Contract* 28). Located around the outskirts of the harem were younger males, lacking a harem of their own. Though a distinct mating season was not noted, copulation amongst the gorillas had still taken place; in a typical fashion, the alpha mated with his females. Yet, Schaller also noted that there were select females that were also mating with the younger males (Fisher, *The Sex Contract* 29).

The speculation behind how these females were able to have sexual activity with a male other than their alpha was later attributed to the fact that the alpha had no knowledge of the female’s estrous cycle (Fisher, *The Sex Contract* 28). These females did not display any outward indication of being in heat; instead they had to *show* males that they were in heat (Fisher, *The Sex Contract* 28). Gorilla females were seen tracking down males and coercing them into copulating, enticing them through cooing and the rubbing of their gentiles until they engaged in sexual activity (Fisher, *The Sex Contract* 28). The explanation to this unusual mating is that female gorillas do not display the obvious swollen glands that most other primates produce, thus causing the female to “notify” the male that she is ready for sexual activity (Fisher, *The Sex Contract* 29). Though, as with all other female primates that go through a cycle, the competition of her cycle ends her sexual flirtation.

Unlike primates, a human female’s sex drive is not confined to her estrous cycle; her genitalia do not enlarge nor does she produce an odor announcing her

ovulation. There is no specific period of time indicating her sexual activity, allowing her to have sex during any time of the year. With this, human females can have sex when they are ovulating, during their menstruation, during pregnancy and after birth when they are breastfeeding; human females experience no period of heat (Fisher, *The Sex Contract* 30). Though human females do experience menstrual cycles, it is in no way similar to the estrous cycle that mammals experience. While a menstrual cycle prepares a human female for pregnancy, indicating whether or not she is pregnant, she is not constrained to sexual activity during that period of time. This sexual freedom amongst female humans is known as "extended receptivity"; the ability for females to be sexually active throughout their menstrual cycles and at any other time throughout the year (Jethá and Ryan 87). Evolutionarily speaking, with a female that was always available for sex there was no need for her male counterpart to seek other females for sexual pleasure, as he now had the ability to go to his mate for that pleasure (Jethá and Ryan 88). Instead of searching and waiting for females to enter their estrous cycles, males now had the ability to stay with one mate that had the ability to copulate frequently in that it was more efficient. In return, these females with the sexual receptivity trait were most likely selected more often than those without the trait to be sexual partners, thus carrying on the gene to future generations.

Menstrual cycles are also not the only time in which a human female can get pregnant. At a certain point during our evolution, it is likely that the menstrual cycle was no different than the estrous cycle; yet the difference in sexual reproduction lead to the division. As noted with Schaller and the gorillas, there are some primates that do not have the physical signs of an estrous cycle. Though the female gorillas do have to indicate when they are ready to copulate, this indication only occurs during their cycle. Gorillas, as well as most other mammals that experience an estrous cycle, also have innate knowledge as to when they are ovulating, a knowledge that human females do not have. It is difficult for most human females to calculate the exact moment of their ovulation cycle, attempting to do so with charts and calendar, even cell phone applications, to ensure conception. All other female mammals do not have this issue. This is because female human beings have hidden ovulation, or silent ovulation (Fisher, *The Sex Contract* 31). Human females do not display the physical outward signs of ovulation.

The exact time line of the evolution of hidden ovulation is unknown as anthropologists do not know the exact reason why our ancestors slowly developed the ability to hide their ovulation. Inferences have been made though, indicating possibilities that might have benefited ancestral females. As noted previously, evolution is the transferring of mutated genes due to an environmental advantage.

Something about the ability to hide ovulation, as well as extended receptivity, gave our ancestors an advantage over the females that could not. The original female with the mutated gene of sexual receptivity, as mentioned previously, were able to keep their sexual partners for longer periods of time simply because of the constant sex. Rather than switching of mating partners due to the ending of estrous cycles, males were able to stick to one partner and obtain nearly constant sexual pleasure. The ability to copulate frequently also allowed females to have more offspring than those with estrous cycles, in that they had the ability to copulate immediately after giving birth. These females were able to gain protection and food from males by keeping their attention, thus assisting in their survival.

As for hidden ovulation, it kept males from knowing the exact time period that was prime for conception. Thus the male would have been motivated to stay with the female to maximize his own probability of impregnating her as well as ensuring that no other males mated with her during this time (Jethá and Ryan 88). This ovulation guessing game also allowed for females to be selective in who to mate with, choosing males that were more likely to offer protecting during the weaning of an infant. At some, these two traits merged into what is now seen in modern day human females solely because these traits led to the survival of these females and their offspring, natural selection.

Bipedalism

Bipedalism is a topic that is unusual in the sense that there is no way to introduce it, as it just occurred throughout human evolution. Anthropologists have been attempting to figure out why our ancestors first stood upright, offering up theory after theory in explanation. The interesting thing about bipedalism is that a handful of animals have the ability to stand on their hind legs: bears, dogs, cats and primates all have the capability to stand up, yet they can only do so for short periods of time. It is simply because it is not a natural position for them to move in, as the positioning of their hind legs and their pelvis are not constructed to be bipedal. Even primates, in particular chimpanzees, who can be seen walking upright, still fall back to their natural position of walking on their knuckles. Over millions of years, human beings have evolved to walk upright.

At some point throughout our evolution, the environment our hominid ancestors lived in changed (Fisher, *The Sex Contract* 45). Between 18 million and 17 million years ago, the African/Arabian plate tectonic shifted and collided with Eurasia (Fisher, *The Sex Contract* 45). What is known as the Mediterranean Sea formed, no longer leaving Africa as an island continent (Fisher, *The Sex Contract* 45). The shifting of the continent did not change much for our ancestors, as they

were unaware of the movement occurring to the north of them. Our ancestors rested, ate, copulated and carried on with their lives in a location that many anthropologists refer to as the Great Rift Valley, a location that started in current day Ethiopia and extended down to Mozambique (Fisher, *The Sex Contract* 41).

The environment of the Rift was not much different than the environment that most primates reside in today; it was a luscious jungle, filled with everything needed to sustain our ancestor's lifestyle. Even though our ancestors were unaware of the plate tectonic shifting of Africa and Eurasia, the motion did create the separation of our ancestors with most primate ancestors. Though, even with the separation, life did not change for our ancestors until the Rift Valley turned into what is described as a "rain shadow", due to winds from the Indian Ocean carrying over moisture (Fisher, *The Sex Contract* 46). Eventually, the highlands surrounding the Rift Valley extracted the moisture from the air later causing the Rift to dry up into a savannah-like environment (Fisher, *The Sex Contract* 46). It is at this moment that life was no longer as relaxing for our ancestors.

With the earth cooling, volcanoes erupting, and the drying of the Great Rift Valley, the luscious jungles of our ancestors slowly started to shrink away (Fisher, *The Sex Contract* 46). Much like primates today, our ancestors traveled by swinging on branches and spent most of their time located up in the foliage than on the ground. The few times our ancestors were on the ground, they were copulating, scavenging for food or socializing with one another. Yet when the forest dispersed because of the drying of the Rift, our ancestors struggled to survive (Fisher, *The Sex Contract* 77). They no longer had the protection of the lush foliage, as they were now vulnerable to predators, and the simple accessibility to food. Without the ability to swing from branch to branch, our ancestors found themselves spending more of their time traveling on the ground, an act that their bodies were not handled to do.

It is at this point in the time line that anthropologists struggle to understand the cause as to why our ancestors became bipedal. There are several hypotheses, one being the Savannah hypothesis (Haviland, McBride, Prins, and Walrath 163). With the dispersing of the trees, anthropologist believed that the new environment imposed bipedalism on our ancestors. Those who were able to stand for long periods of time moved effectively across the savannah and were able to protect themselves from predators (Haviland, McBride, Prins, and Walrath 163). Other anthropologists believe bipedalism evolved less out of the need to travel long distances and more out of the need to reach upright as a feeding posture (Haviland, McBride, Prins, and Walrath 163). For bipedalism, other theories range from the ability to see over the tall savannah grass, the freeing of the arms for the use of tools against predators, and an adaptation to cool the body in the

heat of the savannah (“ELucy Lessons”). Whether or not one of these may be the exact reason to why our ancestors stood upright, and continued to do so, it is possible that the combination of all of the factors described by these theories led to the evolution of bipedalism in our ancestors.

What is evident though is that bipedalism placed pressure on our ancestor’s limbs and affected the evolution of our bodies. Around 3.2 million years ago, as inferred from the fossil remains of *Australopithecus Afarensis*, bipedalism lifted our cranium to a higher position, repositioning our skull and allowing our ancestors to a greater viewing range than they once had (“ELucy Lessons”). Throughout millions of years, our lumbar vertebrae, or spine, straighten out allowing our ancestors to run and walk greater distances (“ELucy Lessons”). Bipedalism also re-adjusted our femur, ankles and knees into a new position, changing the shape of our feet and the length of our toes (“ELucy Lessons”). As the previous theories mentioned, bipedalism allowed for the freeing of the hands which led to dexterous and manipulative hands (“ELucy Lessons”). Most importantly, our pelvis drastically shifted (“ELucy Lessons”).

With the process of shifting our pelvis to a more upright position, the birth canal for females diminished (Fisher, *The Sex Contract* 82). The smaller birth canal led to a more painful, difficult birth, one for which our ancestral females were not equipped. Previously due to the smaller birth canal, females would give birth to rather large brained infants. Having had been born with a larger brain allowed for our ancestral infants to reach maturity more quickly, thus not being as dependent on its mother. Yet with the shrinking of the birth canal due to the repositioning of the pelvis, females could no longer give birth to such large brained infants. The females who had given birth to premature infants survived the process whereas others who had waited full term to given birth did not. The premature infants had smaller brains, with softer skulls, which easily passed through the birth canal that allowed females to survive labor. With natural selection, females who had given birth to premature infants survived to pass on their genes to the next generation.

Yet those who had survived labor lost their mobility as smaller brained infants needed to be tended to far longer than those before them (Fisher, *The Sex Contract* 83). With bipedalism, females were no longer as independent as they once were as they had to be more attentive to their infants, causing them to depend on others for their survival. It should be noted that during the development process of bipedalism, as well as mutated traits among females, one phenomenon did not cause the other to occur. Instead both mutated traits and bipedalism coevolved with one another, forming the human beings that we are today.

Male Parental Investment

The sole development of bipedalism, hidden ovulation, or sexual receptivity led in a casual way to monogamy among our ancestors; rather, it was the combination of all of these traits coevolving that allowed the ability for humans to maintain monogamous relationships. Monogamous mating is not unheard of in the animal kingdom, as certain creatures remain monogamous towards one another during a mating season. Though once that season is complete, the couple separates from one another until the next cycle, in which they typically copulate with another mate. The concept of one mate for life is an unusual occurrence, generally only seen in human beings. Hidden ovulation or the ability to walk on hind legs for long periods of time did not create monogamy within the *Homo sapien* lineage. It was the combination of both of these mutations evolving roughly around the same time, along with the environmental shift, created an ideal situation for monogamy's evolution. With females being more dependent on others for their survival once they had given birth, an arrangement was assembled between the sexes.

As inferred from its name, the sex contract is an agreement which was created between the sexes; it devised a trade with males offering protection to females in assurance that the infant being cared for was his own (Jethá and Ryan 134). 3.2 million years ago, with the evolution of bipedalism, females no longer had the independence they once did due to the repositioning of the pelvic bone; by giving birth to premature infants, they now needed assistance in the raising of their young. Though bipedalism allowed for the use of arms, infants were no longer able to cling onto their mothers as easily. Instead of using their arms for protection or scavenging, mothers now had to carry their infants making them defenseless against predators. The creation of the sex contract allowed for this trade off between males and females.

With the drying of the Great Rift Valley, our hominid ancestors started to come into contact with one another more frequently through the formation of social groups. The groups consisted of mated pairs that moved along the grassland together and worked with one another to ensure their survival (Fisher, *The Sex Contract* 109). Prior to the separation and the drying of the Rift Valley, our ancestors were much like modern day primates, occasionally meeting up with one another to eat, copulate and socialize with one another. The drying up of the Rift Valley enabled our ancestors to bond together as they were able to survive. Without the protection of the foliage, our ancestors had no way of escaping from predators as they were no longer able to escape by climbing up into the trees. They also had the ability to sleep in the branches of trees if need be.

Yet, with the environmental change, this means of protection vanished. The mosaic environment that our hominid ancestor once resided in vanished. There were hardly any trees left for them to hide away in and the ones that were left did not offer the same protection. With this protection gone, traveling in a group provided greater protection against predators than it did if our ancestors were on their own. Assuming that a group consisted of four to six individuals, it was four to six individuals with sticks and rocks over one individual who might not have even noticed the predator.

These bands of mated pairs only stayed with one another throughout mating seasons, hunting and gathering until their sexual tie broke (Fisher, *The Sex Contract* 94). The females that were able to copulate frequently had the advantage that their sexual tie did not end as quickly as those with estrous cycles (Fisher, *The Sex Contract* 94). This ability, along with others such as the ability to experience orgasms and to copulate face to face, were all mutations that evolved and carried on due to sexual selection. Sexual selection is the reproduction selection of certain traits that are favored in the opposite sex (Fisher, *Anatomy of Love* 176). It is through sexual selection that the estrous cycle within our ancestors died out (Fisher, *Anatomy of Love* 185). Sexual selection generally benefits those who contribute the most to sexual activity; in most cases, the female. Using the newly evolved trait of hidden ovulation, sexual selection allowed for females to be selective in choosing their mates by selecting those who were more likely to contribute to the pair bond. With the males unsure of when a female was ovulating and courting them for longer periods of time, females were able to select those who would assist in the rearing of an offspring. It is in this selection process which females enacted the sex contract; trading sex for protection.

This sex contract is seen throughout the animal kingdom as it is the base of most monogamous relationships, though most of these bonds tend to dissolve after the infant has weaned. For humans, it is a unique trait that these contracts go on for much longer, even carrying on until after the infant has matured. The male parental investment not only benefited females by assuring her survival, but assisted males in the carrying on of their genes. By staying by the female's side after copulation, the father was not only able to assist in protecting against predators but also able to protect his offspring against infanticide. It is only recently that anthropologists have finally uncovered the key to the evolution of monogamous relationships within humans: infanticide (Opie, Atkinson, Dunbar, and Shultz 1). Infanticide is the intentional killing of an infant, mostly done by male competitors. Prior to the vanishing of estrous cycle, females had to wait until an infant had weaned before they went into another cycle. During this period, males who were not the father of the infant would intentionally murder the infant

to cause her to enter her cycle and conceive his offspring ("Evolution of Monogamy in Humans the Result of Infanticide Risk"). The process of infanticide allowed for his genes to prosper over others. With the shrinking of the birth canal leading to smaller brained infants, the offspring were vulnerable, leading to the threat from unrelated males who want to ensure the survival of their own genes ("Evolution of Monogamy in Humans the Result of Infanticide Risk").

In order to ensure genetic success, males would copulate with as many females as possible. This promiscuous lifestyle created a genetic lottery: if a male copulated with six females, there is a possibility that at least two of the six females were pregnant with his offspring. The sex contract did not necessarily decrease promiscuity within males, as they did not stay with one partner for the remainder of their life. The promiscuous lifestyle of males, with or without the sex contract, allowed for the greater possibility of passing on his genes.

Yet there was no use in this genetic lottery if his infants were being murdered by other males. Dr. Kit Opie, of University College of London, revealed that infanticide lead to monogamous relationships. It was far more genetically efficient for males to have one mate and ensure the survival of his offspring with her than to attempt to impregnate as many females as possible. With having one mate, a male might have two or three offspring with her rather than the one he might produce by having a promiscuous lifestyle.

The sex contract and infanticide interact with one another in that the protection offered to females did not only benefit her and her offspring, it benefited the male as well. Not only were the males assured that the infant was their own, but the protection from predators and other males ensured the survival of his genes. Monogamous relationships were a mutual relationship for both sexes. With hidden ovulation working alongside with sexual selection, females chose mates with access to resources with her and their children (Jetha and Ryan 80). With males having to now compete against one another for females, they benefited genetically by providing these resources to females and ensuring the passing on of their genes. By sharing the cost of raising an infant, the period of dependency is not as vital to the survival of the infant. Mothers gain the independence they once had now that the fathers help alleviated the burden of looking after the young. With having the father assist, he had the opportunity to protect the infant from other males, increasing the odds that his infant survived. The sex contract created the situation for male parental involvement which inadvertently caused the watershed moment in human evolution.

Providing meat for an infant allowed for an extra supply of protein and calories, which anthropologist believe caused the enlarging of our brains

("Evolution of Monogamy in Humans the Result of Infanticide Risk"). Demanding twenty times more calories than any other muscle, the supply of meat from fathers allowed for the evolution of our complex brains, the watershed moment in our evolution ("Evolution of Monogamy in Humans the Result of Infanticide Risk"). The *Australopithecus afarensis*, which is the first fossil to indicate bipedalism, had a brain size of 420 cubic centimeters, the *Homo erectus* had the cranium capacity of 750 cubic centimeters and modern day humans have a cranium capacity of over 1,350 cubic centimeters ("Hominid Species"). The enlarging of our brains allowed for mental capabilities that are not even fathomable in other mammals. Besides bipedalism, it is the complexity of our brain that led to the drastic difference between *Homo sapiens* and the rest of the animal kingdom. Though our brain size did increase, the largeness of a brain does not necessarily equate to intelligence. Instead, it is the enlarging of our cortex that allowed for such complex brains. With this, human beings became so intellectually advanced, giving them an advantage over all other mammals. Even though predators were twice the size of our ancestors and bipedalism made humans slower and exposed vital organs, our intelligence was far superior. This watershed moment in human evolution can be attributed to male parental involvement.

Refuting Dr. Opie, Dieter Lukas and Tim Clutton-Broc of Cambridge University claim that infanticide was not the cause of monogamy but a consequence of it. According to their research, monogamy evolved in mammals where feeding competition between females was intense (529). Because of this intersex competition, females were widely dispersed thus allowing a male to stay by a female's side, defend her and copulate with her (Lukas and Clutton-Broc 529). Therefore, guarding individual females was the most efficient breeding strategy for males (Lucas and Clutton-Broc 529). Unlike Dr. Opie's theory that claimed that infanticide lead to males providing more paternal care than in the past, in order to ensure the survival of their offspring, Lukas and Clutton-Broc state the opposite. Paternal care evolved after monogamy was already present in primates and, as already mentioned, was a consequence rather than the cause (Lukas and Clutton-Broc 529).

Though there may be some truth to this theory, it is difficult to assess given the lack of concrete evidence there is in evolutionary theory. Yet, considering what is known, Lukas and Clutton-Broc's theory is highly unlikely. The first error in their theory is the belief that our ancestral females were dispersed; they were not. Humans have, and most likely always will be, extremely social animals. Even going back before the separating of the Great Rift Valley, our ancestors were rather social creatures interacting among one another on the floor of the forest. To claim that females became competitive for food is neglecting to acknowledge

what is already known about human evolution. With the observation of the social structure of bonobo primates, anthropologists have been able to predict the early development of our ancestors.

The reason why it is best to compare our ancestral lineage to bonobo primates resides in our close genetic makeup. Much like with chimpanzees, humans share nearly 98% of their DNA with bonobos ("Bonobo Fact Sheet"). What makes humans more identical to bonobos than to chimpanzees is the sensual, peaceful society of bonobos. Unlike chimpanzees, bonobos are not as aggressive or temperamental as their cousins. Rather than interacting with one another through violence, bonobos choose to interact sexually ("What Is a Bonobo?"). Sex for bonobos promotes bonding, reduces anxiety, and acts as a form of greeting ("What Is a Bonobo?"). Overall, sex among bonobos is identical to sex amongst humans in that it transcended the purpose of reproduction. Interestingly enough, bonobos also engage in oral sex, kiss one another and are, next to humans, one of the only creatures that have face-to-face copulate ("What Is a Bonobo?"). Therefore, when studying human evolution, it is best to use bonobos as a comparison to our early ancestral life. So when discussing early social structures of our ancestors, bonobos provide anthropologists with observations that may be similar to what once occurred.

With what is known bonobo primates are extremely unique among primates in that they are a female-dominated social group ("Bonobo Fact Sheet"). Even with the strong social bonds among females, males are not excluded from the group ("Bonobo Fact Sheet"). Though the social hierarchy of bonobo females does not prove the social hierarchy of our ancestors, it does provide the analysis needed to better understand their social structure. Identical to bonobo females, it is possible that our ancestral females supported one another, ate, slept and even sexually stimulated one another. There is no indication that female bonobos compete against one another, which is what Lukas and Clutton-Broc's theory claim. If our early social groups were similar to the structure of bonobos, then there would not be dispersed females. It is possible that our ancestral females behaved like bonobos given our close genetic relationship. Considering also the similarities in sensuality among other traits, it is feasible to assume that our ancestors were more docile towards one another than aggressive. Thus with humans being the social creatures that we are, along with the group tendencies observed in bonobos, it is highly unlikely that female displacement was the cause of monogamy.

Though bonobos can be used to help further understand the early development of our ancestors due to their close DNA structure, it should be noted that bonobos do not experience infanticide. It is easy to assume that due to the sensual nature of

bonobos, they are highly promiscuous. Yet there is no record of infanticide simply due to the fact that when an infant is born it is difficult to determine who the father is. An explanation for the sensual nature of a bonobo is most likely due to the constant provision of resources from their environment (“Bonbo Fact Sheet). As already determined, this luxury was not afforded to our ancestors. Therefore there was some competition among our early ancestors, as both that Lukas and Clutton-Broc believe.

Monogamy is not a “natural” occurrence in human beings. When humans were first evolving, we did not carry out lifelong pair bonds. Yet several factors occurred throughout our evolution that allowed for the social capability to be monogamous: mutated genes, bipedalism and male parental involvement. But these instances do not act alone in the evolution of monogamy. In 10,000 BCE, during the Neolithic period, culture started to emerge. Culture is not independent of evolution and evolution is not independent of culture; the two co-evolved with one another forming the societies that we see today. This concept is known as the Dual Inheritance theory.

Dual Inheritance Theory

In 1985, Robert Boyd and Peter Richerson published *Culture and the Evolutionary Process*, an article describing the importance of the concurrent evolution of human genes and culture (Stone, “The Current Evidence” 8). Culture is the single most important environmental factor driving recent human evolution, as it is also the most unique trait about humans (Stone, “The Current Evidence” 8). The first sign of culture throughout our evolution was seen in the burial of the Neanderthals dead. When buried, the Neanderthals would place sea shells over the eyes of their dead along with other trinkets that may have been important to that individual. Though other animals do have some sort of funeral, it is not to the same complexity of humans. It is believed that with the enlarging of our ancestral’s brain, culture developed; yet, cultures vary across societies, making it unknown exactly how it developed among humans.

Certain evolutionary thinkers believe that culture was a process that was selected for and then passed on through generations (Stone, “The Current Evidence” 10). Evolutionary psychologists doubt this, arguing that culture evolved mental modules evoked by local circumstances (Stone, “The Current Evidence” 12). These modules allow individuals to share a universal, organized system that allows them to respond to thousands of different situations; responses that are not caused through social learning or transmission (Stone, “The Most Unique” 150). This is not necessarily true in that brain modules do not automatically turn on when an individual is introduced into a new culture. In

order to understand the working of a new culture, an individual is taught societal norms; they are not automatically evoked through brain waves.

Considering that culture is transmitted over generations through memes, Boyd and Richerson claim that complex culture coevolved with “tribal social instincts”, instincts that allow humans to identify with and make common cause with a culturally defined set of related individuals (Stone, “The Current Evidence” 10). They claim that drastic climate variation around 100,000 years ago during the Pleistocene period increased the original band of mating pairs, incorporating kin and those with likeminded ideals (Stone, “The Current Evidence” 10). The changing in the environment suited life in groups, as those in groups were able to survive over those who were alone; thus allowing the evolution of social instincts (Stone, “The Current Evidence” 10). It is in these instincts that group norms originated, laying down the foundation for institutions that later assisted in internalizing these norms (Stone, “The Current Evidence” 10). The differencing of norms across cultures can be attributed to the differencing of tribal instincts, as those with similar norms interact with those with whom they shared traits (Stone, “The Current Evidence” 11). Technically speaking, a norm during this time period could be something as minute as clothing style. Groups with similar clothing styles, such as the covering of genitalia, easily interacted among others with this similar trait due to that commonality. Therefore culture, along with instincts, institutions and moral systems coevolved with one another in a mutually reinforcing process; as culture became more pronounced amongst groups, the other factors were enhanced (Stone, “The Current Evidence” 13). It is in these original groupings and societal norms that marriage patterns were selected, as it is seen throughout every culture across the globe.

Marriage Pattern

The social evolution of monogamy did not occur solely due to female gene mutations, sexual selection and male parental involvement; other factors contributed to the ability for humans to have monogamous relationships. Generally speaking, mating patterns and marriage patterns are two distinct terms. A marriage pattern is a societal norm on the type of marriage a culture allows, ranging from monogamous to polygamous, whereas a mating pattern is the sexual behavior of a species. Even though, as described above, humans evolved the ability to maintain monogamous relationships, cultural implications dictate whether or not societies are monogamous. Therefore even if humans are able to maintain monogamous relationships, because of the societal marriage pattern, they may not carry one out.

When analyzing global marriages, monogamous marriage patterns are not a global norm. According to anthropological data, only 17% of cultures across the globe permit monogamous marriage patterns (Dow and Eff 1). But the selection of a monogamous marriage pattern is not because humans are naturally capable of maintaining monogamous relationships. Rather, a monogamous marriage pattern is socialized into a culture. An example of such is that polygyny is discouraged to those who practice Hinduism and Christianity in India yet legal for Muslims under the terms of the Muslim Personal Law Application Act of 1937 (Bilimoria). The contrasting marriage patterns for India shows that there are cultural implications that determine the marriage pattern of a society. So even if an individual is capable of maintaining a monogamous relationship, their culture may not encourage it. Therefore the evolution of monogamy is not solely about understanding the evolutionary aspect but also comprehending the cultural values that coevolved with it.

The placement of monogamous marriage patterns is seen distributed throughout Eurasia, which also happens to be the location in which the evolution of agriculture occurred. As nomadic social groups settled down and learned to cultivate farm land, the progress of culture increased. As culture developed in these societies, marriage patterns became a vital part of their society.

Agricultural Revolution

The agricultural revolution places its origins in the lands that stretch between Jordan north through Israel, Lebanon, Syria, Turkey and then south through Iraq and Iran in about 10,000 B.C.E (Fisher, *Anatomy of Love* 278). The revolution is the first occurrence in human evolution where humans intervened on their environment (McElvaine 86). It should not be stated that this is the agricultural revolution is the first instance in which humans intervened with nature because that would not be true. Humans have intervened in nature for thousands of years prior to the agricultural revolution through natural and sexual selection. In the selection of traits that our ancestors deemed attractive, our ancestors manipulated nature in the sense that they manipulated how humans mated, socialized and looked. Yet, throughout all of this, the environment always controlled our ancestors. The control of their environment is the foundation for all human culture and provides the raw material out of which all cultures and values must be constructed (McElvaine 86). Once humans intervene and create a culture, the culture becomes an additional aspect in which they find themselves, placing values and creating norms for that group; as stated in the Dual Inheritance theory (McElvaine 87).

Prior to the agricultural revolution, our ancestors were nomadic, following herds of animals to collect resources needed for survival. At some point during our evolution, our ancestors finally settled down, collecting and planting seeds to intensify their supply of food. The exact cause for this settlement is unknown. Whatever the reason may be, there has been a consensus that females invented agriculture in that they were the ones responsible for the gathering of seeds, nuts and berries in the collector-hunter division of labor (McElvaine 89). They would have been the ones that were more likely to notice the result of a fallen seed into soil, thus manipulating their environment through the imitation of this act (McElvaine 89).

With the new ability to imitate and manipulate their environment to better ensure their survival, our ancestors settled down and formed societies. It is with this phenomenon in our timeline that culture was, most likely, created. No longer were our ancestors plagued with sheer survival; they had tools to protect themselves from predators, fire to aid them at night and now a constant supply of nutrition. These social groups became societies through the creation of hierarchies and values that the groups unanimously agreed on.

As hunters, males had the responsibility of providing meat which, as mentioned previously, allowed for the enlarging of our brains. Not only did males have this responsibility but they also defended their social groups from predators, something that females no longer had to do. In is in this role of a hunter and a protector that there was the first cultural specific definition of manhood, a role that was now in opposition of womanhood: the farmer and caregiver (McElvaine 108). Nonetheless, with the agricultural revolution, hunting was no longer as high of a priority as it once was because of farming of the land and of domestic animals (McElvaine 109). Predators were also no longer as large of an issue now that our ancestors were settled down in communities. Agriculture led to the displacing of male roles in a community. With this shift, males started to engage in farming alongside women, leading to the development of the plow (McElvaine 112). According to Helen Fisher, there is no tool in human history that has wreaked as much havoc between males and females than the plow (Fisher, *Anatomy of Love* 278). Around 3,000 B.C.E, the first plow was invented. Known as the "ard", it was a stone blade with a protruding handle identical to a modern day plow (Fisher, *Anatomy of Love* 279). The invention of the plow required much more strength, upper body strength that women did not have (Fisher, *Anatomy of Love* 279). Therefore, the plow allowed males to replace females as farmers.

The plow led to the displacement of females in agriculture, females were now seen as an asset (McElvaine 131). With agriculture, the creation of surplus of food

and the need for labor brought upon the incentive for the holding of land. By having land, an individual was able to grow their own food without the need to depend on others. Agriculture created a chain reaction, increasing population growth; our ancestors no longer need to worry about predators and now had a surplus of food (Fortunato and Archetti 154). The increasing population increased productivity and created a demand of land that created a system of supply and demand (Fortunato and Archetti 154). A larger population meant that there no longer was a central area in which individuals could go to gather food, as there were simply too many mouths to feed. Now the responsibility of procuring food was left to the individual, leading to the increase in demand of land. According to social theorist, it is during the agricultural revolution that the concept of property was first seen.

Similar to what was seen in our nomadic ancestors, individuals who had land wanted to pass it on to future generations to ensure their survival. In order to confirm that there would be future generations, females were needed. Thus females were “claimed” by males to produce future workers for farmers and future heirs for the inheritance of lands (McElvaine 133). Females were viewed as property to males in that their sexuality was controlled. Assuring that a female only copulated with this one male was the only way in which he knew the child born was his own (McElvaine 131). When female roles ceased to be in the production of farming, females became much more economically dependent on males (McElvaine 131). Though this is somewhat identical to the sex contract in that females are exchanging sex for food, the sole difference between the two actions is the concept of “property”. Prior to the agricultural revolution, there was no idea of ownership. Now that there was this concept of property, females were now regarded as “mine”.

The control of a female’s sexuality became a societal norm still seen throughout cultures today. Specifically in the discussion of human sexuality, females are noted to be the less sexual of the two sexes. In the overall discussion of monogamy, it is often disregarded that both males *and* females are naturally promiscuous creatures. What is commonly stated is that males are promiscuous and highly difficult for them to have monogamous relationships. Studies have even been conducted comparing the amount of testosterone a male has to the likelihood of him cheating. In opposition, it is often said that monogamy is the best option for females in that it provides security for their wellbeing. This is not true as both females and males adapted the ability to maintain monogamous mating patterns. Statistics indicate that an average amount of sexual partners that a male has is nearly double that a female (Beckford). There are several errors with this statistic, the first being that males sexuality in most western countries are not as demonized as females. Therefore females are hesitant to indicate how many

sexual partners they had, possibly underestimating the number whereas males are more likely to overestimate.

Farming led to the creation of stable societies which solidified the concept of property, in turn having negative effects on females. This is not to say that all males want to control females; instead what is being stated is that the creation of the plow allowed for the controlling of females sexuality. Males, in fear of cuckoldry, wanted to ensure their genetic success. In doing so, he created ideals pertaining to female sexuality, such as virtue and honor that is gained through a female's virginity. With having this concept, he would be able to know that the children born from his wife were his own and not another males. As dated as these ideals may seem, they are still seen throughout cultures today. It is typically in most western cultures that a bride will wear white on her wedding day to show off her purity. The agricultural revolution also created other norms in a different aspect, through the placement of gender roles. With the invention of the plow came the concept of man as a provider, more so than when he was man the hunter. This concept can be seen, once again, in western cultures through the family paradigm. There is the father who is the "breadwinner" and then the mother who is the "homemaker". It should be noted that with the increase of female education, this family paradigm has slowly been shifting in western cultures.

Social norms for the treatment of women came about through the invention of the plow. Females were no longer seen as equals to their male counterparts, thus creating a new role for them in society. It is in this role that the creation of marriage as a cultural institution came about. In most cultures, a ceremony takes place between the union of two or more people. Though the cultures differentiate between one another, the concept of a marriage remains the same. Due to the wide range of ceremonies that can be defined as a 'marriage', anthropologists struggle with finding a precise characterization of the term that would engulf all cultures. Regardless, though the focus of each marriage varies throughout cultures, it does not take away from the fact that the concept of marriage remains the same. It can be said that each culture has their own unique variation of what marriage is to them. Some may be the same throughout cultures, some may not. There is no "correct" form of marriage. Therefore, the concept can be applicable across cultures. Even though there is a general concept of what marriage may be across the globe, the type of marriage pattern does vary. The marriage patterns range from monogamous to polyandrous to polygynous. Each culture has a distinct reason for why they select a certain marriage pattern.

Monogamy

The agricultural revolution brought with it the concept of property, which was not as prevalent in African societies as it was in Eurasia. The differences in cultural values is unknown but is speculated amongst anthropologists and historians. Polygynous societies are focused more so on the availability of labor than they are on the ownership of land (Fortunato and Archetti 154). In African societies, a man with ten cows is far wealthier than a man with eight, as there is a trading of goods, such as livestock, rather than a trading of land. Marriage is seen as a transaction of goods between a father and husband; the exchange of women for cattle is seen as a central social exchange (Kuper 14). This trade is known to be a bridewealth in which the marital rights of a woman are transferred against the payment of cattle (Kuper 26). The exchange is viewed as a creation of structural relationships, an expansion of kin relations.

In Eurasia, the same value was not placed on goods but on land. Increased productivity and population size lead to a scarcity of land. Individuals with land were wealthier than those with little or hardly any land. In order to ensure the success of his lineage, males wanted to pass on land to future generations, however, land is not as highly valued in polygynous societies. Ownership of land became increasingly critical to economic success for societies located in Eurasia, with this came restrictions on polygynous marriages (Fortunato and Archetti 154). Restrictions allowed for a smooth transferring of inheritance to a designated single heir, something which would have been difficult to do with several wives. If a husband were to have only one wife, he would be able to pass on his wealth to the first born son as seen throughout all of history in most Eurasian societies. But if he were to have several wives, it would be difficult to determine which offspring would inherit the family wealth. Thus it is with the invention of the plow, as well as social norms that promote paternity, that lead to monogamous marriages.

Another variable that can contribute to the increase of monogamous marriages in Eurasia is religion, as there was a rise in certain religions that promoted monogamy, which help solidify monogamy as a marriage pattern for those cultures. Catholicism is one of the most defined religions in modern day Western Europe and the United States, areas which are heavily monogamous. The biblical teaching of Adam and Eve, the world's first couple according to the Bible, happen to be monogamous.

Monogamy is not a natural occurrence in that humans were not originally monogamous but it is a phenomenon that, through natural selection, became an option. Yet the evolution of monogamy does not stop there, as it continues on today in multiple cultures. With the rise of the agricultural revolution, monogamy became a vital aspect of burgeoning societies. Through the progress of culture,

societies either selected to have monogamous marriages or opted out for another marriage pattern; the reasons fluctuating from economics, tradition, population size or gender ratio. Cultures that select other marriage patterns did so because the everyday issues that they faced were far different than what individuals in Eurasia faced. Therefore, monogamy as a mating option is a possibility for all humans whereas monogamy as a marriage pattern may not be.

Polygamy

Polygyny is widely seen across the continent of Africa with cultures that still focus primarily on agriculture. As mentioned during the agricultural revolution, a main concern of males was to have children to help on the farm. Due to this, polygamous marriages in Africa are more common among rural areas and happen between the less educated (Cook 236). Polygamous marriages allow for the population size in Africa to stabilize, which then counteracts the high infant and child mortality rates (Cook 236). Because of the inability to access modern medication, there is a high chance that an infant would die before they mature. Therefore, it is more efficient for a male to have multiple wives and attempt to have two or three children with each of them than to have only one wife with several children that may or may not survive.

This is not unlike the mentality of those who live in Eurasia during the agricultural revolution, where males focused on having multiple children to assist in the cultivating of their land. For modern day African societies that permit polygamous relationships, it is economically beneficial for them to have polygamous marriages. These societies worry about infant mortality rates, something that is not an issue in most western societies. Considering that polygamy is practiced within rural areas, this indicates the cultural choice to do so to ensure a population growth within that society.

The concept of polyandry is the opposite of polygamy in that one woman marries multiple husbands. Out of all marriages pattern, this is the most uncommon with less than 1% of the world's cultures allowing it (Dow and Eff 1). In Tibet, fraternal polyandry, in which numerous brothers jointly take a wife, is the most common form of marriage but it not the only form of marriage (Goldstein 92). Tibetan society allows for a variety of marriage types, including monogamy and polygamy (Goldstein 92). Fraternal polyandry is not the outcome of law but a choice that individuals make; it prevents the division of a family's farm and allows for them to have a higher standard of living (Goldstein 92). Economically speaking, the families in Tibet that choose polyandry are better off than those who choose other marriage patterns (Goldstein 92).

Interestingly enough, gender population may also contribute to the selection of a marriage pattern in a society. As of recently, there is a drastic difference in the number of males to females in countries such as China and India due to female infanticide. It is somewhat identical to the infanticide that was discussed in monogamy as a matting pattern in that it is the intentional killing of female infants yet there are cultural rationals as to why. In China and India, males are much more valued than females (*It's a Girl*). Females are seen as inferior to males in their roles as homemakers whereas males ensure a families social and economic stability (*It's a Girl*). Economic rationale behind female infanticide include income potential that males have over females, as well as cultural values that allow sons to take care of their elderly parents, as well as the Dowry system (*It's a Girl*). In India, there is the tradition of bride's parents to give a dowry to the groom and his family, which typically consists of a large amount of money or valuable goods (*It's a Girl*). Most impoverished cannot afford to give a dowry, therefore it is not practical for them to have female because of their low economic value (van Willigen and Channa 375). Female infanticide has led to a disproportionate gender ration in China and India. Because marriage is a highly valued cultural norm across all cultures, as it signifies a rite of passage, it is unlikely that it will lose its value. Hypothetically speaking, from a heterosexual perspective, if all males in India and China wish to marry females, the most rational marriage pattern for these countries would be polyandry. Every female and every male will have a significant other, which is highly unlikely to occur given the low value females have in China and India.

There are specific reasons why cultures have different marriage patterns. As seen within African tribes, polygyny is chosen because of high infant mortality rates. In order to ensure the families survival, it is far more efficient for a male to have several children with several wives than to have just one wife. Polyandry is often selected for other cultural reasons, as seen in Tibet. It is in Tibet that fraternal polyandry is selected because it prevents the division of family land, allowing for a family to gain more economically through polyandry than they would through monogamy. The fact that African societies have polygynous relationships to ensure population growth and the Tibetan society willing chooses polyandry for economic stability indicates that there is a cultural choice to marriage patterns.

In comprehending the evolution of monogamy in humans, the evolution of marriage should also be considered. It is understood why certain cultures select monogamy as a marriage pattern as the issues those societies face are different than those in other cultures. Monogamy as a marriage pattern came about through the concept of property, first introduced during the agricultural revolution. During the revolution, males wanted to ensure their success through the passing on of

property to future generations, as land was a scarce resource. Societies that are currently polygynous did not place as strong of an emphasis on land, instead placing it on other resources such as livestock. Males in modern day polygynous societies did not worry so much about the amount of land they owned as they did on the number of workers they had. Having a high infant mortality rate, polygyny was the best option. When studying monogamy, it is best to view it as a mating pattern and as a marriage pattern. Monogamy is both environmentally influenced, through natural selection during the evolution of humans, and socialized. As described in the Dual Inheritance theory, both culture and genes co-evolved with one another; therefore it is not exactly one or the other, mating or marriage, but both that factor into the evolution of monogamy.

'Till Death Us Do Part

The impact that a divorce once had shook the foundation of a society. Statistics showed the negative effects that a divorce had on children, the structure within a family, and societal norms. This is no longer the case. This is so because it no longer has the impact as it once did, as it has become such a common situation within in society that the effects are no longer as drastic as they once were. With the increase of societal acceptance of divorce, considering that those who do end up divorcing are no longer ostracized from society, a couple may not define commitment to be as long term. Though, with divorce being so prevalent in society and commitment being redefined, this does not mean that marriage in western societies is coming to an end. Instead it means that marriage is adapting. Therefore, divorce is not on a rise because human beings are constraining themselves into monogamous marriages.

As discussed, human beings may not naturally be monogamous creatures but have adapted the abilities to maintain monogamous relationships. Throughout our evolution, situations occurred that allowed for monogamous traits to arise. With mutated traits such as hidden ovulation, females now had the ability to be more selective when choosing a mate. Females wanted to select males that would be involved with the upbringing of their offspring, assisting her by providing food and protection. Females no longer had the capability of providing for themselves and their infants due to bipedalism, which shrunk the birth canal of females causing them to give birth to smaller brained infants that needed far more attention than infants of previous generations. An alliance was created between males and females in that through the offering of sex and assurance that the infant born would be his, a male would provide food and protection from dangers such as infanticide. It is through this process that humans that create the foundation that allowed humans to have monogamous relationships. Throughout hominid evolution came other features that help allow humans to maintain monogamous

relationships, emotions such as jealousy and hormones such as oxytocin. Though not discussed in this paper, there are other evolved traits that allow humans to be monogamous.

There is also the cultural evolution of monogamy, socializing it for hominids; this evolution analyzes why certain cultures allow monogamous marriages whereas others do not. Monogamy as a marriage pattern was formed for different reasons than polygyny or polyandry, as marriage patterns as each society has different economic rational that factor into it. Polygyny as a marriage pattern is efficient for areas with high levels of infant mortality. Polyandry is selected for economic reasons as seen in Tibet and monogamy evolved through the concept of property. Regardless of evolution, the choice of the type of marriage that a society embraces is purely cultural. In which these cultural traits then create social norms that dictate the marriage pattern of a culture, causing western societies to have monogamous marriages and African societies to have polygynous marriages. Therefore monogamy is not solely determined based on whether or not humans can maintain monogamous relationships but also on socialization.

Overall, the rise of divorce in western society does not correlate directly with a flaw in monogamous marriages. Rather what is occurring is a redefining of what marriage is. Marriage is such a complex term to define as any definition might neglect other cultures perception of what marriage is. Thus marriage is always open to interpretation, allowing it to easily adapt to its environment. With that, marriage is not vanishing but adapting itself to modern western society. Instead of the “traditional” monogamous marriages that occurred during the days of our grandparents, or even parents, monogamy has redefined itself to serial monogamy: the act of having several monogamous relationships. Individuals are seen having multiple monogamous relationships, which in turn are reflected in marriages with multiple monogamous marriages. Despite the numerous statistics that show the rise of divorces which leads to the discussion that humans were never meant to be monogamous, marriage will not be vanishing.

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