

## **Notes**

# **Women in History: A Science Perspective**

***Tariq Sohail\****

*Men have broad and large chests, and small narrow hips, and are more understanding than women, who have but small and narrow chests, and broad hips, to the end they should remain at home, sit still, keep house, and bear and bring up children.<sup>7</sup>*

*Martin Luther (1483-1546)*

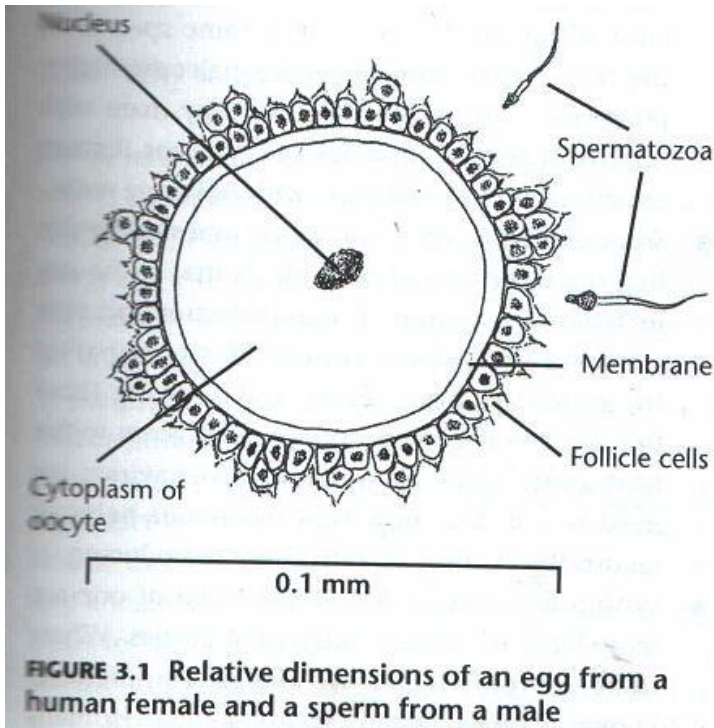
Through out times, semantic and every other kind of bias has been heavily in favour of men, history is His Story. There have been many ways of transmitting history, narratives from the courts of great rulers, instances and stories written by lay-men and women, oral tradition and above all historiography of which the great Ibne Khuldum was the inventor. This essay is an attempt at this kind of history based on anthropological and biological data.

In sexually reproducing species individuals exist in two forms male and female. In most higher animals the distinction is pretty clear. Males are slightly larger and body fat deposition is markedly different. Biologically, a more comprehensive definition would be that the male produces small mobile gametes (sperms) that seeks out the larger less mobile egg produced by the female.

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**FIGURE 3.1** Relative dimensions of an egg from a human female and a sperm from a male

It would be amazing for the uninitiated to see that the female egg is about 100 times larger than the male sperm. A man produces  $280 \times 10$  sperms in one ejaculation. A woman produces only 400 eggs in her entire reproductive life.

### Sex differences in the brain

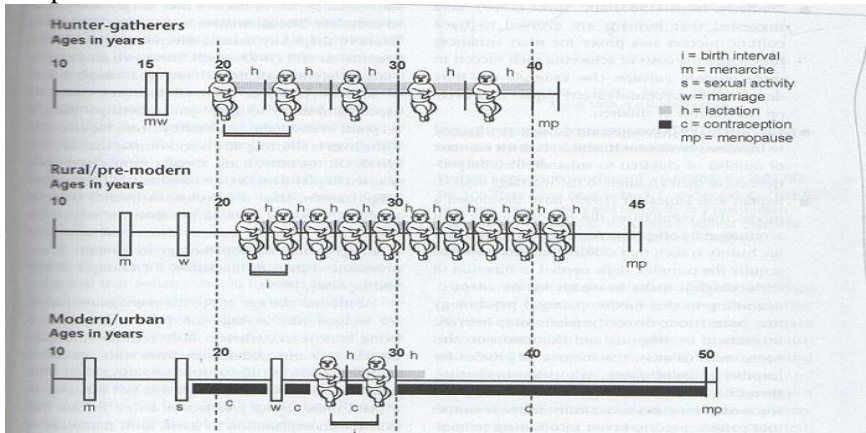
The gross anatomy of the brain differs between men and women. Adult men have on average larger brains than adult women. Across the globe, female brains average 91 per cent (ranging between 88-94 per cent for different populations) of the mean male brain size (calculated from Table 1 of Pakkenberg and Voigt, 1964). The average brain size of many series of adult human males is 1,345 grams, 91 per cent of that mean is 1,222 grams as an estimated average adult female brain size.

The known significant anatomical differences between the 'average' brains of adult men and women can easily be summarized: men have brains that are approximately 10 per cent larger than those of women, but women average significantly larger brains relative to body weight because of allometric scaling. Brains of women have a higher density of neurons, they are more tightly packed and the number of

neurones are same. Men have more glial cells. Two nuclei of the hypothalamus that are involved in male-typical sexual behavior are larger in men. Three structures that connect the right and left hemispheres of the brain are larger of more frequently present in females. Finally, the normal lopsided shape of the brain is more often reversed in females, as is the typical asymmetry in the relative sizes of the top surfaces of the temporal lobes. What all this boils down to is that, on average, the brains of men and women are 'wired' differently. And that relates to cognition.

In order to have some understanding of the story of women we have to go way back in time, comparing the differences between men and women, trying to understand the reasons for these differences, explore the habitat, the way of life, division of labour and changing mating patterns and family units. In the last few decades great progress has been made in dating fossil remains through carbon and DNA studies greatly enhancing our understanding.

The Earth was colonized by human beings when a small band of 300/400 people came out of Africa through the Red Sea. Approximately, 100,000 years ago. For nearly the same period the Homosapien had lived in sub-saharan Africa. This band of African people came out of Africa singing, dancing, hunting and already knew the art of making fire, singing ropes, rafts, speers needles and pottery. The subsistence was carried out by hunting and gathering. Fertility rate was low as the women would milk her child for up to 4 years and during lactation, pregnancy is not possible.



**FIGURE 3.14** Birth intervals, reproductive rates and other variables for women in foraging, rural and modern societies

Modern women reach menarche much earlier than their forebears and also spend much less of their overall life lactating. Some of these parameters are almost certainly related to lifestyle and environmental factors such as nutrient supply and healthcare. But clearly modern women are making the decision to delay the age when they first conceive and have fewer children than their ancestors. Trying to identify adaptive reasons for these decisions is a difficult task.

SOURCE: Adapted and redrawn from Zihlman, A. (2000) *The Human Evolution Colouring Book*. New York, HarperCollins, section 6.9.

Homosapiens spread all over the different continents, replaced the previous hominids and acquired racial characteristics. The multiregional hypothesis of the origins of Homosapiens has been finally rested. Overwhelming evidence is in support of a single origin and differences in racial characteristics are attributed to changing climates, availability of sunlight, food and temperature of the earth.

### **Mating pattern and family**

Homosapien passed through several stages of life style depending upon the means of subsistence in relation to availability of food for survival and security of life for orderly reproduction. Lewis H. Morgan's book, *Ancient Society* (1880) is a landmark effort based on study of existing primitive societies in various parts of the world. Frederick R. Engles wrote a critique of Morgan's book in an essay titled 'The Origin of the Family, Private Property and State, (1884). Engles summarizes the stages of human development in three phases.

1. Savagery – the period in which man's appropriation of products in their natural state predominates; the product of human art are chiefly instruments which assist this appropriation.
2. Barbarism – the period during which man learns to breed domestic animals and to practice agricultural, and acquires method of increasing the supply of natural products by human activity.
3. Civilization – the period in which man learned more advanced application of work to the product of nature, the period of industry proper and of art.

Modern Anthropologists prefer the term Paleolithic, Mesolithic and Neolithic. Paleolithic is before 10,000 B.C. (2.0 Million – 10,000 B.C.), Mesolithic is upto 8000 B.C. and Neolithic thereafter from 8000 – 3500 B.C.

The longest of these periods is the period of savagery, Paleolithic. From the Paleolithic to Neolithic, families remained in transition. From the ancient to modern, four types of families have been identified based on the study of ancient peoples.

1. The Consanguine Family.
2. Punaluan Family.
3. The Pairing Family.
4. The Monogamous Family.

The Consanguine Family is the first stage of the family, in this stage family groups are supported according to generation. The husband and wife relationship is immediately and communally assumed between male and female members of the one generation. The bonding is loose all men of the same generation have access to all women. The only taboo is

a sexual relationship between two generations i.e. father and daughter, grandmother and father. The second stage is the Punaluan family, here the incest taboo is extended to include sexual intercourse between siblings, including all cousins of the same generation. This led to patrilineal and matrilineal lines dividing a family into genes. Interbreeding within the same genes were forbidden, although among first cousins from the corresponding genes were allowed.

Around 10,000 years ago, Homosapiens settled down to the agricultural life in river deltas in the Indo-China, Eupharates Valley, Nile Valley and in north western South America. It was here that the first emergence of pairing families are found. In this family system the husband has one primary wife. Inbreeding is practically eradicated by the prevention of the marriage between two family members. Property, economics and inheritance played a major role in the development of the pairing family. Polygamy was in fashion but polyandry i.e. women having sex with several men was strictly forbidden since women's fidelity would ensure child legitimacy. The primary wife was given a superior role in the family as keeper of the house-hold, guardian of legitimacy and symbol of altruistic behaviour. However, in this stage when the man died his inheritance was still given to his gene rather than to offspring (gene from the male line). This underlines the father right rather than the mother right, as woman could not lay claim for her children. Engle calls this, 'The worlds historical defeat of the female sex'. The ownership of the property created the first division between man and woman in which the woman is inferior. The dissolution of relationship was a unilateral decision of either party. From this pairing family evolved the monogamous family in the upper Mesolithic period at the dawn of civilization around 10,000 years ago. It is based on the supremacy of the man, the express purpose being to produce children of undisputed paternity. This was required as the children are later to inherit their father's property as natural heirs. The wife has become more subservient, kept under surveillance and the dissolution of the marriage is only possible by the will of the husband. This system of monogamy in practice was restricted to woman only as man was still free to have mistresses and concubines and had access to prostitutes.

Thus the status of women transformed from an egalitarian position in the savage society to a subservient position in the 'civilized society'. There are 3 main reasons for this transformation:

1. Patterns of subsistence. Hunter gatherer society.
2. Lack of reproductive control.
3. Dominance and aggression.
4. Women sex and love

### **Hunter gatherer society**

The hunter gatherer society was based on man mostly hunting and woman mostly gathering. 'man the hunter' is as much a myth as 'woman the gatherer'. The myth is based upon the idea that man procured the most food for their groups, and without their contribution the group would cease to exist. Furthermore the stereotype claims that hunting is the activity performed by the man and gathering by women, in most societies, both of these tenets are false.

'Man the hunter' myth has had implication for the study of human evolution as well as for those of human societies. It is often wrongly asserted that hunting large animal has driven human evolution more than any other factor. In this model of human evolution, males have procured meat necessary for development of the brain, and cooperative skills so important to modern human society. Because of their childbearing and rearing obligation, women have been relegated to the more sedentary task of gathering vegetation. This model has many critics, the most notable of which is the implication that one sex has been responsible for driving evolution of the human species. Similar to 'man the hunter myth' is that of 'women the gatherer'. This idea suggests that anyone who is able to walk is capable of collecting vegetation and this is simply not true. Thus, the myth is that, biologically, women are not inclined to hunt and choose to gather instead. Furthermore, myth holds that women do not procure as much food as men that is to say that gathering is a second to hunting. The truth is that the gathering is a job that required great skills, use of tools as well as knowledge of hundreds of species of vegetation. Both myths are not based on factual situation. Hunting had at its best i.e. large animal hunting never produced more than 30% of the protein for any group of people, 70% of proteins were provided by gathering. Also, there is considerable evidence that women and children participated in hunting and men in gathering. Neither activity was exclusive.

### **Lack of reproductive control**

Until the arrival of the 'pill' woman had no control on their reproductive life. Whereas, man can have sex with any member of woman without consequences, women has serious consequence. *Homo sapiens* women is the only species on the planet in whom the oestrous is lost and ovulation is completely hidden, from the women as well. All other primates show the physiological sign of colours, odors or a patch to exhibit their fertile period. Consequently women are attractive throughout the menstrual cycle. Child rearing, lactation and gathering would seriously put restriction on the freedom of the women. However, when the resources

were scarce during the hunter – gathering civilization both women and men had to work hard, women more so than men. As the civilization moved into agricultural stage food was in abundance and cereals replaced lactation from early infancy. Once lactating period was reduced female fertility increased nearly three times. From 4/5 babies in a life cycle an average women had 10/12 babies. This change of life style relegated women of reproductive age almost entirely to the childrearing, domestic activities. Economic activities, became almost entirely a domain for the man causing greatest historical defeat of the women.

### **Dominance and aggression**

A woman, dog, and a walnut tree,  
The more you beat ‘em,  
The better they be.

Thomas fuller (1608-1661)

English clergyman

Homosapiens are the only species on the earth which has achieved the singular distinction of killing its own kind. At the micro level the roots of aggression are located in sexual jealousy. Over millions of years during the Paleolithic period sex was available to man and women in abundance and without singular claims. The advent of jealousy is a direct corollary of proprietorship over women to ensure the patrilineal continuity in the offsprings. All other kinds of aggression are for the purpose of aggrandizement of resources. Whether, it was the fertile valleys or a gold rush or competition for hydrocarbon. Large scale invasions involving organized male armies further relegated the position of women into secondary status and women became objects of acquisition for the victorious.

In order to strengthen the economic system through patrilineal inheritance, women had to be dominated physically as well as intellectually so that the system works. The widespread notion that women are inferior physically and intellectually became the corner stone of scriptures as well as Naturalists thinking. Even Darwin in *Descent of Man* remarks:

The chief distinction in the intellectual powers of the two sexes is shown by man’s attaining to a higher eminence, in whatever he takes up,... whether requiring deep thought, reason, or imagination, or merely the use of the senses or hands...

Although I am an unabashed Darwinian yet I have seriously disagreed with Darwin’s teaching of women’s inferiority. Darwin remarked that as a married man he would be a ‘bare slave worse than

Negro' but then reminisces 'one can not live the solitary life, with groggy old age, friendless and childless staring in ones face'. Darwin concludes his discussion on the philosophical note 'there is many a happy slave' and shortly thereafter married. Darwin believed that adult women of most species resembled the young of both sexes and from this and other evidence reasoned that males are more evolutionally advanced than female. In this view Darwin was supported by Naturalists and Anthropologists of his time including the most eminent Paul Broca (1824-1880).

Re-evaluation of the conclusion that female was less intelligent found major flaws both in the evidence that proved women's inferiority and in major aspect of evolutionary theory. Elaine Morgan argues that the inferiority of women was ingrained in biology taught by men, that thinkers in this area tended to sheer away from the sole subject of biology and origins and ignored the bisexual nature of subsistence procurement, childrearing and making of tools and pottery. Although one can not ignore the evolutionary biology, the jungle heritage and the evolution of man, the hunting carnivore has taken root in mankind thinking as firmly as 'Genesis' ever did. The evolution must be re-evaluated in the light of political, economic and social development. A cursory look at the women's enrolment in all universities of the world may be enlightening to those who still believe in inferiority of the women. As soon as women got an opportunity to compete with men she has shown to be his equal in many fields. This rise of women in modern age has not come out of the blue. It is based in her genetic determination.

### **Women sex and love**

Through out the period of written history culminating in the Victorian era, it was believed that women did not have sexual feelings or at least feelings in the same way as men have. Havelock Ellis a distinguish psychiatrist quotes – Lord Acton, a leading literary authority of the day who condemned the suggestion that women have sexual feelings 'a vile aspersion'. Those days, ofcourse, have gone, and it is now generally believed that women do have sexual orgasm. Kinsey has reported that 90% of women have pleasure from sexual act and 14% have multiple orgasms unlike men. Master and Johnson confirm Kinsey's findings, however, even without orgasm considerable pleasure may be found in sexual arousal and in the social aspect of sexual relationship. The brave Dr. Marie Stopes, who combatted so much rabid ignorance and prejudice about female sexuality that she ended up by thinking she knew it all, went to the lengths of inducing her husband to sign the document permitting her, as a simple measure of hygiene, to obtain sexual



satisfaction from some other source if he ever became incapable of bestowing it.

Sigmund Freud remarked 'if you want to know more about feminity you must interrogate your own experience, or turn to the poet, or else wait until science can give you more profound and coherent information'.

Every piece of evidence we possess concerning animal behavior points to the conclusion that sexual drive is a mutual affair, that both sexes feel a need, both are impelled to satisfy, and both experience copulation as a consumatory act. In both men and women the hormone responsible for sexual drive is testosterone. It is secreted in larger quantity in males from Testes and smaller quantity in women from the Adrenal cortex. People do not eat delicious food because they need to survive nor do they practice sex because its essential for the preservation of the species nor does women fondle her infant for fear of babies extinction. We eat we copulate and mothers fondle babies because such activities are pleasurable.

In all other hominids except women oestrus is the time of soliciting sex from all comers and pursuing her prey until the reward was achieved. Homosapien women choose after her man for love, companionship, experiment, curiosity, security, home and family, prestige or the joy of being held in his arms. But there still remain a basic imbalance between the urgency of his lust and her desire, that when it comes to the crunch the other woman is always on the seller market.

As we have seen, in the pliocene and in savage days sex in the consanguine family system was abundant. Men will go a long way to adorne themselves with all kinds of bright paints, wear bone jewelery and show strength through competitions and offer meat to attract the female. It was the female's prerogative to choose any one of the various available men. Sexual violence and rape did not enter into this equation as it could be extremely destabilizing for the communal life which evolved to protect itself from predators and natural phenomena and not from each other. The clan must remain united to survive. Sexual violence and rape arrived at a later stage, where some men acquired surplus wealth and arrogated many women in their service and at the time of feuds and wars between tribes for acquisition of resources, land, cattle and women. Before that, Intra tribal / clan violence against women was a taboo as strongly avoided as other taboos. It has never been rampant in the Pliocene or early life; with the downward relegation of women's status in the agricultural period the frequency of violence against women increased and some cultures institutionalized it through scriptures.

God said to Eve (genesis 3:16)

I will greatly multiply thy sorrow and thy conception: In sorrow thou shalt bring forth children, and thy desire shall be thy husband, and he shall rule over thee.

It may be, in future, if the behaviour of dominance and aggression does not add to advancement of Man's position, popularity, acceptance and survival, and if that happens then he may begin to shed these attributes as he once shed his coat of fur in transition from Ape to Man.

I believe this impulse of sexual aggression is not in the original primate blueprint, perhaps it is a scar that was left, amongst several others, to remind us of the salutary backlog in our genic determination that enabled us to survive. It is not man's fault; God knows it is not woman's either. We may have to wait a long time before this impulse finds a resolution. The evidence favours a gradual decline of violence in man's nature.

There are manifestation of love without having sex anything to do with it, there is bond between mother and child which in apes my continue well into adolescence, there is male bond which welds the male into cohorts on the play fields or the military. There is a female bond which causes the women to come together into assemblies of their own. For the most part this bond reduces anxiety and hostility and induces natural trust and relaxation. Love as concomitant of sexual relation is not a recent romantic invention, it has already begun at a very early stage and it was not confined to the female either when the hominid (ape) would have his arm around her and kissed her, it was not only to make a sexual advance but he did not want to see her frightened. As when a mother hugs and kisses a howling baby it is done out of fondness too. The whole behavior reward for the female even now culminates in the security and happiness and desire to please. This is the climax of living together as partners.

### **Women, altruism and morality**

In the summer of 1991, three young woman from my apartment block went to Paradise Point for a picnic. Two of them were strong swimmers and the youngest a novice. The two older girls were perched on a rock watching over the younger one who was wading and playing on the beach. Suddenly they saw a big wave approaching behind the young girl. They instantly dived in the sea pulled the girl and helped her climb on the rocks. At precisely the same moment a bigger wave broke through and engulfed both the girls whose bodies were found a few hours later.

This is a well reported incident as one of the young women was working as a reporter in an English daily of Karachi.

The theory of evolution of human behavior has been strongly castigated by the creationist lobby and religious scholars on the basis that evolution has no morality. That the human behavior based on sensory inputs and repeated experimentation is rooted in survival and reproduction. Such critics also give social interpretation to evolutionary theory in the form of 'Social Darwinism' and 'Survival of the Fittest'. They somehow ignore the existence of altruism in every species in the nature even in microbes – living in our guts. All female hominids and primates are heavily endowed with the ability of sacrificing their own interest, jeopardising their status and sometime their life to promote and secure the interest of their offspring and other kins.

Kin selection is another very common behaviour in all species, primates, birds, fishes and reptiles as well as humans. In kin selection an individual related to the same tribe or ken or gens is helped and supported to survive and prosper. In humans this phenomena is called nepotism, which is no more favoured in modern 'civilized' society. Yet, it happens with extreme regularity, particularly in multiethnic and multiracial communities. Both altruism and kin selection is genetically hard wired in our behaviour.

These attributes must be the basis of morality as they advance the human cause. Morality is an activity and not an expression of higher ideas, philosophy or scriptural teachings. It existed long before Socrates or Abraham.

### **Women and environment**

Darwin believed that all species will become extinct one day replaced by new ones. Perhaps this is true. Dinosaurs once ruled the world for a long time, the last one died 65 million years ago. They died away as a result of the earth not being able to sustain their life style. Massive industrialization and incessant carbon emission in the last 100 years have triggered climate change. With the advent of vaccines and other health measures the population of the world has more than doubled in the last 50 year. Women are already playing a major role in environment and family planning movements. Similarly, women are at the front in every peace movement as militarization seriously affects their way of looking at the future.

Gabriel Gracia Marquez the Colombian, Spanish novelist and Nobel Laureate described his assessment of humanity's only path for survival in a special issue of *Time* magazine (Fall 1992):

The only new idea that could save humanity in the 21<sup>st</sup> century is for women to take over the management of the world. I believe that male hegemony has squandered an opportunity of 10,000 years... The masculine power structure has proved that it cannot impede the destruction of the environment, because it is incapable of overcoming its own interests. For women, on the other hand, preservation of the environment is a genetic vocation. The reversal of powers is a matter of life or death’.

### **Conclusion**

At the end of his life Freud remarked that he could never succeed in finding ‘what women want’. I think he posed the wrong question as it is as ambiguous as to say ‘what men want’. Freud died 10 years before the ‘pill’ was introduced in England. Had he lived he may have been closer to a answer. From the 1960’s onward in Russia and Scandinavian countries the status of woman has been rising, in terms of their participation as professionals, civil servants, business managers, participation in the armed forces and their salaries have become equal to men. *Pari-passu* with this change their fertility rate is declining and there are more single women, and single mothers. Now the same phenomena is seen in European countries and Japan.

Marx was perhaps closer to the mark when he observed that the status of women will equalize with the decline of capitalism as it improved with the decline of imperialism. Woman is not a ‘mystery’, neither is man. Evolution has determined them to be same in many ways and different in some. It is true that a man can throw a cricket ball farther than a woman; but, it is also true that women can teach and communicate better.

Evolution has determined that women have the singular attribute of menopause. No other primate has this, and consequently can not get out of the reproductive chain and childrearing. Surely it is a great boon to women who can set aside the business of childbearing and involve in other activities. The only way of accounting for the evolutionary emergence of menopause is by the assumption that the tribe as a whole, and not merely the individual, derived some benefits from the presence of those females who although sterile lived to a ripe and healthy old age. In some way or other, and in a way that applied to no other species that we know of, grannies were good for them.

As far as I can see the explanation for this can only be found in their function as repository of ‘wisdom’ and especially as it related to their

particular craft, the caring of the young. There were no services of doctors or nurseries or LHVS.

And what about marriage? As Shulamith Firestone mourned, 'Every body debunks marriage, but everybody ends up married'. It can sometimes be tough for two individuals of opposite sex living permanently at close quarters without driving each other to the wall. But, it can be equally trying to live with somebody of the same sex, or with parents or in a commune. For the rate of failed communes is at least as high as failed marriages. And it is toughest of all trying to live in an empty apartment.

How often men may complain about being victims in marriage, surely, the institution was not developed by women alone. Man's sexual needs may be greater but his psychological need for security, social acceptance and being tenderly cared will keep the institution of marriage going for a very long time.

With her finger on the 'genetic trigger', for the first time in 'her story' there is no telling where she is heading.

Woman, once Made Equal to Man,  
Becomes His Superior

Socrates  
470 to 399 B.C.