

HAVE ONLY MEN EVOLVED?

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... with the dawn of scientific investigation it might have been hoped that the prejudices resulting from lower conditions of human society would disappear, and that in their stead would be set forth not only facts, but deductions from facts, better suited to the dawn of an intellectual age

The ability, however, to collect facts, and the power to generalize and draw conclusions from them, avail little, when brought into direct opposition to deeply rooted prejudices.

Eliza Burt Gamble, *The Evolution of Woman* (1894)

Science is made by people who live at a specific time in a specific place and whose thought patterns reflect the truths that are accepted by the wider society. Because scientific explanations have repeatedly run counter to the beliefs held dear by some powerful segments of the society (organized religion, for example, has its own explanations of how nature works), scientists are sometimes portrayed as lone heroes swimming against the social stream. Charles Darwin (1809–82) and his theories of evolution and human descent are frequently used to illustrate this point. But Darwinism, on the contrary, has wide areas of congruence with the social and political ideology of nineteenth-century Britain and with Victorian precepts of morality, particularly as regards the relationships between the sexes. And the same Victorian notions still dominate contemporary biological thinking about sex differences and sex roles.

SCIENCE AND THE SOCIAL CONSTRUCTION OF REALITY

For humans, language plays a major role in generating reality. Without words to objectify and categorize our sensations and place them in relation to one another, we cannot evolve a tradition of what is real in the world. Our past experience is organized through language into our history within which we have set up new verbal categories that allow us to assimilate present and future experiences. If every time we had a sensation we gave it a new name, the names would have no meaning: lacking consistency, they could not arrange our experience into reality. For words to work, they have to be used consistently and in a sufficient variety of situations so that their volume – what they contain and exclude – becomes clear to all their users.

If I ask a young child, “Are you hungry?”, she must learn through experience that “yes” can produce a piece of bread, a banana, an egg, or an entire meal; whereas “yes” in answer to “Do you want orange juice?” always produces a tart, orange liquid.

However, all acts of naming happen against a backdrop of what is socially accepted as real. The question is *who* has social sanction to define the larger reality into which one’s everyday experiences must fit in order that one be reckoned sane and responsible. In the past, the Church had this right, but it is less looked to today as a generator of new definitions of reality, though it is allowed to stick by its old ones even when

they conflict with currently accepted realities (as in the case of miracles). The State also defines some aspects of reality and can generate what George Orwell called Newspeak in order to interpret the world for its own political purposes. But, for the most part, at present science is the most respectable legitimator of new realities.

However, what is often ignored is that science does more than merely define reality; by setting up first the definitions – for example, three-dimensional (Euclidian) space – and then specific relationships within them – for example, parallel lines never meet – it automatically renders suspect the sense experiences that contradict the definitions. If we want to be respectable inhabitants of the Euclidian world, every time we see railroad tracks meet in the distance we must “explain” how what we are seeing is consistent with the accepted definition of reality. Furthermore, through society’s and our personal histories, we acquire an investment in our sense of reality that makes us eager to enlighten our children or uneducated “savages,” who insist on believing that railroad tracks meet in the distance and part like curtains as they walk down them. (Here, too, we make an exception for the followers of some accepted religions, for we do not argue with equal vehemence against our fundamentalist neighbors, if they insist on believing literally that the Red Sea parted for the Israelites, or that Jesus walked on the Sea of Galilee.)

Every theory is a self-fulfilling prophecy that orders experience into the framework it provides. Therefore, it should be no surprise that almost any theory, however absurd it may seem to some, has its supporters. The mythology of science holds that scientific theories lead to the truth because they operate by consensus: they can be tested by different scientists, making their own hypotheses and designing independent experiments to test them. Thus, it is said that even if one or another scientist “misinterprets” his or her observations, the need for consensus will weed out fantasies and lead to reality. But things do not work that way. Scientists do not think and work independently. Their “own” hypotheses ordinarily are formulated within a context of theory, so that their interpretations by and large are sub-sets within the prevailing orthodoxy. Agreement therefore is built into the process and need tell us little or nothing about “truth” or “reality.” Of course, scientists often disagree, but their quarrels usually are about details that do not contradict fundamental beliefs, whichever way they are resolved.¹ To overturn orthodoxy is no easier in science than in philosophy, religion, economics, or any of the other disciplines through which we try to comprehend the world and the society in which we live.

The very language that translates sense perceptions into scientific reality generates that reality by lumping certain perceptions together and sorting or highlighting others. But what we notice and how we describe it depends to a great extent on our histories, roles, and expectations as individuals and as members of our society. Therefore, as we move from the relatively impersonal observations in astronomy, physics and chemistry into biology and the social sciences, our science is increasingly affected by the ways in which our personal and social experience determine what we are able or willing to perceive as real about ourselves and the organisms around us. This is not to accuse scientists of being deluded or dishonest, but merely to point out that, like other people, they find it difficult to see the social biases that are built into the very fabric of what they deem real. That is why, by and large, only children notice that the emperor is naked. But only the rare child hangs on to that insight; most of them soon learn to see the beauty and elegance of his clothes.

In trying to construct a coherent, self-consistent picture of the world, scientists come up with questions and answers that depend on their perceptions of what has been, is, will be, and can be. There is no such thing as objective, value-free science. An era’s science is part of its politics, economics and sociology: it is generated by them and in turn helps to generate them. Our personal and social histories mold what we perceive to be our biology and history as organisms, just as our biology plays its part in our social behavior and perceptions. As scientists, we learn to examine the ways in which our experimental methods can bias our answers, but we are not taught to be equally wary of the biases introduced by our implicit, unstated and often unconscious beliefs about the nature of reality. To become conscious of these is more

difficult than anything else we do. But difficult as it may seem, we must try to do it if our picture of the world is to be more than a reflection of various aspects of ourselves and of our social arrangements.²

DARWIN'S EVOLUTIONARY THEORY

It is interesting that the idea that Darwin was swimming against the stream of accepted social dogma has prevailed, in spite of the fact that many historians have shown his thinking fitted squarely into the historical and social perspective of his time. Darwin so clearly and admittedly was drawing together strands that had been developing over long periods of time that the questions why he was the one to produce the synthesis and why it happened just then have clamored for answers. Therefore, the social origins of the Darwinian synthesis have been probed by numerous scientists and historians.

A belief that all living forms are related and that there also are deep connections between the living and non-living has existed through much of recorded human history. Through the animism of tribal cultures that endows everyone and everything with a common spirit; through more elaborate expressions of the unity of living forms in some Far Eastern and Native American belief systems; and through Aristotelian notions of connectedness runs the theme of one web of life that includes humans among its many strands. The Judaeo-Christian world view has been exceptional – and I would say flawed – in setting man (and I mean the male of the species) apart from the rest of nature by making him the namer and ruler of all life. The biblical myth of the creation gave rise to the separate and unchanging species which that second Adam, Linnaeus (1707–78), later named and classified. But even Linnaeus – though he began by accepting the belief that all existing species had been created by Jehovah during that one week long ago (“Nulla species nova”) – had his doubts about their immutability by the time he had identified more than four thousand of them: some species appeared to be closely related, others seemed clearly transitional. Yet as Eiseley has pointed out, it is important to realize that:

Until the scientific idea of ‘species’ acquired form and distinctness there could be no dogma of ‘special’ creation in the modern sense. This form and distinctness it did not possess until the naturalists of the seventeenth century began to substitute exactness of definition for the previous vague characterizations of the objects of nature.³

And he continues:

... it was Linnaeus with his proclamation that species were absolutely fixed since the beginning who intensified the theological trend.... Science, in its desire for classification and order, ... found itself satisfactorily allied with a Christian dogma whose refinements it had contributed to produce.

Did species exist before they were invented by scientists with their predilection for classification and naming? And did the new science, by concentrating on differences which could be used to tell things apart, devalue the similarities that tie them together? Certainly the Linnaean system succeeded in congealing into a relatively static form what had been a more fluid and graded world that allowed for change and hence for a measure of historicity.

The hundred years that separate Linnaeus from Darwin saw the development of historical geology by Lyell (1797–1875) and an incipient effort to fit the increasing number of fossils that were being uncovered into the earth's newly discovered history. By the time Darwin came along, it was clear to many people that the earth and its creatures had histories. There were fossil series of snails; some fossils were known to be very old, yet looked for all the world like present-day forms; others had no like descendants and had become extinct. Lamarck (1744–1829), who like Linnaeus began by believing in the fixity of species, by 1800 had formulated a theory of evolution that involved a slow historical process, which he assumed to have taken a very, very long time.

Possibly one reason the theory of evolution arose in Western, rather than Eastern, science was that the descriptions of fossil and living forms showing so many close relationships made the orthodox biblical view of the special creation of each and every species untenable; and the question, how living forms merged into one another, pressed for an answer. The Eastern philosophies that accepted connectedness and relatedness as givens did not need to confront this question with the same urgency. In other words, where evidences of evolutionary change did not raise fundamental contradictions and questions, evolutionary theory did not need to be invented to reconcile and answer them. However one, and perhaps the most, important difference between Western evolutionary thinking and Eastern ideas of organismic unity lies in the materialistic and historical elements, which are the earmark of Western evolutionism as formulated by Darwin.

Though most of the elements of Darwinian evolutionary theory existed for at least hundred years before Darwin, he knit them into a consistent theory that was in line with the mainstream thinking of his time. Irvine writes:

The similar fortunes of liberalism and natural selection are significant. Darwin's matter was as English as his method. Terrestrial history tuned out to be strangely like Victorian history writ large. Bertrand Russell and others have remarked that Darwin's theory was mainly 'an extension to the animal and vegetable world of laissez faire economics.' As a matter of fact, the economic conceptions of utility, pressure of population, marginal fertility, barriers in restraint of trade, the division of labor, progress and adjustment by competition, and the spread of technological improvements can all be paralleled in *The Origin of Species*. But so, alas, can some of the doctrines of English political conservatism. In revealing the importance of time and the hereditary past, in emphasizing the persistence of vestigial structures, the minuteness of variations and the slowness of evolution, Darwin was adding Hooker and Burke to Bentham and Adam Smith. The constitution of the universe exhibited many of the virtues of the English constitution.⁴

One of the first to comment on this congruence was Karl Marx (1818–83) who wrote to Friedrich Engels (1820–95) in 1862, three years after the publication of *The Origin of Species*:

It is remarkable how Darwin recognizes among beasts and plants his English society with its division of labour, competition, opening up of new markets, 'inventions,' and the Malthusian 'struggle for existence.' It is Hobbes's 'bellum omnium contra omnes,'

[war of all against all] and one is reminded of Hegel's *Phenomenology*, where civil society is described as a 'spiritual animal kingdom,' while in Darwin the animal kingdom figures as civil society.⁵

A similar passage appears in a letter by Engels:

The whole Darwinist teaching of the struggle for existence is simply a transference from society to living nature of Hobbes's doctrine of 'bellum omnium contra omnes' and of the bourgeois-economic doctrine of competition together with Malthus's theory of population. When this conjurer's trick has been performed...the same theories are transferred back again from organic nature into history and now it is claimed that their validity as eternal laws of human society has been proved.⁵

The very fact that essentially the same mechanism of evolution through natural selection was postulated independently and at about the same time by two English naturalists, Darwin and Alfred Russel Wallace (1823–1913), shows that the basic ideas were in the air – which is not to deny that it took genius to give them logical and convincing form.

Darwin's theory of *The Origin of Species by Means of Natural Selection*, published in 1859, accepted the

fact of evolution and undertook to explain how it could have come about. He had amassed large quantities of data to show that historical change had taken place, both from the fossil record and from his observations as a naturalist on the Beagle. He pondered why some

forms had become extinct and others had survived to generate new and different forms. The watchword of evolution seemed to be: be fruitful and multiply, one that bore a striking resemblance to the ways of animal and plant breeders. Darwin corresponded with many breeders and himself began to breed pigeons. He was impressed by the way in which breeders, through careful selection, could use even minor variations to elicit major differences, and was searching for the analog in nature to the breeders' techniques of selecting favorable variants. A prepared mind therefore encountered Malthus's *Essay on the Principles of Population* (1798). In his *Autobiography*, Darwin writes:

In October 1838, that is, fifteen months after I had begun my systematic enquiry, I happened to read for amusement Malthus on *Population*, and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved and unfavourable ones to be destroyed. The result of this would be the formation of new species. Here, then, I had at last got a theory by which to work.⁶

Incidentally, Wallace also acknowledged being led to his theory by reading Malthus. Wrote Wallace:

The most interesting coincidence in the matter, I think, is, that I, *as well as Darwin*, was led to the theory itself through Malthus....It suddenly flashed upon me that all animals are necessarily thus kept down – ‘the struggle for existence’ – while *variations*, on which I was always thinking, must necessarily often be *beneficial*, and would then cause those varieties to increase while the injurious variations diminished.⁷ (Wallace's italics)

Both, therefore, saw in Malthus's struggle for existence the working of a natural law which effected what Herbert Spencer had called the “survival of the fittest.”

The three principal ingredients of Darwin's theory of evolution are: endless variation, natural selection from among the variants, and the resulting survival of the fittest. Given the looseness of many of his arguments – he credited himself with being an expert wriggler – it is surprising that his explanation has found such wide acceptance. One reason probably lies in the fact that Darwin's theory was historical and materialistic, characteristics that are esteemed as virtues; another, perhaps in its intrinsic optimism – its notion of progressive development of species, one from another – which fit well into the meritocratic ideology encouraged by the early successes of British mercantilism, industrial capitalism and imperialism.

But not only did Darwin's interpretation of the history of life on earth fit in well with the social doctrines of nineteenth-century liberalism and individualism. It was used in turn to support them by rendering them aspects of natural law. Herbert Spencer is usually credited with having brought Darwinism into social theory. The body of ideas came to be known as social Darwinism and gained wide acceptance in Britain and the United States in the latter part of the nineteenth and on into the twentieth century. For example, John D. Rockefeller proclaimed in a Sunday school address:

The growth of a large business is merely the survival of the fittest....The American Beauty rose can be produced in the splendor and fragrance which bring cheer to its beholder only by sacrificing the early buds which grow up around it. This is not an evil tendency in business. It is merely the working-out of a law of nature and a law of God.⁸

The circle was therefore complete: Darwin consciously borrowed from social theorists such as Malthus

and Spencer some of the basic concepts of evolutionary theory. Spencer and others promptly used Darwinism to reinforce these very social theories and in the process bestowed upon them the force of natural law.⁹

SEXUAL SELECTION

It is essential to expand the foregoing analysis of the mutual influences of Darwinism and nineteenth-century social doctrine by looking critically at the Victorian picture Darwin painted of the relations between the sexes, and of the roles that males and females play in the evolution of animals and humans. For although the ethnocentric bias of Darwinism is widely acknowledged, its blatant sexism – or more correctly, androcentrism (male-centeredness) – is rarely mentioned, presumably because it has not been noticed by Darwin scholars, who have mostly been men. Already in the nineteenth century, indeed within Darwin's life time, feminists such as Antoinette Brown Blackwell and Eliza Burt Gamble called attention to the obvious male bias pervading his arguments.¹⁰ ¹¹ But these women did not have Darwin's or Spencer's professional status or scientific experience; nor indeed could they, given their limited opportunities for education, travel and participation in the affairs of the world. Their books were hardly acknowledged or discussed by professionals, and they have been, till now, merely ignored and excluded from the record. However, it is important to expose Darwin's androcentrism, and not only for historical reasons, but because it remains an integral and unquestioned part of contemporary biological theories.

Early in *The Origin of Species*, Darwin defines sexual selection as one mechanism by which evolution operates. The Victorian and androcentric biases are obvious:

This form of selection depends, not on a struggle for existence in relation to other organic beings or to external conditions, but on a struggle of individuals of one sex, generally males, for the possession of the other sex.¹²

And,

Generally, the most vigorous males, those which are best fitted for their places in nature, will leave most progeny. But in many cases, victory depends not so much on general vigor, as on having special weapons confined to the male sex.

The Victorian picture of the active male and the passive female becomes even more explicit later in the same paragraph:

the males of certain hymenopterous insects [bees, wasps, ants] have been frequently seen by that inimitable observer, M. Fabre, fighting for a particular female who sits by, an apparently unconcerned beholder of the struggle, and then retires with the conqueror.

Darwin's anthropomorphizing continues, as it develops that many male birds "perform strange antics before the females, which, standing by as spectators, at last choose the most attractive partner." However, he worries that whereas this might be a reasonable way to explain the behavior of peahens and female buds of paradise whose consorts anyone can admire, "it is doubtful whether [the tuft of hair on the breast of the wild turkey-cock] can be ornamental in the eyes of the female bird." Hence Darwin ends this brief discussion by saying that he "would not wish to attribute all sexual differences to this agency."

Some might argue in defense of Darwin that bees (or birds, or what have you) do act that way. But the very language Darwin uses to describe these behaviors disqualifies him as an "objective" observer. His animals are cast into roles from a Victorian script. And whereas no one can claim to have solved the important methodological question of how to disembarass oneself of one's anthropocentric and cultural

biases when observing animal behavior, surely one must begin by trying.

After the publication of *The Origin of Species*, Darwin continued to think about sexual selection, and in 1871, he published *The Descent of Man and Selection in Relation to Sex*, a book in which he describes in much more detail how sexual selection operates in the evolution of animals and humans.

In the aftermath of the outcry *The Descent* raised among fundamentalists, much has been made of the fact that Darwin threatened the special place Man was assigned by the Bible and treated him as though he was just another kind of animal. But he did nothing of the sort. The Darwinian synthesis did not end anthropocentrism or androcentrism in biology. On the contrary, Darwin made them part of biology by presenting as “facts of nature” interpretations of animal behavior that reflect the social and moral outlook of his time.

In a sense, anthropocentrism is implicit in the fact that we humans have named, catalogued, and categorized the world around us, including ourselves. Whether we stress our upright stance, our opposable thumbs, our brain, or our language, to ourselves we are creatures apart and very different from all others. But the scientific view of ourselves is also profoundly androcentric. *The Descent of Man* is quite literally *his* journey. Elaine Morgan rightly says:

It's just as hard for man to break the habit of thinking of himself as central to the species as it was to break the habit of thinking of himself as central to the universe. He sees himself quite unconsciously as the main line of evolution, with a female satellite revolving around him as the moon revolves around the earth. This not only causes him to overlook valuable clues to our ancestry, but sometimes leads him into making statements that are arrant and demonstrable nonsense.... Most of the books forget about [females] for most of the time. They drag her on stage rather suddenly for the obligatory chapter on Sex and Reproduction, and then say: 'All right, love, you can go now,' while they get on with the real meaty stuff about the Mighty Hunter with his lovely new weapons and his lovely new straight legs racing across the Pleistocene plains. Any modifications of her morphology are taken to be imitations of the Hunter's evolution, or else designed solely for his delectation.¹³

To expose the Victorian roots of post-Darwinian thinking about human evolution, we must start by looking at Darwin's ideas about sexual selection in *The Descent*, where he begins the chapter entitled 'Principles of Sexual Selection' by setting the stage for the active, pursuing male:

With animals which have their sexes separated, the males necessarily differ from the females in their organs of reproduction; and these are the primary sexual characters. But the sexes differ in what Hunter has called secondary sexual characters, which are not directly connected with the act of reproduction; for instance, the male possesses certain organs of sense or locomotion, of which the female is quite destitute, or has them more highly-developed, in order that he may readily find or reach her; or again the male has special organs of prehension for holding her securely.¹⁴

Moreover, we soon learn:

in order that the males should seek efficiently, it would be necessary that they should be endowed with strong passions; and the acquirement of such passions would naturally follow from the more eager leaving a larger number of offspring than the less eager.¹⁵

But Darwin is worried because among some animals, males and females do not appear to be all that different:

a double process of selection has been carried on; that the males have selected the more attractive females,

and the latter the more attractive males. . . . But from what we know of the habits of animals, this view is hardly probable, for the male is generally eager to pair with any female.¹⁶

Make no mistake, wherever you look among animals, eagerly promiscuous males are pursuing females, who peer from behind languidly drooping eyelids to discern the strongest and handsomest. Does it not sound like the wish- fulfillment dream of a proper Victorian gentleman?

This is not the place to discuss Darwin's long treatise in detail. Therefore, let this brief look at animals suffice as background for his section on Sexual Selection in Relation to Man. Again we can start on the first page: "Man is more courageous, pugnacious and energetic than woman, and has more inventive genius."¹⁷ Among "savages," fierce, bold men are constantly battling each other for the possession of women and this has affected the secondary sexual characteristics of both. Darwin grants that there is some disagreement whether there are "inherent differences" between men and women, but suggests that by analogy with lower animals it is "at least probable." In fact, "Woman seems to differ from man in mental disposition, chiefly in her greater tenderness and less selfishness,"¹⁸ for:

Man is the rival of other men; he delights in competition, and this leads to ambition which passes too easily into selfishness. These latter qualities seem to be his natural and unfortunate birthright.

This might make it seem as though women are better than men after all, but not so:

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, than can women – whether requiring deep thought, reason, or imagination, or merely the use of the senses and hands. If two lists were made of the most eminent men and women in poetry, painting, sculpture, music (inclusive both of composition and performance), history, science, and philosophy, with half-a-dozen names under each subject, the two lists would not bear comparison. We may also infer ... that if men are capable of a decided pre-eminence over women in many subjects, the average of mental power in man must be above that of woman. ... [Men have had] to defend their females, as well as their young,

from enemies of all kinds, and to hunt for their joint subsistence. But to avoid enemies or to attack them with success, to capture wild animals, and to fashion weapons, requires the aid of the higher mental faculties, namely, observation, reason, invention, or imagination. These various faculties will thus have been continually put to the test and selected during manhood.¹⁹

"Thus," the discussion ends, "man has ultimately become superior to woman" and it is a good thing that men pass on their characteristics to their daughters as well as to their sons, "otherwise it is probable that man would have become as superior in mental endowment to woman, as the peacock is in ornamental plumage to the peahen."

So here it is in a nutshell: men's mental and physical qualities were constantly improved through competition for women and hunting, while women's minds would have become vestigial if it were not for the fortunate circumstance that in each generation daughters inherit brains from their fathers.

Another example of Darwin's acceptance of the conventional mores of his time is his interpretation of the evolution of marriage and monogamy:

... it seems probable that the habit of marriage, in any strict sense of the word, has been gradually developed; and that almost promiscuous or very loose intercourse was once very common throughout the world. Nevertheless, from the strength of the feeling of jealousy all through the animal kingdom, as well as from the analogy of lower animals ... I cannot believe that absolutely promiscuous intercourse prevailed

in times past....20

Note the moralistic tone; and how does Darwin know that strong feelings of jealousy exist “all through the animal kingdom?” For comparison, it is interesting to look at Engels, who working largely from the same early anthropological sources as Darwin, had this to say:

As our whole presentation has shown, the progress which manifests itself in these successive forms [from group marriage to pairing marriage to what he refers to as “monogamy supplemented by adultery and prostitution”] is connected with the peculiarity that women, but not men, are increasingly deprived of the sexual freedom of group marriage. In fact, for men group marriage actually still exists even to this day. What for the woman is a crime entailing grave legal and social consequences is considered honorable in a man or, at the worse, a slight moral blemish which he cheerfully bears....Monogamy arose from the concentration of considerable wealth in the hands of a single individual – a man – and from the need to bequeath this wealth to the children of that man and of no other. For this purpose, the monogamy of the woman was required, not that of the man, so this monogamy of the woman did not in any way interfere with open or concealed polygamy on the part of the man.²¹

Clearly, Engels did not accept the Victorian code of behavior as our natural biological heritage.

SOCIOBIOLOGY : A NEW SCIENTIFIC SEXISM

The theory of sexual selection went into a decline during the first half of this century, as efforts to verify some of Darwin’s examples showed that many of the features he had thought were related to success in mating could not be legitimately regarded in that way. But it has lately regained its respectability, and contemporary discussions of reproductive fitness often cite examples of sexual selection.²² Therefore, before we go on to discuss human evolution, it is helpful to look at contemporary views of sexual selection and sex roles among animals (and even plants).

Let us start with a lowly alga that one might think impossible to stereotype by sex. Wolfgang Wickler, an ethologist at the University of Munich, writes in his book on sexual behavior patterns (a topic which Konrad Lorenz tells us in the Introduction is crucial in deciding which sexual behaviors to consider healthy and which diseased):

Even among very simple organisms such as algae, which have threadlike rows of cells one behind the other, one can observe that during copulation the cells of one thread act as males with regard to the cells of a second thread, but as females with regard to the cells of a third thread. The mark of male behavior is that the cell actively crawls or swims over to the other; the female cell remains passive.²³

The circle is simple to construct: one starts with the Victorian stereotype of the active male and the passive female, then looks at animals, algae, bacteria, people, and calls all passive behavior feminine, active or goal-oriented behavior masculine. And it works! The Victorian stereotype is biologically determined: even algae behave that way.

But let us see what Wickler has to say about Rocky Mountain Bighorn sheep, in which the sexes cannot be distinguished on sight. He finds it “curious”:

that between the extremes of rams over eight years old and lambs less than a year old one finds every possible transition in age, but no other differences whatever; the bodily form, the structure of the horns, and the color of the coat are the same for both sexes.

Now note: “...the typical female behavior is absent from this pattern.” Typical of what? Obviously not of

Bighorn sheep. In fact we are told that “even the males often cannot recognize a female,” indeed, “the females are only of interest to the males during rutting season.” How does he know that the males do *not* recognize the females? Maybe these sheep are so weird that most of the time they relate to a female as though she were just another sheep, and whistle at her (my free translation of “taking an interest”)

only when it is a question of mating. But let us get at last to how the *females* behave. That is astonishing, for it turns out:

that *both* sexes play two roles, either that of the male or that of the young male. Outside the rutting season the females behave like young males, during the rutting season like aggressive older males. (Wickler’s italics)

In fact:

There is a line of development leading from the lamb to the high ranking ram, and the female animals (9) behave exactly as though they were in fact males (d) whose develop- ment was retarded....We can say that the only fully developed mountain sheep are the powerful rams....

At last the androcentric paradigm is out in the open: females are always measured against the standard of the male. Sometimes they are like young males, sometimes like older ones; but never do they reach what Wickler calls “the final stage of fully mature physical structure and behavior possible to this species.” That, in his view, is reserved for the rams.

Wickler bases this discussion on observations by Valerius Geist, whose book, *Mountain Sheep*, contains many examples of how androcentric biases can color observations as well as interpretations and restrict the imagination to stereotypes. One of the most interesting is the following:

Matched rams, usually strangers, begin to treat each other like females and clash until one acts like a female. This is the loser in the fight. The rams confront each other with displays, kick each other, threat jump, and clash till one turns and accepts the kicks, displays, and occasional mounts of the larger without aggressive displays. The loser is not chased away. The point of the fight is not to kill, maim, or even drive the rival off, but to treat him like a female.²⁴

This description would be quite different if the interaction were inter- preted as something other than a fight, say as a homosexual encounter, a game, or a ritual dance. The fact is that it contains none of the elements that we commonly associate with fighting. Yet because Geist casts it into the imagery of heterosexuality and aggression, it becomes perplexing.

There would be no reason to discuss these examples if their treatments of sex differences or of male/female behavior were exceptional. But they are in the mainstream of contemporary sociobiology, ethology, and evolutionary biology.

A book that has become a standard reference is George Williams’s *Sex and Evolution*.²⁵ It abounds in blatantly biased statements that describe as “careful” and “enlightened” research reports that support the androcentric

paradigm, and as questionable or erroneous those that contradict it. Masculin- ity and femininity are discussed with reference to the behavior of pipefish and seahorses; and cichlids and catfish are judged downright abnormal because both sexes guard the young. For present purposes it is sufficient to discuss a few points that are raised in the chapter entitled ‘Why Are Males Masculine and Females Feminine and, Occasionally, Vice-Versa?’

The very title gives one pause, for if the words masculine and feminine do not mean of, or pertaining, respectively, to males and females, what *do* they mean – particularly in a scientific context? So let us read.

On the first page we find:

Males of the more familiar higher animals take less of an interest in the young. In courtship they take a more active role, are less discriminating in choice of mates, more inclined toward promiscuity and polygamy, and more contentious among themselves.

We are back with Darwin. The data are flimsy as ever, but doesn't it sound like a description of the families on your block?

The important question is who are these "more familiar higher animals?" Is their behavior typical, or are we familiar with them because, for over a century, androcentric biologists have paid disproportionate attention to animals whose behavior resembles those human social traits that they would like to interpret as biologically determined and hence out of our control?

Williams' generalization quoted above gives rise to the paradox that becomes his chief theoretical problem:

Why, if each individual is maximizing its own genetic survival should the female be less anxious to have her eggs fertilized than a male is to fertilize them, and why should the young be of greater interest to one than to the other?

Let me translate this sentence for the benefit of those unfamiliar with current evolutionary theory. The first point is that an individual's *fitness* is measured by the number of her or his offspring that survive to reproductive age. The phrase, "the survival of the fittest," therefore signifies the fact that evolutionary history is the sum of the stories of those who leave the greatest numbers of descendants. What is meant by each individual "maximizing its own genetic survival" is that every one tries to leave as many viable offspring as possible. (Note the implication of conscious intent. Such intent is not exhibited by the increasing number of humans who intentionally *limit* the numbers of their offspring. Nor is one, of course, justified in ascribing it to other animals.)

One might therefore think that in animals in which each parent contributes

half of each offspring's genes, females and males would exert themselves equally to maximize the number of offspring. However, we know that according to the patriarchal paradigm, males are active in courtship, whereas females wait passively. This is what Williams means by females being "less anxious" to procreate than males. And of course we also know that "normally" females have a disproportionate share in the care of their young.

So why these asymmetries? The explanation: "The *essential* difference between the sexes is that females produce large immobile gametes and males produce small mobile ones" (my italics). This is what determines their "different optimal strategies." So if you have wondered why men are promiscuous and women faithfully stay home and care for the babies, the reason is that males "can quickly replace wasted gametes and be ready for another mate," whereas females "can not so readily replace a mass of yolky eggs or find a substitute father for an expected litter." Therefore females must "show a much greater degree of caution" in the choice of a mate than males.

E. O. Wilson says that same thing somewhat differently:

One gamete, the egg, is relatively very large and sessile; the other, the sperm, is small and motile.... The egg possesses the yolk required to launch the embryo into an advanced state of development. Because it represents a considerable energetic investment on the part of the mother the embryo is often sequestered and protected, and sometimes its care is extended into the postnatal period. *This is the reason why* parental care is *normally* provided by the female....²⁶ (my italics)

Though these descriptions fit only some of the animal species that reproduce sexually, and are rapidly ceasing to fit human domestic arrangements in many portions of the globe,²⁷ they do fit the patriarchal model of the household. Clearly, androcentric biology is busy as ever trying to provide biological “reasons” for a particular set of human social arrangements.

The ethnocentrism of this individualistic, capitalistic model of evolutionary biology and sociobiology with its emphasis on competition and “investments,” is discussed by Sahlins in his monograph, *The Use and Abuse of Biology*.⁵ He gives many examples from other cultures to show how these theories reflect a narrow bias that disqualifies them from masquerading as descriptions of universals in biology. But, like other male critics, Sahlins fails to notice the obvious androcentrism.

About thirty years ago, Ruth Herschberger wrote a delightfully funny book called *Adam's Rib*,²⁸ in which she spoofed the then current androcentric myths regarding sex differences. When it was reissued in 1970, the book was not out of date. In the chapter entitled “Society Writes Biology,”

she juxtaposes the then (and now) current patriarchal scenario of the dauntless voyage of the active, agile sperm toward the passively receptive, sessile egg to an improvised “matriarchal” account. In it the large, competent egg plays the central role and we can feel only pity for the many millions of miniscule, fragile sperm most of which are too feeble to make it to fertilization.

This brings me to a question that always puzzles me when I read about the female's larger energetic investment in her egg than the male's in his sperm: there is an enormous disproportion in the *numbers* of eggs and sperms that participate in the act of fertilization. Does it really take more “energy” to generate the one or relatively few eggs than the large excess of sperms required to achieve fertilization? In humans the disproportion is enormous. In her life time, an average woman produces about four hundred eggs, of which in present-day Western countries, she will “invest” only in about 2.2.²⁹ Meanwhile the average man generates several billions of sperms to secure those same 2.2 investments!

Needless to say, I have no idea how much “energy” is involved in producing, equipping and ejaculating a sperm cell along with the other necessary components of the ejaculum that enable it to fertilize an egg, nor how much is involved in releasing an egg from the ovary, reabsorbing it in the oviduct if unfertilized (a partial dividend on the investment), or incubating 2.2 of them to birth. But neither do those who propound the existence and importance of women's disproportionate energetic investments. Furthermore, I attach no significance to these questions, since I do not believe that the details of our economic and social arrangements reflect our evolutionary history. I am only trying to show how feeble is the “evidence” that is being put forward to argue the evolutionary basis (hence *naturalness*) of woman's role as homemaker.

The recent resurrection of the theory of sexual selection and the ascription of asymmetry to the “parental investments” of males and females are probably not unrelated to the rebirth of the women's movement. We should remember that Darwin's theory of sexual selection was put forward in the midst of the first wave of feminism.³⁰ It seems that when women threaten to enter as equals into the world of affairs, androcentric scientists rally to point out that our *natural* place is in the home.

THE EVOLUTION OF MAN Darwin's sexual stereotypes are doing well also in the contemporary

literature

on human evolution. This is a field in which facts are few and specimens are separated often by hundreds of thousands of years, so that maximum leeway exists for investigator bias. Almost all the investigators have been men; it should therefore come as no surprise that what has emerged is the familiar picture of Man the Toolmaker. This extends so far that when skull fragments estimated to be 250,000 years old turned up among the stone tools in the gravel beds of the Thames at Swanscombe and paleontologists decided that they are probably those of a female, we read that “The Swanscombe woman, or her husband, was a maker of hand axes....”³¹ (Imagine the reverse: The Swanscombe man, or his wife, was a maker of axes....) The implication is that if there were tools, the Swanscombe *woman* could not have made them. But we now know that even apes make tools. Why not women?

Actually, the idea that the making and use of tools were the main driving forces in evolution has been modified since paleontological finds and field observations have shown that apes both use and fashion tools. Now the emphasis is on the human use of tools as weapons for hunting. This brings us to the myth of Man the Hunter, who had to invent not only tools, but also the social organization that allowed him to hunt big animals. He also had to roam great distances and learn to cope with many and varied circumstances. We are told that this entire constellation of factors stimulated the astonishing and relatively rapid development of his brain that came to distinguish Man from his ape cousins. For example, Kenneth Oakley writes:

Men who made tools of the standard type...must have been capable of forming in their minds images of the ends to which they laboured. Human culture in all its diversity is the outcome of this capacity for conceptual thinking, but the leading factors in its development are tradition coupled with invention. The primitive hunter made an implementation in a particular fashion largely because as a child he watched his father at work or because he copied the work of a hunter in a neighbouring tribe. The standard hand-axe was not conceived by any one individual *ab initio*, but was the result of exceptional individuals in successive generations not only copying but occasionally improving on the work of their predecessors. As a result of the co-operative hunting, migrations and rudimentary forms of barter, the traditions of different groups of primitive hunters sometimes became blended.³²

It seems a remarkable feat of clairvoyance to see in such detail what happened some 250,000 years in pre-history, complete with the little boy and his little stone chipping set just like daddy’s big one.

It is hard to know what reality lurks behind the reconstructions of Man Evolving. Since the time when we and the apes diverged some fifteen million

years ago, the main features of human evolution that one can read from the paleontological finds are the upright stance, reduction in the size of the teeth, and increase in brain size. But finds are few and far between both in space and in time until we reach the Neanderthals some 70,000 to 40,000 years ago – a jaw or skull, teeth, pelvic bones, and often only fragments of them.³³ From such bits of evidence as these come the pictures and statues we have all seen of that line of increasingly straight and upright, and decreasingly hairy and ape-like men marching in single file behind *Homo sapiens*, carrying their clubs, stones, or axes; or that other one of a group of beetle-browed and bearded hunters bending over the large slain animal they have brought into camp, while over on the side long-haired, broad-bottomed females nurse infants at their pendulous breasts.

Impelled, I suppose, by recent feminist critiques of the evolution of Man the Hunter, a few male anthropologists have begun to take note of Woman the Gatherer, and the stereotyping goes on as before. For example Howells, who acknowledges these criticisms as just, nonetheless assumes “the classic division of labor between the sexes” and states as fact that stone age men roamed great distances “on

behalf of the whole economic group, while the women were restricted to within the radius of a fraction of a day's walk from camp." Needless to say, he does not *know* any of this.

One can equally well assume that the responsibilities of providing food and nurturing young were widely dispersed through the group that needed to cooperate and devise many and varied strategies for survival. Nor is it obvious why tasks needed to have been differentiated by sex. It makes sense that the gatherers would have known how to hunt the animals they came across; that the hunters gathered when there was nothing to catch, and that men and women did some of each, though both of them probably did a great deal more gathering than hunting. After all, the important thing was to get the day's food, not to define sex roles. Bearing and tending the young have not necessitated a sedentary way of life among nomadic peoples right to the present, and both gathering and hunting probably required movement over large areas in order to find sufficient food. Hewing close to home probably accompanied the transition to cultivation, which introduced the necessity to stay put for planting, though of course not longer than required to harvest. Without fertilizers and crop rotation, frequent moves were probably essential parts of early farming.

Being sedentary ourselves, we tend to assume that our foreparents heaved a great sigh of relief when they invented agriculture and could at last stop roaming. But there is no reason to believe this. Hunter/gatherers and other

people who move with their food still exist. And what has been called the agricultural "revolution" probably took considerably longer than all of recorded history. During this time, presumably some people settled down while others remained nomadic, and some did some of each, depending on place and season.

We have developed a fantastically limited and stereotypic picture of ways of life that evolved over many tens of thousands of years, and no doubt varied in lots of ways that we do not even imagine. It is true that by historic times, which are virtually now in the scale of our evolutionary history, there were agricultural settlements, including a few towns that numbered hundreds and even thousands of inhabitants. By that time labor was to some extent divided by sex, though anthropologists have shown that right to the present, the division can be different in different places. There are economic and social reasons for the various delineations of sex roles. We presume too much when we try to read them in the scant record of our distant prehistoric past.

Nor are we going to learn them by observing our nearest living relatives among the apes and monkeys, as some biologists and anthropologists are trying to do. For one thing, different species of primates vary widely in the extent to which the sexes differ in both their anatomy and their social behavior, so that one can find examples of almost any kind of behavior one is looking for by picking the appropriate animal.

HERE I AM

For another, most scientists find it convenient to forget that present-day apes and monkeys have had as long an evolutionary history as we have had, since the time we and they went our separate ways many millions of years ago. There is no theoretical reason why their behavior should tell us more about our ancestry than our behavior tells us about theirs. It is only anthropocentrism that can lead someone to imagine that "A possible preadaptation to human ranging for food is the behavior of the large apes, whose groups move more freely and widely compared to gibbons and monkeys, and whose social units are

looser.”³⁴ But just as in the androcentric paradigm men evolved while women cheered from the bleachers, so in the anthropocentric one, humans evolved while the apes watched from the trees. This view leaves out not only the fact that the apes have been evolving away from us for as long a time as we from them, but that certain aspects of their evolution may have been a response to our own. So, for example, the evolution of human habits may have put a serious crimp into the evolution of the great apes and forced them to stay in the trees or to hurry back into them.

The current literature on human evolution says very little about the

role of language, and sometimes even associates the evolution of language with tool use and hunting – two purportedly “masculine” characteristics. But this is very unlikely because the evolution of language probably went with biological changes, such as occurred in the structure of the face, larynx, and brain, all slow processes. Tool use and hunting, on the other hand, are cultural characteristics that can evolve much more quickly. It is likely that the more elaborate use of tools, and the social arrangements that go with hunting and gathering, developed in part as a consequence of the expanded human repertory of capacities and needs that derive from our ability to communicate through language.

It is likely that the evolution of speech has been one of the most powerful forces directing our biological, cultural, and social evolution, and it is surprising that its significance has largely been ignored by biologists. But, of course, it does not fit into the androcentric paradigm. No one has ever claimed that women can not talk; so if men are the vanguard of evolution, humans must have evolved through the stereotypically male behaviors of competition, tool use, and hunting.

HOW TO LEARN OUR HISTORY? SOME FEMINIST STRATEGIES

How *did* we evolve? Most people now believe that we became who we are by a historical process, but, clearly, we do not know its course, and must use more imagination than fact to reconstruct it. The mythology of science asserts that with many different scientists all asking their own questions and evaluating the answers independently, whatever personal bias creeps into their individual answers is cancelled out when the large picture is put together. This might conceivably be so if scientists were women and men from all sorts of different cultural and social backgrounds who came to science with very different ideologies and interests. But since, in fact, they have been predominantly university-trained white males from privileged social backgrounds, the bias has been narrow and the product often reveals more about the investigator than about the subject being researched.

Since women have not figured in the paradigm of evolution, we need to rethink our evolutionary history. There are various ways to do this:

(1) We can construct one or several estrocentric (female-centered) theories. This is Elaine Morgan’s approach in her account of *The Descent of Woman* and Evelyn Reed’s in *Woman’s Evolution*.³⁵ Except as a way of parodying the male myths, I find it unsatisfactory because it locks the authors into many of the same unwarranted suppositions that underlie those very myths.

For example, both accept the view that our behavior is biologically determined, that what we do is a result of what we were or did millions of years ago. This assumption is unwarranted given the enormous range of human adaptability and the rapid rate of human social and cultural evolution. Of course, there is a place for myth-making and I dream of a long poem that sings women’s origins and tells how we felt and what we did; but I do not think that carefully constructed “scientific” mirror images do much to counter the male myths. Present-day women do not know what prehistoric hunter/gatherer women were up to any more than a male paleontologist

like Kenneth Oakley knows what the little toolmaker learned from his dad.

(2) Women can sift carefully the few available facts by paring away the mythology and getting as close to the raw data as possible. And we can try to see what, if any, picture emerges that could lead us to questions that perhaps have *not* been asked and that should, and could, be answered. One problem with this approach is that many of the data no longer exist. Every excavation removes the objects from their locale and all we have left is the researchers' descriptions of what they saw. Since we are concerned about unconscious biases, that is worrisome.

(3) Rather than invent our own myths, we can concentrate, as a beginning, on exposing and analyzing the male myths that hide our overwhelming ignorance, "for when a subject is highly controversial – and any question about sex is that – one cannot hope to tell the truth."³⁶ Women anthropologists have begun to do this. New books are being written, such as *The Female of the Species*³⁷ and *Toward an Anthropology of Women*,³⁸ books that expose the Victorian stereotype that runs through the literature of human evolution, and pull together relevant anthropological studies. More important, women who recognize an androcentric myth when they see one and who are able to think beyond it, must do the necessary work in the field, in the laboratories, and in the libraries, and come up with ways of seeing the facts and of interpreting them.³⁹

None of this is easy, because women scientists tend to hail from the same socially privileged families and be educated in the same elite universities as our male colleagues. But since we are marginal to the mainstream, we may find it easier than they to watch ourselves push the bus in which we are riding.

As we rethink our history, our social roles, and our options, it is important that we be ever wary of the wide areas of congruence between what are obviously ethno- and androcentric assumptions and what we have

been taught are the scientifically proven facts of our biology. Darwin was right when he wrote that "False facts are highly injurious to the progress of science, for they often endure long...."⁴⁰ Androcentric science is full of "false facts" that have endured all too long and that serve the interests of those who interpret as women's biological heritage the sexual and social stereotypes we reject. To see our alternatives is essential if we are to acquire the space in which to explore who we are, where we have come from, and where we want to go.

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NOTES

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¹ For a discussion of this process, see Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 2nd ed. (University of Chicago Press, 1970). ² Berger and Luckmann have characterized this process as "trying to push a bus in which one is riding." [Peter Berger and Thomas Luckmann, *The Social Construction of Reality* (Garden City: Doubleday & Co., 1966), p. 12.]. I would say that, worse yet, it is like trying to look out of the rear window to *watch* oneself push the bus in which one rides.

³ Loren Eiseley, *Darwin's Century* (Garden City: Doubleday & Co., Anchor Books Edition, 1961), p. 24. ⁴ William Irvine, *Apes, Angels, and Victorians* (New York: McGraw-Hill, 1972), p. 98.

⁵ Quoted in Marshall Sahlins, *The Use and Abuse of Biology* (Ann Arbor: University of Michigan Press, 1976), pp. 101–102. ⁶ Francis Darwin, ed., *The Autobiography of Charles Darwin* (New York: Dover Publications, 1958), pp. 42–43.

⁷ *Ibid.*, pp. 200–201. ⁸ Richard Hofstadter, *Social Darwinism in American Thought* (Boston: Beacon Press, 1955), p. 45. ⁹ Though not himself a publicist for social Darwinism like Spencer, there can be no doubt that Darwin accepted its ideology. For example, near the end of *The Descent of Man* he writes: “There should be open competition for all men; and the most able should not be prevented by laws or customs from succeeding best and rearing the largest number of offspring.” Marvin Harris has argued that Darwinism, in fact, should be

known as biological Spencerism, rather than Spencerism as social Darwinism. For a discussion of the issue, *pro* and *con*, see Marvin Harris, *The Rise of Anthropological Theory: A History of Theories of Culture* (New York: Thomas Y. Crowell, 1968), Ch. 5: Spencerism; and responses by Derek Freeman and others in *Current Anthropology*

¹⁵ (1974), 211–237. ¹⁰ Antoinette Brown Blackwell, *The Sexes Throughout Nature* (New York: G. P. Putnam's Sons, 1975; reprinted Westport, Conn.: Hyperion Press, 1978). Excerpts in which Blackwell argues against Darwin and Spencer have been reprinted in Alice S. Rossi, ed., *The Feminist Papers* (New York: Bantam Books, 1974), pp. 356–377. ¹¹ Eliza Burt Gamble, *The Evolution of Woman: An Inquiry into the Dogma of her Inferiority to Man* (New York: G. P. Putnam's Sons, 1894). ¹² Charles Darwin, *The Origin of Species and the Descent of Man* (New York: Modern Library Edition), p. 69. ¹³ Elaine Morgan, *The Descent of Woman* (New York: Bantam Books, 1973), pp. 3–4. ¹⁴ Darwin, *Origin of Species ...*, p. 567.

¹⁵ *Ibid.*, p.580.

. ¹⁶ *Ibid.*, p.582.

. ¹⁷ *Ibid.*, p.867.

. ¹⁸ *Ibid.*, p. 873.

. ¹⁹ *Ibid.*, pp. 873–874.

. ²⁰ *Ibid.*, p. 895.

²¹ Frederick Engels, *The Origin of the Family, Private Property and the State*, E. B. Leacock, ed. (New York: International Publishers, 1972), p. 138. ²² One of the most explicit contemporary examples of this literature is E. O. Wilson's *Sociobiology: The New Synthesis* (Cambridge: Harvard University Press,

1975); see especially chapters 1, 14–16 and 27.

²³ Wolfgang Wickler, *The Sexual Code: The Social Behavior of Animals and Men* (Garden City: Doubleday, Anchor Books, 1973), p. 23. ²⁴ Valerius Geist, *Mountain Sheep* (Chicago: University of Chicago Press, 1971), p. 190.

²⁵ George C. Williams, *Sex and Evolution* (Princeton: Princeton University Press, 1975). ²⁶ Edward O. Wilson, *Sociobiology: The New Synthesis* (Cambridge: Harvard University Press, Belknap Press, 1975), pp. 316–317. Wilson and others claim that the growth of a mammalian fetus inside its mother's womb represents an energetic "investment" on her part, but it is not clear to me why they believe that. Presumably the mother eats and metabolizes, and some of the food she eats goes into building the growing embryo. Why does that represent an investment of *her* energies? I can see that the embryo of an undernourished woman perhaps requires such an investment – in which case what one would have to do is see that the mother gets enough to eat. But what "energy" does a properly nourished woman "invest" in her embryo (or, indeed, in her egg)? It would seem that the notion of pregnancy as "investment" derives from the interpretation of pregnancy as a debilitating disease.

²⁷ For example, at present in the United States, 24 percent of households are headed by women and 46 percent of women work outside the home. The fraction of women who

work away from home while raising children is considerably larger in several European countries and in China. ²⁸ Ruth Herschberger, *Adam's Rib* (1948; reprinted ed., New York: Harper and Row, 1970).

²⁹ Furthermore, a woman's eggs are laid down while she is an embryo, hence at the expense of her mother's "metabolic investment." This raises the question whether grandmothers devote more time to grandchildren they have by their daughters than to those they have by their sons. I hope sociobiologists will look into this.

³⁰ Nineteenth-century feminism is often dated from the publication in 1792 of Mary Wollstonecraft's (1759–1797) *A Vindication of the Rights of Woman*; it continued right through Darwin's century. Darwin was well into his work at the time of the Seneca Falls Declaration (1848), which begins with the interesting words: "When, in the course of human events, it becomes necessary for one portion of the family of man to assume among the people of the earth a position different from that which they have hitherto occupied, but one to which the *laws of nature and of nature's God* entitle them . . ." (my italics). And John Stuart Mill (1806–1873) published his essay on *The Subjection of Women* in 1869, ten years after Darwin's *Origin of Species* and two years before the *Descent of Man and Selection in Relation to Sex*.

³¹ William Howells, *Evolution of the Genus Homo* (Reading: Addison-Wesley Publishing Co., 1973), p. 88. ³² Kenneth P. Oakley, *Man the Toolmaker* (London: British Museum, 1972), p. 81. ³³ There are also occasional more perfect skeletons, such as that of *Homo erectus* at Choukoutien, commonly known as Peking Man, who was in fact a woman.

³⁴ Howells, p. 133. ³⁵ Evelyn Reed, *Woman's Evolution* (New York: Pathfinder Press, 1975). ³⁶ Virginia Woolf, *A Room of One's Own* (1945; reprinted ed., Penguin Books, 1970), p. 6. ³⁷ M. Kay Martin and Barbara Voorhis, *Female of the Species* (New York: Columbia University Press, 1975). ³⁸

Rayna R. Reiter, ed., *Toward an Anthropology of Women* (New York: Monthly Review Press, 1975).³⁹
This is what Sarah Blaffer Hardy and Nancy Tanner have done. See Sarah Blaffer Hardy, *The Woman That Never Evolved* (Cambridge, MA: Harvard University Press, 1981); and Nancy Makepeace Tanner, *On Becoming Human* (Cambridge: Cambridge University Press, 1981).⁴⁰ Darwin, *Origin of Species...*, p. 909.

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