Population, Nature, and What Women Want

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Lessons from Robert Engelman's More: Population, Nature, and What Women Want (Island Press, 2008) - Book review

Editor's note: The matter of women and population growth could be our most urgent task to deal with as a species and civilization. John Wertime handles it brilliantly, short of your reading the whole book which is a breakthrough by Robert Engelman. If you liked Ishmael, read this.

Engelman explains an effect of the agricultural revolution: "With the bounty of the world now quantifiable, storable, and controllable by those who could defend food surplus, new ideas of property, wealth, and inheritance emerged. All these shifts tended to favor males with their upper-body strength and brought them to the fore as authorities and leaders. Women dropped back, and their value as childbearers came to overshadow the roles they had had in societies more oriented toward natural life." And what followed? Look around: motor-vehicle domination, global warming, etc. Of course, women today have to equally address negative developments that mainly men have brought about. - Jan Lundberg

Only in the last few years has the environmentalist community's urgent warning of the perils of human-induced global warming begun to be reported seriously by the mainstream American media and to have a significant impact on public discourse and policy. Although still inadequate to the need, this discourse far exceeds the meager attention currently given in the public sphere to the root cause of global warming -- excessive population, both human and animal -- and the environmental, economic and social consequences of population growth.

A recently published book, More: Population, Nature, and What Women Want, by longtime population analyst and activist Robert Engelman, does much to fill this void with the big picture it conveys. Engelman's principal goal is to show how human numbers have grown to the point of unsustainability and to suggest the most effective way to curb their further increase in the hope of preventing the ultimate danger they pose--our extinction. This highly readable book merits widespread circulation and careful consideration not only by politicians, policy makers, and members of the media, but also by the general public, especially young people, who will need far more wisdom and understanding in dealing with the looming crises facing humankind and the natural world than their parents and grandparents have exhibited. It would make an ideal book to challenge and stimulate college students through the important perspective it gives on the past and the insights it contains for the present.

In what follows, I have highlighted concepts, concerns, themes, paradigms, facts, and historical perspectives in Engelman's work that I find particularly noteworthy and compelling for an appreciation of the intimate connections and interactions of human gender, reproduction, numbers, and environmental stress that form the main focus of the book. In doing this, I have liberally paraphrased and quoted the author's carefully chosen words, knowing that I cannot do better. I hope this extract will whet the reader's appetite for the real thing, or for those who may read nothing else, at least help convey the importance of population in our lives, and encourage active interest and participation in the vital issues with which Engelman so eloquently deals.

Until 2007, when he became vice president for programs at the Worldwatch Institute, Robert Engelman worked on population and the environment at Population Action International (PAI), an organization earlier known as the Population Crisis Committee. This position gave the author numerous opportunities for firsthand observation and research on population and reproductive health matters in parts of Africa, Asia and Latin America as well as time for extensive reading in many fields, such as demography, anthropology, archaeology, and history, all of which figure importantly in his succinct, amazingly rich, and mind-expanding discourse. Engelman's writing is personal, with many allusions to his experience in the real world, and frank, but very sensitive -- population, after all, ultimately stems from sex in all its aspects and ramifications.

It's also a tour de force of historical analysis and connection-making that illuminates key points and problems in human development and history that shape us today, and a penetrating look at the circumstances in which we currently find ourselves. Furthermore, it demonstrates a rare understanding and appreciation of basic needs and desires that women, especially those who bear and raise children, have generally shared over the millennia, as well as fundamental contributions women have made to humankind and its culture. Few writers demonstrate more clearly the effects of the tragic subjugation and devaluing woman have long suffered on the world's current population predicament, to say nothing of the effects on women's personal lives.

While working as a newspaper reporter years ago, Engelman became perplexed by the lack of attention demographic trends were getting in the press and academia (a situation that has changed little today). Despite the central role population plays in the environmental, economic, and social challenges facing the world, vital population statistics -- e.g., we are now 6.7 billion strong with our numbers growing daily by 215,000 (births minus deaths) and have a projected population of 9.2 billion by 2050 -- are much less known by most of us than ball scores or sports records, and tracked far less by the news media than economic trends. Historians and environmentalists consistently overlook demography, as

do those who write news reports. Population is a sensitive subject because it embraces controversial matters such as race and ethnicity, immigration, gender relations, contraception and abortion. Muddling the issue are declining rather than growing populations in countries like Japan, South Korea, Italy and Belarus, a situation that raises different fears for the future than growing numbers.

We “human beings,” Engelman writes,

alter nature for our own ends and only later learn that we have unleashed forces that undermine our own survival. The alteration often begins modestly, when human numbers are negligible relative to the local landscape. Then the change accelerates as human population grows, until unintended side effects begin to appear, bearing the increasingly insistent message that all is not well as before. This process has been occurring, on one scale or another, at least since Homo sapiens learned how to kill large mammals. It reached new heights of intensity, first with the adoption of extensive agriculture 10,000 years ago and then with the dawn of the industrial age 250 years ago.

Humankind’s overexploitation of nature and its resources hasn’t necessarily been anyone’s “fault” or the product of carelessness or miscalculation. “It is simply how population growth works, then as now: it amplifies the scale of human activities and pushes them past tipping points, at which time conditions shift irrevocably toward greater and greater scarcity, complexity, and risk.” Engelman further observes that:

Societies might be able to invent ways to lighten their footprint on the environment. The history of agriculture, in fact, is in part a story of wresting more food from the earth while allowing more people to live on less land. Once tipping points are passed and critical natural thresholds exceeded, however, few populous societies can manage the stately retreat of human numbers needed to return to balance with finite natural resources. The only route to population decline for most has been the kind of catastrophic jumps in death rates that spell collapse to archaeologists.

The climate change our growing numbers are causing poses a potential mortal threat to life on the planet on which we emerged, evolved, and expanded, a planet that, in its essence, is “a paradise for humanity, despite the degradation we have caused.” What Engelman hopes for is this: ”If it happens for the right reasons, a little uncrowding of the world -- not too much, and not for too long -- will be just what the doctor ordered.” By “the right reasons,” Engelman means population decline as a result of women’s unfettered reproductive choices, not through coercion or mortality.

The author’s encounter with Henrietta, a seventeen year-old Ghanaian girl he met on one of his research trips, is used to introduce the reader to key concepts and figures in demography and population policy and their focus on women as those most intimately involved in population change. Called “Condom Sister” by street kids in Accra, Henrietta worked as a “peer educator” to promote condom use and safe sex (her slogan was “if it’s not on, it’s not in”). Like her peers, Henrietta wanted to get married and have three children, one less than the typical Ghanaian woman has today and considerably less than the nearly seven children women there averaged from 1950 to 1975 when about a 3 percent population increase per annum was taking place (the global growth rate in 1970 was about 2 percent per year and is now about 1.2).

The ideal expressed by Henrietta and friends illustrates the revolution in reproductive behavior taking place globally due to the breakthrough of modern contraception and its increased use by women and their partners. In “one of the most remarkable behavioral shifts in history,” Engelman tells us, the worldwide average of five or more live births per woman characteristic of the last several centuries and possibly of most of the last 200,000 years -- the period of homo sapiens -- has dropped today to 2.6. But Henrietta’s goal of three children is still too many for the good of the planet if one is worried about human numbers, for two parents producing three children who grow up to have three children of their own engender a fifty percent increase over the preceding generation and unsustainable exponential growth. Even at the level of 2.6 -- the world’s average today -- this growth is unsustainable. To replace themselves and their partners with no population growth, women need to have approximately 2.1 children on average in wealthy countries and somewhat more in most poor ones, where the replacement fertility rate can reach as high as 2.9 or more in extreme cases. These figures, our author tells us, are the average for all women, not the average for all women actually giving birth. The failure of the youngest and most vulnerable to survive is starkly quantified by these replacement fertility rates. “We ought to be tracking how the rates change,” Engelman says, “but no one does.”

Small differences in fertility thus have major impacts on human numbers. Populations that on average are at or below fertility rates that replace parents must have occasional above-replacement fertility (the Law of the Third Child) or net immigration to survive. Below-replacement fertility has obviously not led to demographic self-extinction in the case of our species, and except for some small groups, it rarely has lasted long enough to threaten survival. If, however, the third child prevails and average fertility rates remain significantly above two live births per woman, rising death rates will someday put a stop to population increase in a Malthusian fashion. As Engelman explains, “Exponential growth cannot continue indefinitely on the finite surface of a planet.” He’s not willing to hazard a guess as to what the “limits to growth”

might be for human numbers, but he acknowledges that they exist. Population change, either upward or downward, has its own momentum, and doesn't stabilize immediately when birthrates hit the critical replacement value. This is something to be remembered, I believe, when thinking of global warming, for just as the effects of this warming will continue beyond a cessation of carbon emissions, so, too, will the population excess that has been the root cause of global warming continue to grow until deaths equal births and the generations of reproducers just about equal the size of those dying.

Migration is one of the demographic forces or "wild cards", as Engelman calls them, that are neither well understood nor well integrated into demographers' analyses and their projections of future population. Family size in most rural areas of the globe is significantly larger than in most cities, whose swelling numbers in the developing world give the false impression that growth is mostly taking place in urban settings rather than through migration from the countryside. Population change is specific to place, whether village, state or country; through migration, any one place can influence any other demographically. Countries like Japan and various European nations facing declining ratios of workers to retirees could slow this decline by accepting more immigrants, but high levels of immigration can cause politically unwanted ethnic shifts as well as increased and unwelcome population densities.

One of the important understandings that women have and men largely lack, Engelman maintains, is a sense of reproductive timing. "The key question a prospective mother faces at each moment of her reproductive life is, when is the right time?" A baby that comes at the right time is more likely to receive better care than one that doesn't. Men's failure to grasp "the conditions that could allow human numbers to be sustained over time" has had a direct connection to population growth. Engelman explains the concept of "reproductive timing" as follows:

Reproductive timing may refer mostly to preventing an unwanted conception at any given moment, but it also includes the encouragement of conception and healthy pregnancy when a birth is wanted. It can include fostering and adoption, if willing and qualified parents are available. It can include the always-divisive concept of abortion. And it can include strategies more universally disturbing than abortion but that today gain much less attention: infanticide and two less directly murderous ways of escaping parental investment, child neglect and abandonment….Given the length of time sexually active women must live with pregnancy as a possibility, reproductive timing is most often a matter of using contraception rather than trying to enhance fecundity.

How far back in the past does the intentional management of a woman's own childbearing go? The author suggests there is good reason to believe it goes very far back in time and that contraceptive and other fertility-regulating practices may have played a significant role in depressing population long before modern contraception became widespread. Fertility-regulating practices that were available to people anciently, just as they are today, include abstinence, mutual masturbation, fellatio, anal sex, and withdrawal. Breastfeeding and leanness on the mother's part are also ways in which hunter-gather humans probably sustained low populations. Interestingly, in 1793, the pioneer feminist Mary Wollstonecraft proposed regular breastfeeding as a check on population. For tens of thousands of years, Engelman argues, women spent much of their time in collecting and learning about plants and small animals. Besides satisfying the need for food, this activity may have enabled them to identify healing and pain relieving substances, and also some that helped in repressing the reproductive process when it was sex but not a child they wanted. Both biological and documentary evidence, he says, support the idea that plant and animal substances with some effect on human fertility exist. Among them are menstruation-inducing emmenagogues, which come from a number of reliably documented plants, imbibed whole or in solution. Pessaries—something a woman places in front of her cervix before intercourse—were utilized anciently and find use today in parts of the world (the modern diaphragm falls into this category). Engelman also mentions the existence of a female condom in the ancient and contemporary world. However limited the effectiveness of these traditional methods might have been in comparison to modern contraceptives, "the cumulative demographic impact of widespread use over time might nonetheless have been significant despite many disappointed individual users." Literary references to abortion in ancient Greece and China establish that whatever the danger involved, women sought and attempted it long ago. When all else has failed, people throughout the world have practiced infanticide in various ways with differing justifications, issues Engelman sensitively and sensibly discusses.

The statistics for pregnancy and abortion Engelman cites are grim. On average, during the course of a year, 85% of women who are part of a heterosexual couple having sex without contraception become pregnant. Worldwide, from a quarter to a half of all pregnancies are not welcomed at the time they occur by the women who conceived them. Approximately 46 million abortions take place each year, roughly one for every three births. Of these abortions, 40 percent are illegal and most are performed in unsafe circumstances. More than 1 in 270 result in a woman's death. Many of the rest render the recipients disabled or infertile or both for the remainder of their lives. "To become pregnant is to approach the door of death," a woman told a colleague of Engelman's in Bolivia. In that country, the lifetime risk of dying in pregnancy or childbirth is 1 in 50. In Afghanistan, it is 1 in 6 !!! "Not many wars force combatants to face such dismal odds," he states. Abortion rates go down as access to safe and effective contraceptive methods go up. Without

safe and affordable abortion, no country has achieved sustained replacement fertility. It's possible, he says, that access to safe abortion is essential to ending population growth through lower birthrates. Engelman's sensible take on abortion is "to make it safe, accessible, and likely to occur as early as possible in a pregnancy, while improving the effectiveness and reach of contraception. And, of course, support abstinence as an option, especially for the young. But to criminalize abortion is to ask for dead and maimed women and to bring on infanticide."

As is true of other professionals in the population and reproductive health fields, Engelman considers the term "population control" to have a negative connotation stemming from the coercive measures employed by governments or medical personnel to control women's reproduction for whatever reasons. China's example comes immediately to mind here. In a statement that distills the experience and insights he has gained over the years, Engelman says: "It is not population control…that depresses demographic growth over the long term. Nor is it, in all likelihood, simple economic development and growth, as many economists assume. Instead, the main factor in regulating population is women's ability to manage their own fertility, ideally in agreement with their sexual partners." In other words, Engelman says: "The best way to 'control' population is to give up control, in fact to give control away to those who can best decide for themselves when to bear a child." The basis for Engelman's confidence in women is stated in the introduction of the book:

If any message arises from the research that went into this book, it is this: Women aren't seeking more children, but more for their children….Avoiding unintended pregnancy and childbearing is an essential strategy for achieving the dreams that women hold for their children. Women's intention to bear wanted children and nurture them to adulthood, with the best possible future in mind, is a central theme of this book.

Engelman's prescription to halt the world's present runaway population growth thus appears to be the following: provide modern contraceptive means and counseling to help women bear children in good health -- at the times women want to do so -- and women, from a sense of reproductive timing and a concern for their offspring developed over a myriad of generations, will make reproductive decisions that lead to population stability. Additionally, provide safe and affordable abortion facilities as a backup for unintended pregnancies. The active participation of their partners will enhance the decision-making process and outcome. Boosting the status of women closer to that of men will increase the success of women in timing their childbearing.

But, one must ask here, is the trust in women's instincts and judgment that underlies mainstream population policy well founded? Can women be trusted to actually want the small families needed to end population growth? "It is an empirical fact," biologist Garrett Hardin argued in 1980, "that in every country in the world the number of children wanted by the average family is greater than the number needed to produce population equilibrium in that nation." The veracity of Hardin's assertion, Engelman tells us, was refuted not long thereafter by physician Malcolm Potts, who pointed out that "even as early as the 1960s, countries that provided relatively unconstrained access to family planning and safe abortion services saw fertility rates heading toward or going below replacement levels of two (and a fraction) children per woman."

To turn the "close correlation between access to effective contraception and average family sizes of two children or less" into an effective basis for sustained population, Engelman looks to governmental support, but finds that:

Few governments are moving with real urgency to enable more women and couples to put small-family intentions into effect. Until governments offer such support, no assumption that replacement fertility will arrive any time soon is a safe one -- unless replacement fertility itself floats upward on a rising tide of death. For these reasons and more, few threats related to population are as worrisome as the prospect of setback for women's status and persistent barriers to their access to health services.

The reason why governments aren't taking on this challenge in any serious way, he says, is that they are under no pressure to do so "thanks in large part to the global silence on population." Engelman's confidence in "individual childbearing decisions as the basis of sustainable population" runs directly counter to the despair about the demographic future of the world, irrespective of the options available to childbearers, that Paul Ehrlich expressed in his 1968 book, The Population Bomb. This pessimism and the lack of support for governmental action that characterized adherents of this point of view opened a rift in the population policy community. Some writers, Engelman says, have also argued that much more urgent and direct action is needed to end world population growth, a position Engelman does not espouse.

Engelman's emphasis on reproductive autonomy and higher status for women as key to halting the runaway population growth in today's world stems from his understanding of the interactions of the "dynamic triangle of women's lives, human numbers, and nature" during the long evolution of humankind, a story he tells with clarity and great skill. His hypotheses and speculations about women are predicated on the assumption that there are no differences between the sexes apart from "the obvious bodily ones: Women give birth. Men, on average, are bigger and stronger." From these differences come the experiences and perceptions that have determined the ways in which men and women have related to each other at various times in the past and how their differing interests in sex, reproduction, population, and nature have

played out in cultural evolution and everyday life. Certain fluctuations in the balance of power between them notwithstanding, males have generally dominated females, and in no society of significant size or duration has the opposite been true. What students of past cultures have discerned is that male subjugation of women grew markedly as population expanded and societies became more complex. While calling this transformation “one of humanity’s great mysteries,” Engelman nonetheless suggests an astute explanation for it: male domination of women increased as the ways in which our ancestors earned their livings changed. Status and authority, his discussion shows, can be related historically to the degree to which each sex made significant economic contributions to the support of the family and to society.

“Curiously,” Engelman says as he begins to elucidate the interconnections in the dynamic triangle paradigm over a vast period of time, ”it may have been the business of standing on two feet itself that helped launch the demographic success of hominids and, eventually, modern humans.” Emerging four to six million years ago in a particular line of apes, bipedalism brought about significant changes in the pelvis and birth canal of hominid females, thereby complicating the birthing process and making it the most dangerous time of life for mother and child. To deal with this new situation, bipedal females, before giving birth, had to go against a deeply ingrained instinct and seek help from a supportive, familiar individual, perhaps a neighboring female someday in need of the same help herself. Engelman suggests that seeking birth assistance may have helped shape our social nature and possibly provided a stimulus to the invention of language itself. Hominid females proficient at assisting births may have gained special status or other benefits, in effect becoming midwives, the first career specialists. Reliance on birth assistance may also have made it easier for a female to give and accept help throughout the long process of child rearing. These innovations may have dramatically raised the child survival rate, “the essential ingredient of species-wide population growth.”

A paradigm parallel to the above-mentioned dynamic triangle -- “innovation leads to growth, which leads to scarcity, which leads to further innovation, which leads to yet more growth” -- is another leit motiv of More: “We could call most of the inventions that led to these shifts win-lose innovations because they seem to work that way in sequence,” he says.

Win-lose innovations may be as old as the spear. (Those with an especially dark view of humanity might put assisted birth in this category.) What these innovations share is that they work brilliantly for their purpose on small scales, but surprise their creators with unintended, indirect, and risky side effects when the scale is large. The process of innovating until we win and then lose has accelerated to warp speed since our numbers have crossed into the billions. Scale matters incredibly to nature, because the interplay of the size and quantity of forces, materials, and beings are what determines nature’s state. This is true of climate, the makeup of soils, and the atmosphere, the presence or absence of water, what can live here, and what can live there.

At the dawn of Homo erectus1.9 million years ago, improved diet among women, possibly due to their invention of cooking or to better skills at large-game hunting and gathering food, enabled them to largely overcome dimorphism -- their proportionally smaller frame than men’s, to which the huge energy demands of pregnancy and lactation had condemned them -- and dramatically increase in head and body size, thereby making this hominid species the first to closely resemble modern human beings. The narrowed dimorphic gap implies a gain in females’ social standing vis-à-vis males. It also allowed Homo erectus women to give birth more often than any hominid species before them. That women now lived past their own reproductive ages meant they were available to act as alloparents (short-term surrogate mothers) for their own grandchildren or for others.

Sometime around 1.8 million years ago, the first Homo erectus group moved out of Africa into the Near East in a dispersal that would reach eastern Asia in 100,000 years or so. The environment of eastern Africa had grown less friendly, with rains coming only seasonally. An increasingly meat-based diet and probable use of fire by a growing erectus population had brought on scarcity by exceeding the carrying capacity of the landscape (that is, what the local animal prey and food plants could support). To avoid hunger and death, some Homo erectus groups chose to migrate. What took these early human precursors all the way to China is explained thus: “…population after population expanded quickly to take advantage of rich resource bases in previously unpeopled ecosystems. Then these populations grew in turn, only to propel yet more subgroups farther eastward until they found the next hospitable landscape, eventually near what is now Beijing.” Engelman suggests that several technological innovations -- food baskets, water sacks, and baby slings -- that most likely were made by women even before the invention of erectus’s distinctive Acheulean tool kit, enabled this transcontinental trek:

Homo sapiens, like Homo erectus (from which we humans probably evolved into our modern form in a small, isolated East African homeland around 200,000 years ago) also turned to migration to alleviate the success of bringing more than two children to maturity over time and thereby stressing the environmental base that supported them. The second major exodus from Africa began sometime between 80,000 and 50,000 years ago. Key innovations leading to population growth unprecedented among large mammals seem to have taken place in such things as assisted childbirth and care, crafty new tools for fishing, a rudimentary knowledge of gardening, and refined weapons and ornaments. Engelman asks what brought on the “creative explosion” that gave us such things as symbolic art and complex speech and made Homo sapiens a truly new phenomenon? The answer, he suggests, is population growth itself -- more people create problems

or shortages that get solved by greater creativity and innovations that are more likely to be passed on and stick in larger groups.

While moving into the Near East and Europe, our ancestors encountered Homo neandertalensis, slightly different human beings who had occupied the same regions for some 200,000 years before them. Neanderthals disappeared about the same time they first encountered Homo sapiens in Europe: “the nonviolent outcome of many generations of below-replacement fertility, in this case perhaps due to resource competition from a more reproductively successful species -- us.” Protofarming, combined with their other livelihoods, allowed sapiens populations to grow in size even as animal prey became scarce and was eventually hunted to extinction. The critical mass Homo sapiens achieved by 35,000 years ago left individuals of other human species no place to live and feed themselves. As our author graphically puts it, “Our Homo sapiens ancestors literally ate the Neanderthals’ lunch, little knowing where the meal would lead them as they -- we -- gained uncontested human dominion of the world.”

The era of hunting, gathering and gardening appears to have been one of relative abundance and relatively high status enjoyed by women due to their important economic contributions. In time, the exploding growth of sapiens numbers throughout the world would cause significant scarcity in the local supply of wild food and natural resources and fill suitable ecological niches to the point that migration could no longer serve as a reliable safety valve. In the wake of these stresses came intensive farming, one of the most momentous innovations in human history.

The shift to full-time cultivation of crops and tending of domesticated animals
that started in the Near East about 10,000 years ago was a mixed blessing for people who had lived in small groups and hunted and gathered their food for several million years. Men, women, and children were unprepared physically for the long, backbreaking work agriculture entailed and for a sedentary life style marked by increasing social complexity and afflictions such as infant mortality, tooth decay, anemia, and infectious disease. The transition from hunting and gathering to intensive agriculture, Engelman says, might be called “a fall from grace”, the Bible story of Adam and Eve’s expulsion from Eden serving as “a parable that recalled, thousands of years after the fact, this irreversible shift and the massive cultural changes it provoked. The First Couple left their garden paradise to a new life of farming in which men had to earn their living ‘in the sweat of thy face’ and to ‘rule over’ women.” Those thus forced out of this Garden of Eden by scarcity and climate change came to face a far more crowded and constricted world than they were used to, one increasingly fraught with types of risk, conflict, subjugation, exploitation, and control never before experienced. The transition from hunting and gathering to agriculture and animal husbandry made necessary by environmental change took place globally from 10,000 to less than 1,000 years ago.

The status women enjoyed in hunter-gather societies because of their contributions to their group’s livelihood or food production may have been enhanced during the transformational shift to agricultural lifestyles. Engelman cites ancient art as being suggestive of women’s association with nature at this time, when there was also a rise to prominence of female priestesses and deities. Males, on the other hand, probably lost status as hunting became marginalized due to animal extinctions, and were forced to work alongside their womenfolk in agricultural pursuits. However, this loss did not last long, for “men soon reasserted their authority over food production, and correspondingly, over women’s lives. The slightly later domestication of animals probably contributed to the shift of male power that occurred in Europe, Asia, and perhaps Africa.”

The earliest traction plows, invented well before 3000 BC in response to the growing need to till tougher soils than were previously plowed, gave males another route to advancement over women who lacked the upper body strength to use them and to break the oxen that pulled them. On this point, Engelman offers the following important conclusion: “The shift in farming practices may have been pivotal to gender relations, the growth of population, and history itself, because it was plow agriculture that spread from the Fertile Crescent to Europe, North Africa, Asia, and eventually to the Americas” [my italics]. Quoting historian William H. McNeill, Engelman continues: “’Hunting and tending animals had always been primarily a man’s job,’ McNeill writes. ‘And when animals came into the field, men came with them. Women lost their earlier dominion over the grain fields; and as followers of the plow, men became once again the principal providers of food. Therewith they were able to reinforce or restore masculine primacy in family and society.’” Quintessential male pursuits -- violence and warfare -- increased with the spread of plow agriculture, further helping to promote male dominance. The appearance of male deities and priests in Sumerian and Egyptian religion had a likely connection to the new masculine role in agriculture as well.

The change from a world of nature, in which knowledge of plant and animal behavior was crucial, to a post-natural world of farming and animal husbandry in which physical strength was paramount, cost women dearly. Regarding this, Engelman says:
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