Introduction

> Have you any notion how many books are written about women in the course of one year? Have you any notion how many are written by men? Are you aware that you are, perhaps, the most discussed animal in the universe?
>
> —Virginia Woolf (1929)

> The distinction between masculinity and femininity has served as a basis for metaphysical thinking at so many times and in so many cultures that it ranks with the stars as an object of superstition.
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> —Michael T. Ghiselin (1974)

In a small white stone house in Avignon near the banks of the Rhone, John Stuart Mill worked during the morning hours of 1860 and 1861 on a first draft of *The Subjection of Women*. The essay was in every respect, he would later insist, a collaborative venture with his wife, Harriet Taylor. But she could no longer work with him; she lay in the cemetery of St. Véran nearby, dead now some two years.

Mill opened with a blunt challenge to the patriarchal foundation of Victorian society: the subordination of one sex to the other was "wrong in itself, and now one of the chief hindrances to human improvement"; accordingly, it "ought to be replaced by a principle of perfect equality, admitting no power or privilege on the one side, nor disability on the other." Dismissing the argument that the long history of sexual inequality should weigh in its favor, Mill turned to "that most difficult question, what are the natural differences between the two sexes." It was a question, he insisted, that could not really be answered: "Standing on the ground of common sense and the constitution of the human mind, I deny that any one knows, or can know, the nature of the two sexes, as long as they have only been seen in their present relation to one another . . . What is now called the nature of women is an eminently artificial thing—the

result of forced repression in some directions, unnatural stimulation in others." But of this Mill was sure—that nurture shaped character more than nature ever could. History displayed "the extraordinary susceptibility of human nature to external influences, and the extreme variableness of those of its manifestations which are supposed to be most universal and uniform." Any differences that might be found between the sexes could only be adjudged natural if they could not possibly be artificial, the effects of education or external circumstances. Meanwhile, a frank confession of ignorance was the only intellectually respectable position.[1]

Charles Darwin disagreed. Standing on a hillside path in Wales sixty feet above his summer neighbor, the redoubtable writer and reformer Frances Power Cobbe, Darwin shouted down to her his reaction to Mill's recently published essay on women. He was, he said, intensely interested in Mill's book, but "Mill could learn some things from physical science; and . . . it is in the struggle for existence and (especially) for the possession of women that men acquire their vigor and courage." Women's nature, like men's, was rooted in their biology. It was nature, not nurture, that mattered. Even then, Darwin was at work on the volume that would enshrine this view of human beings, *The Descent of Man*. Recording this scene in her autobiography, Cobbe was aware of some incongruity in the spectacle of two eminently genteel people, separated by "impenetrable brambles" and hence "exchang[ing] remarks at the top of our voices, being too eager to think of the absurdity of the situation." But she did not comment on the oddity of Darwin's emphasizing the natural inequality of the sexes to a woman who was an ardent and active suffragist.[2]

The distance between Avignon and Wales, stone house and hillside, nurture and nature precisely delimits the controverted terrain of the "woman question" in Anglo-American science in the late nineteenth century. The moment was one in which social and scientific developments converged to create the possibility and urgency of a science of male and female nature and of the differences between them. Such a science would, it was believed, shed light on vexing social issues raised by changes in women's roles and status that were taking place during the middle and later nineteenth century. The rise of sexual science needs, accordingly, to be seen both

as part of an ongoing inquiry into the varieties of human existence and as a response to the particular historical moment in which women were asserting new claims to a life beyond the domestic hearth.

Interest in the scientific study of humanity had never been so lively. Nineteenth-century scholars responded with a will to Alexander Pope's admonition that "the proper study of mankind is man," but unlike most of their predecessors they worked under the assumption that human nature was not unitary but separate and diverse. If the proper study of mankind was indeed man, it was discrete, not universal, man—humanity divided by class, nation, and race. And increasingly it seemed, as the century wore on, that the proper study of mankind was woman.

What is man? What is woman? What are the differences between them? Before the midnineteenth century such questions were largely the province of folklore, theology, and philosophy. Yet science too entered the discussion. Aristotle argued that the female sex was a deformity of nature. Women, being colder and weaker than men, had insufficient heat to transform the menstrual blood into the more perfect form of semen. In conception, the woman contributed no seed but only the material substance and the place of incubation; the man supplied the form and the efficient cause. Galen similarly justified woman's inferior social status on the basis of her weaker nature. These assumptions survived to animate the speculations of medieval thinkers. And even when William Harvey challenged Aristotle's view that women produced no seed or ovum, he nonetheless insisted that the male contribution to conception was superior: the male supplied "reason" and excellence. Descartes, in like manner, held that the male semen endowed the offspring with soul.[3]

Scientific interest in women's nature had, then, a lengthy history. Yet the sexual science that arose in the late nineteenth century was something more than simply another chapter in that history. It was distinctive in a number of ways. In the first place, it attempted to be far more precise and empirical than anything that had gone before. In addition it was able to draw on new developments in the life sciences as well as on the new social sciences of anthropology, psychology, and sociology. And, finally, it spoke with the imperi-

ous tone of a discipline newly claiming, and in large measure being granted, decisive authority in matters social as well as strictly scientific.

In the natural sciences the great event was the emergence of biology out of a union of descriptive natural history and physiology. Both these fields had flourished independently in the previous century, when physiology, largely confined to the human body, was still the preserve of the medical profession and natural history remained classificatory and descriptive. Those who coined the term *biology* around 1800 hoped to move beyond narrowness and taxonomy to create a comprehensive study of the living organism, whether vegetable, animal, or human.

Biology in the second half of the nineteenth century was steeped in an atmosphere of evolution. Though the concept had not awaited the *Origin of Species,* Charles Darwin's collection of facts and powerful reasoning made evolution central to biological inquiry. The effect was revolutionary. Evolution gave new meaning and an entire history to the particular facts of anatomy, morphology, and embryology. Biologists began to study organisms with an eye to their ancestral linkages and to their change and variation over time, as well as to their adaptive fitness in the present.

The new social sciences bathed in the same evolutionary stream. These new disciplines were actually modernized forms of much older fields of inquiry. Physical anthropology, for example, proposed to bring precise empirical data to bear on anthropological questions going back a century and more, above all the question of race. Psychology, too, shook off its speculative past and determined to employ clinical tests and measurements as well as new information about the physiology of the nervous system in place of introspection and anecdote. The phenomena of moral philosophy, seen to be too diffuse to satisfy the new demands for specificity, empiricism, and precision, were parceled out among the social sciences of economics, political science, and sociology. In all these areas models of change and development, usually though not invariably indebted to Darwin, became the backbone of theory and research. Physical anthropologists studied the physical and mental traits of human beings in the context of their evolutionary relationships to the great apes. Cultural anthropologists assessed civiliza-

tions and races on an evolutionary scale of perfection. In psychology interest centered on the neurophysiological development of brain levels in the individual, as well as the development of intelligence and morality in humanity as a whole. Sociologists were fond of imagining societies as biological organisms writ large, undergoing a similar course from birth through maturity to death.[4]

Science and scientists had never enjoyed greater prestige, a prestige accorded them partly on the basis of the perceived connection between scientific knowledge and the great achievements of nineteenth-century technology and even more because they held out the dazzling promise of certain knowledge. The natural sciences were to undergo a crisis of faith around the turn of the century, but before that time it was possible to believe that nature was an objective reality "out there" apart from humanity but reliably knowable and predictable. Science was a product of human discovery, not an artifact of the human mind. Physics was generally conceded to provide the model of definite, exact knowledge. Biology had not yet attained that status, but Thomas Henry Huxley looked forward to a time when it would be "as deductive and exact" as mathematics. All the sciences, whatever their level of development, were alike committed to discovering the ground rules of the universe, those underlying principles that governed reality. Science was, quite simply, "the pursuit of *Law*."[5]

Charmed by the conception of a hierarchical order in human knowledge, charmed too by the evident successes of the scientific method, social scientists modeled their fledgling disciplines upon the natural sciences and set out to discover the regular laws that surely underlay the flux of social facts. Human life, they were convinced, was part and parcel of an orderly, law-bound universe: "The world," enthused the American psychologist G. Stanley Hall, "is lawful to the core." In support of this conviction they had little by way of proof (though the early work of the Belgian astronomer L. A. J. Quetelet on population statistics appeared promising) but a great deal by way of faith. Interested as they no doubt were in the study of society for its own sake, they were far more interested in it for the sake of the ethical and political norms they hoped by its means to discover. This interest extended beyond the social sciences to all realms of society. Finding "manifestations

of a universal law" had become "the intellectual pastime of the nineteenth century." Reformers and conservatives alike searched for a new foundation for social and political action in the face of the weakening of religious belief and the growth of social unrest. By midcentury the bloom was off the optimistic social reform movements of the earlier part of the century both in Europe and in America.[6]

One measure of the European turn away from the Enlightenment faith in natural rights was the increasing emphasis laid by the social sciences on individual and group differences. It had been characteristic of social theory in the late eighteenth century to stress the commonalities shared by all human beings. Humanity was one in essence, however varied its particular manifestations might be. Eighteenth-century theorists did not deny the existence of differences among races and national groups; they did not even deny that some groups were better, or more advanced, than others. But in the main they did reject the notion that such differences were inborn or hereditary, and hence permanent, and accepted "the great surmise of the Enlightenment environmentalists concerning the power of enculturation."[7] Scottish Common Sense philosophy contributed to the notion of the psychic unity of humanity an analysis of mind into only a few relatively undifferentiated faculties like memory and judgment. It was thus content to suppose the division of labor in economic life a result not of specific constitutional abilities, but of environment and social conditions.

This congeries of ideas gradually gave way in the nineteenth century to a stress on differentiation and hierarchy. Environmentalism lost favor; categories hardened and were made permanent. Physical attributes were construed to be the determinants of character. Anatomists, physiologists, and psychologists grew increasingly concerned to classify individuals according to types with sharply differing constitutions and aptitudes. In the early years the new approach was sometimes put to the service of liberal reform, as with phrenology; later it served to buttress conservative, even racist, social and political philosophies. In either case the shift was, as Frank Manuel notes, "a momentous departure." It was so because it fractured the assumption of human unity, thereby encouraging invidious comparisons among groups; because it fos-

tered typology at the expense of individual particularity; and because the new stress on measurable dimensions gave priority to just those physical attributes least amenable to change. According to the new doctrines a glance might suffice to read an individual's character and destiny.[8]

Of all the permutations of physical differentiation sex is, together with color, the most evident. Race and gender, not infrequently linked, are two of the great themes of nineteenth-century science. There are many reasons why this was so. The natural sciences, particularly after Darwin, were obsessed with the great issue of "man's place in nature" (the title of a book by Thomas Henry Huxley). New knowledge of comparative anatomy and physiology seemed to be laying the groundwork for a rigorously precise physical anthropology. Anthropological interest had been enormously stimulated by the accounts of late-eighteenth- and early-nineteenth-century missionaries, traders, and explorers. An "explosion of exploration" had sent Cook on three voyages to the southern Pacific and the coasts of Asia and America, Mungo Park to west Africa, Alexander von Humboldt to Spanish America, William Kirkpatrick to Nepal, and Alexander McKenzie to the Canadian Northwest, all by 1800. Contact with native peoples aroused interest not merely in race but in sex, since it revealed sexual customs, cultural beliefs, and labor patterns quite at variance with European expectations. Darwin himself raised the question of sex differences in *The Descent of Man, and Selection in Relation to Sex* (1871).[9]

Yet more was involved in this efflorescence of nineteenth-century anthropology than austere scientific inquiry. Race was a burning social issue in England and America. Abolitionist movements agitated the issue of black emancipation with increasing stridency. In this atmosphere science became a weapon, its findings useful as they legitimated or discountenanced the claims of black people to political and social equity. So too with sex. By the third quarter of the century women were laying claim to rights and opportunities previously reserved for men.

The lead in the agitation for women's rights gathering momentum in the last third of the nineteenth century was taken in America, where the movement could be dated from the Seneca Falls Conven-

tion of 1848. Though the movement later focused mainly on suffrage, the Declaration of Sentiments of 1848 represented a full-scale assault on the status of women, including the legal death of women in marriage, their exclusion from higher education and the professions, and the double standard of morality, as well as the franchise. Before the Civil War, women's rights in America were largely the concern of a numerically small but vigorous circle of reform-minded men and women, most of them abolitionists. After the war, the old alliance between abolitionists and women dissolved, and the women's rights movement emerged on its own. During these years organized feminism concentrated on winning the vote, with some modest successes in the West, but some voices continued to raise the grievances of 1848 and even (though more timidly) suggested reforms in marriage and divorce that would make the marital bond less restrictive.

Some changes were beginning to take place. Most of the private men's colleges continued to shut their doors against women, but coeducational state colleges and a few private ones were being founded, and, more important in the short run, a number of women's colleges sprang up to fill the void in the years after 1865. Postgraduate and professional training was still difficult to come by, but quite a few women had managed to obtain M.D.'s by 1900, and there were also some—though fewer—female lawyers and ministers. Perhaps of greater significance, the post–Civil War years saw an astonishing growth of women's organizations of all kinds, from those designed for self-culture to those with specific public policy concerns. This development, of which the suffrage organizations were only a small part, marked the real emergence of American women into public life, and resulted in awakening many to their disadvantaged and secondary status.[10]

These nascent changes in women's status came about partly through feminist agitation and partly for reasons unrelated to feminism, such as (in the case of the married women's property laws) the efforts to protect family property from improvident or unscrupulous sons-in-law. So too with the movement of women into the workforce, perhaps the greatest change in women's lives before the advent of reliable contraception: feminists applauded it and worked for it, but the trend resulted from the vast industrial

expansion of the period with its insatiate need for human labor. Most women worked in factories through no desire of their own but simply to survive, yet they too, like the female doctors and the suffragists and the New Women of all persuasions, contributed to the perceived threat to the established social order.

British feminism followed a related but not identical course. It might be said that England led America in theory, while America led England in organization. The great fountainhead of Anglo-American feminist thought was Mary Wollstonecraft's *A Vindication of the Rights of Women* (1792), and in England a radical current continued to ripple through the early years of the nineteenth century. Influenced by the French Saint-Simonians and Fourierists, the utopian socialists under Robert Owen spoke and wrote on behalf of the social and intellectual emancipation of women. So too did the Unitarian radicals who wrote for the *Monthly Repository* and the Benthamite radicals whose organ was the *Westminster Review*. These latter circles initiated the youthful John Stuart Mill into the views that would find mature expression in *The Subjection of Women*.[11]

The material situation of women in England lagged behind that of American women. Married women there remained in coverture until passage of the Married Women's Property Acts of 1870 and 1883, whereas the American states began to pass property acts before midcentury. Divorce was more difficult to obtain in England. Higher education opened more slowly to women. Though the new civic universities welcomed men and women alike, Oxford and Cambridge, while accepting the presence of women by the 1880s, refused them degrees until well into the twentieth century.

Yet in England as in America feminism made itself felt. *The Englishwoman's Journal,* founded in 1858, became the focal point of feminists working for improved educational and professional opportunities for women, as well as for married women's property rights and, somewhat later, the vote. In 1866 Lydia Becker founded the first lasting suffragist organization. The next year John Stuart Mill introduced a woman suffrage amendment into the Reform Bill of 1867; its failure provided the real impetus for the creation of a nationwide suffrage movement, marked by the founding of the National Society for Woman Suffrage (1868). Shortly thereafter

Josephine Baker embarked on her crusade against the Contagious Diseases Acts, which provided for the registration and medical inspection (by force if necessary) of prostitutes in garrison towns. This "revolt of women" challenged not only the curtailment of women's civil liberties but also the Victorian code of propriety that mandated female innocence in such matters. Feminists succeeded in establishing women's colleges at Cambridge (Girton and Newnham) and Oxford (Somerville and Lady Margaret Hall). They also contributed to a change in the climate of opinion regarding the rights of married women that made possible passage of the two Married Women's Property Acts. And in England, with an even longer history of female wage labor than America, women continued to pour into the marketplace, each a living contradiction of the cult of true womanhood.[12]

The feminist challenge was sweeping: it embraced education and occupation, together with legal, political, and social status. It even dared broach the subject of equality in personal, and especially matrimonial, relationships. Such assertiveness was more unsettling than the racial threat because it was more intimate and immediate: few white men lived with blacks, but most lived with women. Scientists responded to this unrest with a detailed and sustained examination of the differences between men and women that justified their differing social roles. Anatomy and physiology, evolutionary biology, physical anthropology, psychology, and sociology evolved comprehensive theories of sexual difference. Scientists in all these fields were guided, with few exceptions, by the beacon of evolution, but they turned more specifically to several theories common in the scientific literature of the time. From physics they took the principles of the conservation of energy and the correlation of forces: from biology, sexual selection, the biogenetic law ("ontogeny recapitulates phylogeny"), and the physiological division of labor. These theories were utilized and adapted to explain how and why men and women differed from each other and, often enough, what these differences signified for social policy, and conclusions drawn from them display such a remarkable degree of uniformity that it is fair to say that a genuine scientific consensus emerged by the turn of the century.

It is my aim in this book to examine these theories in the context

of their time. I have focused on the Anglo-American scientific community because my primary interest is in American history. Science, however, does not observe national boundaries, and many of the materials are Continental. There are, I think, some differences in tone between the prescriptive proposals of European and American scientists, but the materials on which they drew were common to both. We need to understand first of all what the theories had to say and what kinds of evidence were adduced in their support. The nature of the evidence is an interesting issue in itself because of the absence at the time of most—indeed, virtually all—of the data we would today deem relevant to a discussion of sex differences: data from genetics and endocrinology, from neuroanatomy and neurophysiology, from Freudian psychology and measurements of intelligence and personality. Today we would want in addition to examine the role of culture and society in differentiating the sexes, but this vast topic, now so critical to the discussion, was dismissed by the great majority of Victorian scientists as of little consequence.

The situation was one in which a truly modest quantity of reliable data was made to support a formidable body of theory. This lack of empirical data did not inhibit theorizing, but it made the validation of theories much more difficult. It forced scientists to rely for the most part not on clinical results or laboratory evidence but on common knowledge and the obiter dicta of their predecessors. Again and again the same names were cited, gaining authority with each citation. Alternatively, some scientists became masters of extrapolation, the classic instance being that of Patrick Geddes and J. Arthur Thomson's interpretation of sex differences based on the distinction between sperm and ovum.

The overwhelming consensus of this work was that women were inherently different from men in their anatomy, physiology, temperament, and intellect. In the evolutionary development of the race women had lagged behind men, much as "primitive people" lagged behind Europeans. Even as adults, they remained childlike in body and mind, never developing traits, such as beards, that distinguished the men from the boys. The reason for woman's arrested development was the need to preserve her energies for reproduction; she suffered a foreshortened maturation, but the race gained. And her weaknesses were actually strengths: Darwinian

sexual selection explained physical and behavioral differences between the sexes as advantageous in finding mates. Thus women became fragilely attractive, while men grew muscular and courageous, each sex loving in the other what it did not find in itself. It followed, therefore, that women could never expect to match the intellectual and artistic achievements of men, nor could they expect an equal share of power and authority. Nature had decreed a secondary role for women. The great principle of division of labor was here brought to bear: men produced, women reproduced. This was called complementarity.

Women, and those men like Mill who sympathized with them, naturally found this message unpalatable. Particularly in America, feminists rejected their scientific relegation to a separate and lesser status. They did so, essentially, in two ways. Writers like Antoinette Brown Blackwell and Eliza Burt Gamble denied that Charles Darwin and Herbert Spencer had correctly interpreted the significance of sex differences, but they did not deny the existence of innate differences themselves; indeed, they emphasized them. Other women, particularly students of the newly developing social sciences, attacked the issue of difference directly. The alleged sex differences lacked proof, they argued, and even those that might be shown to exist were unlikely to be innate, but were probably the result of social factors.

In the long run the environmental argument proved a far more reliable tool to combat scientific antifeminism, since the acceptance of innate sex differences—and thus, in effect, of biological determinism—reinforced traditional stereotypes and lent credence to the validity of separate spheres. For this reason modern scholars have criticized the work of innatists like Blackwell as "entrapped within the same framework of biological determinism as Darwin." Certainly the example of John Stuart Mill and the power of his skeptical environmentalism appear immensely preferable in retrospect, yet in the 1870s and 1880s such was not the case. Contemporary scientists and scientific popularizers dismissed Mill as one who ignored science. Darwin, who respected Mill, nonetheless lamented his scientific ignorance. The London Anthropological Society, devoted to racial and sexual inequality, excoriated the "school of Mill." The editor of the *Popular Science Monthly* scolded

the "philanthropists, sentimentalists, and politicians" promoting women's rights as people who, like Mill, refused to be guided by science: "And yet the fundamental questions of this important movement belong solely to scientific investigators." Only at the very end of the century did cultural interpretations begin to achieve respectability; prior to that time they were simply dismissed as unscientific. So it is understandable why, given the enormous prestige of science and the universal acceptance of its authoritative status in matters of sex difference, some women tried to confront scientific antifeminism on its own terms.[13]

The liveliest and arguably the most effective challenge to scientific orthodoxy around the turn of the century was that of Charlotte Perkins Gilman. A devoted Darwinian, Gilman gave her whole allegiance neither to the environmentalists nor to the innatists. She believed in the shaping power of the environment; her books are searching critiques of the social forces that distort and stunt the lives of women. At the same time she accepted the innatist notion that men had a greater share of genius than women, whose innate gifts were for constructive labor and altruism. Her suspicion that there existed a bedrock residuum of sex distinction played second fiddle, nonetheless, to her exasperation with the social overemphasis on sexual distinction. Both men and women shared a common human nature; this, not the accident of sex, was the most important fact about them.

Witty and penetrating, Gilman had a talent for accepting the premises of men like Darwin and Spencer and exploding their perspectives to arrive at wickedly revolutionary conclusions. Thus she drew on sexual selection while exploiting to the full the awkward break in Darwin's account between human beings, among whom the females were kept, and other mammals, among whom the females were free and independent. She extolled the division of labor with an enthusiasm equal to Spencer's but insisted on pursuing it to its logical conclusion in the one enterprise as yet untouched by modern methods of work—household industry. In the end Gilman's social evolutionism wore no better than theirs, but such was the force of her logic that her argument remained intact, as fresh today as when it first appeared.

A great deal of the late-nineteenth-century writing on gender

difference is overtly emotion-laden. Though some scientists, like Darwin, were content to speculate fairly judiciously about the social significance of their conclusions, others—and they seem to have been more numerous—pontificated. Many writers expressed anxiety at women's restiveness, while others expressed outrage. The subject of women and their status in society clearly touched a deep nerve. I believe that this issue became interwoven in complex ways with other concerns of this period, religious, philosophical, social, and economic, to form a tapestry of uncertainty: about changes in the economy and social structure deriving from industrialism, and more profoundly about evolution and humanity's kinship with the brutes, and about the eclipse of divinity in the universe and the relation of matter and spirit. Educated Victorians of all kinds felt the impact of change, but scientists were particularly aware of the cosmic instabilities that evolution disclosed. In denying to women a coequal role in society, scientists sought to stabilize at least one set of relationships and by inserting lesser orders (women, savages) between themselves and the apes, to distance themselves from the animality and erosion of status that Darwinism seemed to imply. If human beings could no longer lay claim to being a separate creation just a little less exalted than the angels, then a human hierarchy of excellence was needed more than ever. Women and the lesser races served to buffer Victorian gentlemen from a too-threatening intimacy with the brutes.

The terms of this controversy are by now obsolete, yet the fundamental issues have not been laid to rest. In the twentieth century sex and scientific inquiry continue their uneasy relationship in new areas with new vocabularies—hormonal research, brain lateralization, and sociobiology among them. The level of discourse is in every way more sophisticated, and the content less overtly tendentious. Moreover, science no longer speaks with a single voice, and in recent years a vigorous critique of science has emerged. Still, the historical emphasis on difference continues to be put to the use of an ideology of incapacity, though the two concepts are not logically linked. Difference does not have to imply inequality. And even if it did, no particular social policy would necessarily follow. As Richard Lewontin has pointed out, "there is no reason that differences in ability, whether intrinsic or not, need imply

differences in status, wealth, or power. We might build a society in which picture painters and house painters, barbers and surgeons would be given equal material and psychic rewards."[14] Such a society would have chosen to sever the causal connection between science and social policy. It would, that is to say, have denied the assertion, so strenuously made by Victorian scientists, that scientific knowledge ought to govern social and political decision-making. We have not created that society, any more than the Victorians did. Meanwhile, women and other marginal groups will continue to view the scientific pursuit of group and individual differences with suspicion. The dismal history of sexual science suggests that they will be right to do so.