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THE MIND HAS NO SEX?

6 HARVARD UNIVERSITY PRESS, 1989

## *Competing Cosmologies: Locating Sex and Gender in the Natural Order*

Aristotle . . . pretends that women are but monsters.  
Who would not believe it, upon the authority of so  
renowned a person?

—François Poullain de la Barre, 1673

Modern science was both the root and the fruit of a series of revolutions. The historian Alexandre Koyré has described these changes as: the shift from the geocentric world of Greek and medieval astronomy to the heliocentric and (later) the centerless world of modern astronomy; the conversion of the European mind from *theoria* to *praxis*; the replacement of the teleological pattern of thinking and explanation by the mechanical world view.<sup>1</sup> Other scholars have focused on different aspects of these developments, but what is not usually recognized is that revolution occurred also in another quarter—in scientific understandings of biological sex and sexual temperament (what we today call gender).

The Renaissance inherited from the ancient world two dominant cosmologies accounting for women's place in nature and society: the Aristotelian-Galenic theory of humors (important especially to medical traditions) and the Judeo-Christian account of creation. In the ancient world, as in our own, men and women were carefully placed in the great chain of being—their positions were defined relative to plants, animals, and God. Much could be said about ancient views of sexuality; here I shall focus on the relation between biological sex and gender (or an ascribed sexual character). For the moderns, biology has all too often served as a starting point for explanations of that which distinguishes men from women—not

just physique but character and social status. The ancients saw things quite differently. For them, sex organs were not considered the determining factor in sexual character. Gender (or sexual temperament, as they called it) was more fundamental than biological sex; gender shaped sex, rather than vice versa. Gender in the ancient world was a cosmological principle.

### *Ancient Cosmologies: Woman as Imperfect Man*

In the ancient world, woman was viewed as a unique sexual and moral creature, distinct from and inferior to man. The inferiority of woman—odd as it may seem—depended on her lesser *heat*. Fire (or heat)—along with air, water, and earth—constituted the four elements in the terrestrial sphere. As summarized by a seventeenth-century interpreter, each of these elements possessed distinctive qualities: fire was hot and dry; air, moist and hot; water, cold and moist; and earth, cold and dry.<sup>2</sup> The human body was composed of four humors corresponding to the four elements of the cosmos: blood (like air) was hot and moist; phlegm (like water) was cold and moist; yellow bile (like fire) was hot and dry; and black bile or the melancholic humor (like earth) was cold and dry. These traits were influenced and changed by eight additional factors: age, sex, color, composure, time or season, region, diet, and occupation. Good fortune (like good health) depended on cultivating a fine balance between these diverse elements (heat must be tempered by cold, dryness by moisture). The elements also stood in a hierarchical relationship to one another: things hot and dry were superior to things cold and moist. Heat was the immortal substance of life (see Figure 27).

To the ancient mind, temperament (sexual or otherwise) was also defined by the propensity to be hot or cold, wet or dry. Everything in the universe had a temperament. Things hot and dry—the sun, for example—were considered masculine, while things cold and moist—like the moon, or western regions of the earth—were thought of as effeminate. Thus Osiris, identified with the sun, represented the male principle and was the king of heaven; while Isis, identified with the moon, was thought of as the female principle and queen of heaven. In this sense masculinity and femininity had

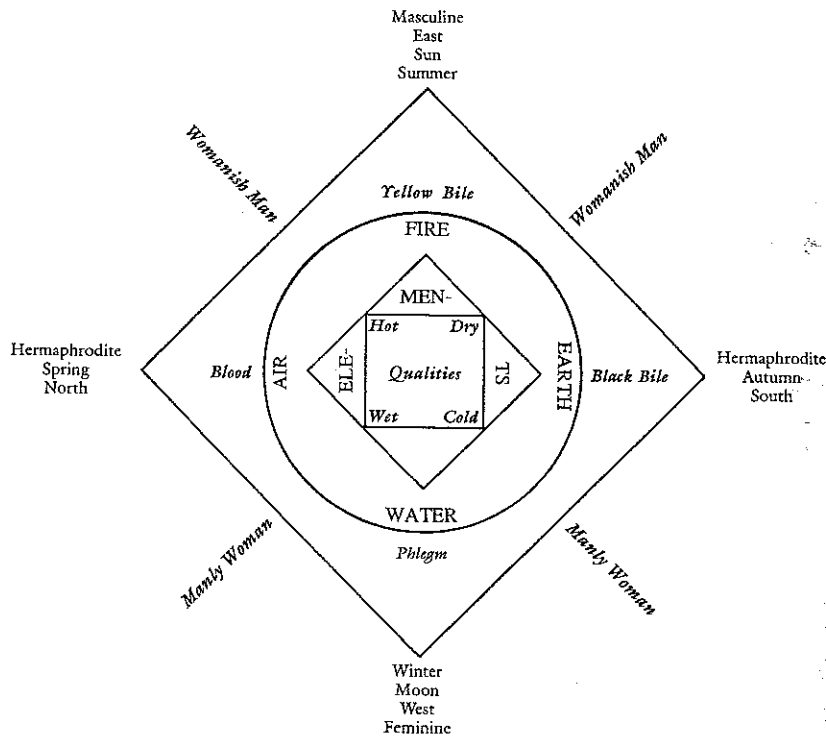


Figure 27. Diagram of the four humors. Sexual temperament (that which defined manliness or womanliness) derived not from the bodies of the male or female but from a specific mix of the qualities (the hotness or coldness, wetness or dryness) inhering in the four elements—air, fire, water, and earth. The perfect woman was wet and cold; the perfect man was hot and dry. The hermaphrodite being both wet and hot (or cold and dry) was ambiguous in its sex and temperament. To the extent that heat predominated, the hermaphrodite approached the manly axis and was thus considered a “womanish man”; to the extent that cold predominated, he or she was considered more womanly and thus a “manly woman.”

nothing to do with the sexual nature of men or women but resulted from a specific mix of the four elements. Differences between the two sexes were reflections of a set of dualistic principles that penetrated the cosmos as well as the bodies of men and women. As Aristotle put it, maleness and femaleness were principles for which the organs of reproduction were mere instruments. “Taking the widest formulation of each of these two opposites,” he wrote, “[we regard] the male *qua* active and causing movement, and the female

*qua* passive and being set in movement.” That is why Aristotle spoke of the nature of the earth as something female, calling it “mother,” while the heaven and sun were given the title of “generation” and “father.”<sup>3</sup>

Heat, which determined sexual character, also determined sex by shaping male and female genitalia into their characteristic forms. From the time of Galen until late into the sixteenth century, woman was thought to have a “spermatic vessel” (a polite word for penis) similar to man’s.<sup>4</sup> Galen taught that male and female genitalia were not essentially different: “All parts that men have, women have too . . . the difference between them lies in only one thing . . . that in women the parts are within the body, whereas in men they are outside.”<sup>5</sup> Even the womb was nothing special. As Galen pictured it, the neck of the womb was nothing other than the penis turned inward, and the bottom of the womb nothing but the scrotum inverted (see Figure 28). Women’s organs were similar to men’s in number and kind, but because women’s organs were internal, women remained “imperfect and, as it were, mutilated.” Again, this important difference between men and women depended on their varying degrees of heat. Women simply lacked the heat to propel their sex organs outward:

Now just as mankind is the most perfect of all animals, so within mankind, the man is more perfect than the woman, and the reason for his perfection is his excess heat, for heat is Nature’s primary instrument . . . the woman is less perfect than the man in respect to the generative parts. For the parts were formed within her when she was still a foetus, but could not because of the defect in heat emerge and project on the outside.<sup>6</sup>

As proof of the fact that women were men *manqué*, Galen, Pliny, and others recounted stories of women spontaneously transformed into men. Volateran, a cardinal, told of a woman in the time of Pope Alexander VI who, on the day of her marriage, “had suddenly a virile member grown out of her body.” There was also a man at Auscis in Vasconia, at age sixty strong, grey, and hairy, who had been a woman until the age of fifteen. “At age fifteen, by accident of a fall, the Ligaments being broken, her privities came outward, and she changed her sex.” Another woman, a citizen of Ebula, be-

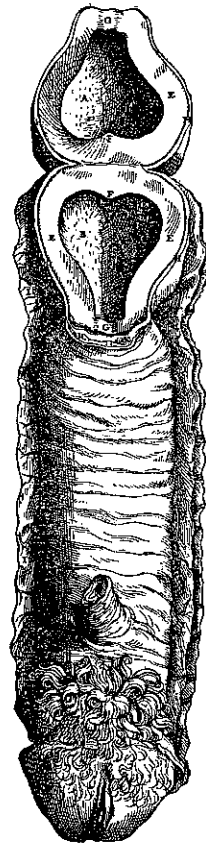


Figure 28. Female reproductive organs. Vesalius provided this visual rendering of Galen's conception in his *De humani corporis fabrica* (Basel, 1543, plate 60). By permission of the Boston Medical Library in the Francis A. Countway Library of Medicine.

came a man after twelve years of marriage.<sup>7</sup> The possibility of transformation was only one way, however: Galen had argued that, though a woman might become a man, a man could not become a woman. This, he explained, was because nature strives always for perfection.

Galen considered the most noble part of the human body to be neither the mind nor the heart, but the testicles, for their role in cooking the blood. A seventeenth-century writer attributed to him the view that the testicles are another fountain or well-spring of

inbred heat—the “feu-place or fire-hearth”—whence the whole body receives an increase of heat. Women, too, had “testicles [ovaries] which boil the blood,” but with less vigor. Should the testicles be absent or taken away, “in a word, all virility or manhoode vanisheth away.”<sup>8</sup>

Varying degrees of heat were thought to distinguish not only the sexes, but also diverse peoples. The peoples of Africa and southern regions, for example, were thought to excel in intelligence and wit because the dry hot climate enlivened their temperament.

### *Renaissance and Early Modern Feminism*

How did the philosophy of sex and gender differences change with the rise of modern science? Some historians have suggested that the new philosophy of Descartes and Locke made modern feminism possible. In this view, the new ideas promoted by the moderns in the seventeenth century served to wipe clean the slate of ancient prejudices in Aristotelian scholasticism, Roman law, and Christian ethics.<sup>9</sup> Prejudices against the intellectual capabilities of women were to be rethought on the basis of clear and distinct ideas. As we shall see, however, the fathers of modern science were curiously silent on the matter of gender differences. Furthermore, the urge to reevaluate women's moral and physical character can be traced to Renaissance humanism, which predated the new philosophy by several centuries. Though Joan Kelly has suggested that women did not reap the benefits of a Renaissance in the fifteenth century, this was a period of great debate about women and their intellectual character. These debates flourished in the feminine atmosphere cultivated at Italian courts where well-born ladies commanded respect (see Chapter 1).<sup>10</sup>

Renaissance humanism and the revival of Platonism chipped away at the oppressive Aristotelian dictates about the nature of women. Some humanists used these newly revived doctrines to subvert biblical authority. The neo-Platonic notion of a hierarchy of creation allowed Agrippa von Nettesheim, for example, to subvert biblical authority. Where scholastics argued that man was superior to woman because he was created first, Agrippa argued that woman is superior to man because she was created last.<sup>11</sup> Agrippa

further justified his claim that woman is superior to man through five different kinds of arguments: *e nomine*, "Eve" means life and "Adam" means earth; *ex ordine*, Eve, created last, represents God's masterpiece of creation; *e materia*, Eve was created from human flesh, Adam from lifeless clay; *e loco*, Eve was created in paradise, Adam outside (and nobility follows from birthplace); *e conceptione*, a woman bore the son of God, man cannot.<sup>12</sup>

These were strong arguments, yet they were made to stand on standard authorities—that of Aristotle, the Bible, or Plato: feminists in this period rarely planted their feminism in new ground. Like other humanists, they employed traditional authorities and standard tools. Perhaps the most curious apologies for women were those employing the tools of that great enemy of women—scholasticism. Anna van Schurman (1607–1678), a renowned Dutch scholar, employed scholastic logic in her defense of women. Van Schurman's work serves as a prime example of a feminist attempting to make her argument understandable by locating it within philosophical traditions of the dominant culture. Her book, *The Learned Maid*, announced itself as an "exercise in logic upon the question whether a maid may be a scholar," and was drafted in proper scholastic form using major and minor premises.<sup>13</sup> Her argument began with the traditional definition of terms. She then proceeded to present fifteen theses defending the right of women to be educated, ending with a refutation of "the adversaries" of this right. In trying to make her voice heard, Schurman employed orthodox scholarly tools.

Other writers drew feminist conclusions by reversing the hierarchy of the sexes within ancient authorities. Where Aristotle had seen women as subordinate, feminists would claim that the female sex was equal to the male or even superior. The work of Marie le Jars de Gournay, the *fille d'alliance* of Montaigne, reveals the eclecticism inherent in this enterprise. In her *Egalité des hommes et des femmes*, written in Paris just before Descartes's *Discourse on Method*, Gournay ridiculed those who "trumpeted in the streets that women lack the dignity, the independence, the temperament, and the organs" to achieve the dignity of men. Yet, in her own argument for the equality of women, Gournay appealed to many of those same authorities. She, too, used the words of Plato, Aristotle, or St. Je-

rome, twisting them to her own purposes. In order to justify her claim that woman is the social equal of man, for example, she argued that sex differences have no significance beyond the purely physical. This she grounded in the teachings of the scholastics: the difference between the sexes, she wrote, is simply an accident required for the propagation of the species. Gournay backed up this properly phrased Aristotelian principle with the notion, drawn from scripture, of an androgynous creation: "Man was created male and female, the two were considered but one," thus male and female possess the same strength of soul. As for those who asked whether woman was created in the image of God, Gournay quipped, "it depends on how much value is attached to the beard." From these traditional authorities Gournay drew feminist conclusions, but like others of her time she did not challenge the world view upon which that authority was founded.<sup>14</sup>

With a bit of imagination, even the Aristotelian/Galenic humoral tradition could be turned to women's advantage. In his *L'Honneste femme* Jacques Du Bosc, for example, found women *more* capable than men of studying the arts and sciences. "It seems to me that . . . [women's] temperament, which the doctors judge more delicate than ours, is better disposed to the study of the arts and the sciences." Whereas the exercise of the body suited men, the exercise of mind suited women.<sup>15</sup> As at the Renaissance court, delicacy, and not strength, was seen as the primary virtue of the learned. Samuel Sorbière too, ever the courtier, wrote to Princess Elizabeth of Bohemia in 1660 assuring her that she—along with Queen Elizabeth of England, Mary Stuart, and Queen Christina of Sweden—served as a fine example of a woman who excels in knowledge. This was not to be a source of wonder, for (as Sorbière explained) "our doctors, who consider the brain the seat of reason and learning, find it as large in women as in men, and also claim that the softness of their constitution (whence perhaps the Latin name *mulier*) is much more suitable to actions of the mind than the dryness and hardness of ours."<sup>16</sup> This played into the hands of men (like Leibniz) who advocated learning for women precisely *because* women had leisure. One author in the *Guardian* argued that women's employments were of "a Domestick Nature, and not like those of the other Sex which are often inconsistent with Study and Contemplation."<sup>17</sup>

Proponents of feminism were not likely to rest their defense of women on one authority alone. "Approved Authors, evident reasons, Holy Writ, sanctions of both Civil and Canon Laws" all served as epistemological moorings. "Unquestioned Histories" were soon added to the flotilla. With the Renaissance we enter the heyday of lexicons listing female worthies in the arts and sciences.<sup>18</sup> Jean de La Forge drew on a number of trends favoring women in his history of learned women. Invoking neo-Platonism, he dedicated his *Le Cercle des femmes sçavantes* to a woman of noble standing (the Contesse de Fisque), admonishing her to join science with beauty.<sup>19</sup>

Let us look at one final example of the attempt to garner a new respect for women by placing them positively within traditional hierarchies. Marguerite Buffet, a "teacher for ladies" living in Paris at the end of the seventeenth century, began her defense of women with that most powerful authority—Christian theology. As others before her, Buffet held that souls have no sex. Since both men and women are created in the image of the divinity, she claimed that "beauty of the mind knows no differences between man or woman." Buffet found it necessary, however, to compare sex organs as well as souls. She countered Aristotle's claim that women are monsters of nature with the Galenic view that the "organs" (or "instruments," as she called them) are "similar and equal." If anything, she added, there is less difference between one sex and the other than there is among individuals of the same sex. Whatever differences might be found between the organs of the two sexes, Buffet held, are necessary for the preservation of the species and do not extend to the soul.<sup>20</sup>

Buffet also denied that female brains were "smaller and more narrow than those of the male," a condition thought to cause women's brains to retain acid and biting humors that "sting" female nerves and membranes. These accusations she judged to be based on prejudice and not on scientific fact. "Geometers and philosophers," Buffet wrote, have shown that buffaloes and cows—animals renowned for the grandeur of their heads—do not have the largest brains. Men, while glorying in their strength and large heads, have demonstrated not their superiority, but only that they have something in common with "stupid animals and large beasts."<sup>21</sup> Not satisfied with simply defending women's equality, Buffet attempted

to turn the tide in favor of women, claiming that women have more lively minds than men and that women's beauty and virtue exceed that of men. Women can trace their greater beauty, Buffet taught, to the fact that female babies take longer to come to term, demonstrating that nature has taken more care in their making. Buffet did not let her opponents off easily. Plato and Aristotle, she wrote, were themselves very ugly and that is why they were so unkind to women.

The most important and powerful argument in the feminist arsenal, however, was a Christian one. After Agrippa's work in the midsixteenth century, it became common within feminist circles to assert that "the soul has no sex." Feminists stretched this idea, originally a Christian notion, far beyond the intentions of its author, Saint Augustine of Hippo. For quite different purposes, Augustine had asserted that both sexes, having been created in the image of God, possess a rational soul (though woman's rationality was of a lesser degree).<sup>22</sup> While woman might be inferior to man by nature, she was his equal by grace: in the afterlife souls had no sex—no legs, arms, or genitalia. Though some argued that all resurrected persons are male, Augustine envisioned paradise populated by asexual souls. Having shed their corporeality (and the sexuality required on earth for preserving the species), souls in heaven finally achieved the equality that at their creation was only potential.<sup>23</sup>

The vagueness of the term *soul* in this period allowed for an easy secularization of this claim, and feminists easily stretched the notion of soul to assert that the "mind has no sex." Some simply considered the soul itself as the seat of intelligence: "all things are thus equal between men and women with respect to the soul, which is the intelligent part and that which makes learned men and philosophers."<sup>24</sup> Others suggested that though equality might be granted women in the matter of salvation (their souls), it was not to be granted in matters of science (their minds). Richard Allestree, professor of divinity at Oxford, wrote in 1673, "but not to oppose a received opinion, let it be admitted, that in respect of their intellects they [women] are below men; yet sure in the sublimest part of Humanity, they are their equals: they have Souls of as Divine an Original . . . that spiritual Essence . . . owns no distinction of Sexes."<sup>25</sup>

This debate concerning the sex of the mind occurred as the brain



was becoming established as the seat of reason. The work of Descartes and Locke sparked interest in philosophy of mind; Hobbes and Locke focused attention on reason as the cement of social contracts. At the same time, within medical circles interest was growing in the nature of the brain. In his summary of medical traditions written in 1615, Helkiah Crooke gave a new preeminence to the brain. Whereas Galen had deemed the testicles the most noble part of the body and Aristotle the heart (as the seat of the soul), Crooke yielded superiority to the brain (followed next by the heart and last by the liver). Crooke found the brain most noble and divine because it was the seat of all sense and voluntary motion, the habitation of wisdom, the shrine of memory, judgment and discourse, intelligence and understanding. In short, Crooke considered the head to be the "prince of the family," the "head of the tribe," to which all other parts are but attendants.<sup>26</sup>

Throughout the sixteenth and seventeenth centuries feminists attempted to locate women positively within ancient, and still powerful, cosmologies. But they did so without challenging those cosmologies and the social hierarchy they underwrote. In the end, feminists left themselves open to easy rebuttal. However brilliantly they stood Aristotle on his head, he was easily set upright again. A new philosophy, however, was in the making. How would that philosophy deal with the feminist claim that "the mind has no sex"?

### *Descartes and Locke: Is Neglect Benign?*

Bacon and Descartes, Locke and Leibniz are often celebrated for having pioneered new scientific methods. Yet, curiously, these fathers of modern epistemology had little to say about the question of sex and sexual temperament. Though they wrote at a time when "the woman question" was much and hotly debated, neither Descartes nor Locke nor Leibniz focused attention on this question. They neither repeated the prejudices of Aristotle nor established their own positions on the nature and status of woman. The focus of their interest remained on the discovery and articulation of new methods (Bacon and Descartes) or on questioning the divine rights of kings (Locke) or establishing new techniques of calculation (Leibniz). Only Bacon and his fellows at the Royal Society called for an explicitly "masculine" philosophy (see Chapter 5).

Many of the principles of the new philosophy did allow (intentionally or not) for the participation of women in philosophy. By adopting a cool silence vis-à-vis the issue of feminism, however, Descartes, Locke, and Leibniz failed to reflect upon how gender relations might affect the foundations of modern philosophy. What might appear to be a "neutral stance" in effect left traditional male prerogative—both social and intellectual—unchallenged.

One might imagine that Descartes's emphasis on method should have provided opportunities that feminists could exploit. Descartes's attack on Aristotelian scholasticism was powerful and unremitting—indeed, it was better (in his view) for one never to have attended school at all than to have imbibed the myths propagated by these men. Those, he wrote, who "blindly follow Aristotle . . . are incapable of attaining knowledge of true philosophy." Those, by contrast, who have learned least about "all that which hitherto has been named philosophy" are the most capable of apprehending the truth.<sup>27</sup> Appealing to what he called an unsullied "natural intelligence," Descartes encouraged each person to learn to the limits of his natural ability.

This emphasis on a universally applicable method had the potential to broaden participation within intellectual culture. Reason, or the ability to manipulate words and signs, Descartes understood to be a universal instrument in mankind. "I have noticed," he wrote, "on examining the nature of many different minds, that there are almost none of them so dull or slow of understanding that they are incapable of high feeling, and even of attaining to all the profoundest sciences, were they trained in the right way."<sup>28</sup> Descartes believed that differences in human intellectual capabilities could be overcome by right method. "Those who walk slowly can," he wrote, "if they follow the right path, go much farther than those who run rapidly in the wrong direction." In contrast to the teachings of Aristotle, Descartes emphasized that reason is the same by nature in all mankind.<sup>29</sup>

Women appealed to natural intelligence in the Cartesian sense to justify their own philosophical endeavors. Though not a Cartesian, Margaret Cavendish, duchess of Newcastle, held that natural reason gave her authority to write about natural philosophy: "since I have not Scholastical Learning . . . I may Err in Words, yet I am Confident, I do not Err in Sense and Reason."<sup>30</sup> Descartes dined at

Cavendish's table, yet he never shared her interest in the question of women's intellectual abilities. He did, however, encourage a number of individual noblewomen to pursue the study of philosophy. In dedicating his *Principles* to Princess Elizabeth of Bohemia, Descartes praised her for her grasp of geometry and metaphysics. "The incomparable excellence of your intellect," he wrote to her, "is evident in the fact that in a very short time you have mastered the secrets of the sciences, and obtained a perfect knowledge of them all."<sup>31</sup> Though sincere in his praise, it should be noted that the women Descartes served—Queen Christina of Sweden, Princess Elizabeth, even the duchess of Newcastle—outranked him socially. Descartes's support in these cases was for particular individuals of high social station; he never made a general defense of the female sex.

In years to come, Descartes was often cited as a defender of women. In an Enlightenment comedy entitled *Le Club des dames, ou le Retour de Descartes*, the playwright Madame de Genlis called for Descartes, the "first person to defend women against the most barbarous opinions of men," to preside over a club for women where they were to cultivate their minds and reclaim their rights.<sup>32</sup> While Molière became notorious as an opponent of learned ladies, Descartes was celebrated as their defender.

Though Descartes never spoke directly to the woman question, he helped clear away much debris of older cosmologies. One important housecleaning took place around the crucial question of gender. Without comment, Descartes simply dropped all talk of sexual temperament. The only sexual differences Descartes acknowledged were those in reproductive organs. Masculinity and femininity for Descartes, unlike for Aristotle, were not cosmological opposites—the one hot and active, the other cold and sluggish.<sup>33</sup> Descartes (again, unlike Aristotle) did not conceive of women as having lesser reason; nor did he (unlike Rousseau) claim for women distinctive mental or moral faculties.

Much the same can be said for the work of John Locke. In his political philosophy, Locke followed traditional opinions that found it fit to subordinate a wife to the will of her husband.<sup>34</sup> In his epistemology and theory of education, however, Locke did not emphasize differences of sex. For him access to "learning and log-

ick" was more a matter of class than of sex. Locke recognized that education was reserved for the leisured classes—of either sex. Where, he wrote, the hand is used to the plough and the spade, the head is seldom elevated to sublime notions or exercised in mysterious reasoning. "'Tis well if men of that rank (to say nothing of the other sex) can comprehend plain propositions, and a short reasoning about things familiar to their minds."<sup>35</sup>

In his 1693 *Thoughts on Education*, Locke suggested that girls of the upper classes be schooled like their brothers in the use of reason; Locke did not (as Rousseau would later) prescribe a radically different education for girls and for boys. Although his comments (originally addressed to a friend and distant relative, Edward Clarke) concerned the upbringing of a young gentleman, Locke stated that they could be used as a guide for raising children of either sex. Locke passed over the question of sex with the remark that "where the Difference of Sex requires different Treatment, 'twill be no hard Matter to distinguish." He did make certain allowances for the protection of a girl's beauty, yet he emphasized that the education of boys and girls should be the same, especially in the early years. In his letter to Mrs. Clarke about the education of her daughter, Locke wrote that he would rather have a wife with a healthy constitution—a stomach able to digest ordinary food, and a body that could endure upon occasion both wind and sun—than a paling, weak, sickly wretch that every breath of wind or least hardship puts in danger. For these reasons he recommended that girls have the same diet, lodging, and clothing as boys. Locke advised no more differences between boys and girls in moral education than in their physical education. Again he wrote to Mrs. Clarke, "since I acknowledge no difference of sex . . . relating . . . to truth, virtue and obedience, I think well to have no thing altered in it [an educational program for daughters] from what is [writ for the son]."<sup>36</sup>

These two or three references to the woman question suggest that Locke did not think that women of the upper classes were less capable of intellectual endeavor than men of those classes. Yet Locke did not treat this topic systematically. His comments on the education of girls were but a response to Mrs. Clarke's particular queries.

Like Descartes, Locke found disciples among women. In 1702, Catharine Cockburn wrote (at age twenty-two) a "Defense of Mr. Locke's Essay of Human Understanding." Thomas Birch, the eighteenth-century historian, has suggested that Cockburn's essay was one of the few pieces to support Locke's work at that time. This work, which won Locke's own approval, had as its purpose the "vindication of Locke's Christian Principles."<sup>37</sup>

What are we to make of Descartes's and Locke's relative silence on the subject of women, despite their innovative abandonment of age-old notions of femininity and masculinity (of the active masculine spirit and passive feminine matter)? Historian Paul Hoffmann has argued that Descartes's distinction between mind and body unseated the misogyny built into Aristotelian physiology.<sup>38</sup> The notion of a profound distinction between soul and body did not, of course, originate with Descartes. What Descartes had to offer was a grounding for this notion in a new epistemology and ontology. The idea of man as a machine undermined the Aristotelian dictum that because women are colder than men they have a lesser reason. If the mind operates independently of the body, as suggested by Cartesian epistemology, traditional allegations of female failings of body no longer imply feminine failings of spirit. All minds are created (at least potentially) equal.<sup>39</sup> Hoffmann has judged Descartes's contribution to feminism a positive one. Ruth Perry has gone further to suggest that the Cartesian method suited women's intellectual and also social condition. Meditative introspection required leisure and isolation, two things literate middle-class and aristocratic women had in abundance.<sup>40</sup>

Genevieve Lloyd, by contrast, has argued that the long-term effects of Cartesianism have been negative. Though Descartes intended to open the sciences (as he put it) "even to women," Lloyd argues that within the context of previously existing gender relations, the effect was quite different. Lloyd locates the seeds of a sexual division of intellectual labor in the Cartesian distinction between mind and body. The ideal of a pure, highly abstract reason separated from the demands of the body and also from the demands of ordinary life became a pillar of modern science. A philosophy that separated sharply the requirements of truth-seeking from

the practical affairs of everyday life reinforced already existing distinctions between male and female lives.<sup>41</sup>

Though the philosophy of a radical mind/body distinction seemingly recognized the equality of women's minds by dissociating these from their (feeble) flesh, it failed to grapple with the male/female dualism that Lloyd has identified. The misogyny of the ancients or the silence of the moderns were not the only options open to seventeenth-century thinkers, however. A number of traditions—the neo-Platonic, cabala, and alchemical—dealt explicitly with the relationship between the masculine/feminine polarity and the mind/body duality (see also Chapter 5).<sup>42</sup> To take one example, Anne Finch, the Lady Conway, envisioned a unity of body and spirit resulting from a union of masculine and feminine principles. She held that spirit and body are one; the original man (what was later called the hermaphroditic Adam) was both masculine (in mind) and feminine (in body).<sup>43</sup> The unity of body and spirit Conway conceived as analogous to the union of man and woman in procreation: "for as the ordinary generation of men requires a conjunction and cooperation of male and female; so also all generations and productions . . . require an union . . . of those two principles." Conway also rejected the Hobbesian vision of a primitive war of each against all, postulating instead a fundamental unity within nature cemented by the kind of love or desire women and men feel toward their offspring.<sup>44</sup>

Anne Conway (and to some extent those associated with her way of thinking—Henry More and Franciscus van Helmont) found a solution to the mind/body problem in the union of the male intellect with the female body. At the same time Conway left intact the ancient subordination of the feminine to the masculine. Like others of her day, Conway accepted the familiar alignment of the *principium magis activum* with the male and the *principium magis passivum* with the female.

#### *Poullain and an Anonymous Englishwoman*

Though Descartes and Locke did not apply their principles to the question of women's participation in philosophy, others did. Fran-



çois Poullain de la Barre, who followed Descartes closely in method and doctrine, did what Descartes never dared: apply the principle of methodological doubt to the social domain. Poullain dared, in other words, to meddle in an area where Descartes had argued vehemently that one should not venture.<sup>45</sup>

According to the ex-Jesuit Poullain de la Barre (1647–1725), it was Descartes who had awakened him from his dogmatic slumbers. Poullain de la Barre reported that his training at the University of Paris had imbued him with a fervent antiwomanism: “When I was a scholastic, I considered [women] scholastically, that is to say, as monsters, as beings inferior to men, because Aristotle and some theologians whom I had read, considered them so.”<sup>46</sup> Highly critical of scholasticism, Poullain claimed that a scholastic arrives at an opinion not by reason but by adherence to ancient custom. The use of Latin and ancient authority was in his opinion merely pretentious. Rejecting scholasticism, Poullain turned Descartes’s new way of ideas to the inequality of the sexes—“of all prejudices, the most remarkable.” Poullain thought that this prejudice, like all others, could be “absolutely renounced by clear and distinct knowledge.”<sup>47</sup>

Using the tenets of Cartesianism, Poullain set out to demonstrate that there is no significant difference between the sexes. Central to his claim was that the mind—distinct from the body—has no sex. Sex indeed extends no further than to the organs of generation, “there being no other but that part which serves for the production of men.” For Poullain, success in science required only reliable senses combined with right method. If sexual differences extend no further than reproductive organs, then everyone—both women and men—has equally reliable senses. Women have the same sense organs as men—their eyes see as clearly, their ears hear with the same degree of accuracy, their hands are as dexterous. And their heads are the same as men’s. “The most exact anatomy has not discovered any difference in that part [the head] between men and women; the brain is the same in both, as are memory and imagination.” On this basis Poullain argued that women were capable of doing anatomy. “They too have eyes and hands; may they not . . . perform dissections of a human body and consider the symmetry, and structure thereof?” For similar reasons women were capable of creative work in mathematics and logic, physics and engineering,

metaphysics and astronomy, history and geography, medicine, theology and civil law; in short, there was “nothing too high for women.”<sup>48</sup>

Poullain held that it was custom which subordinated women to men, making them “languish in idleness, softness, and ignorance, or otherwise grovel in low and base employments.” That women had made no great advance in the sciences Poullain attributed not to their minds, but to the fact that they were employed in their “housewifery” and found “therein business enough.”<sup>49</sup>

Poullain was an early advocate of higher education for women. Like Locke, who wrote his book for the education of a gentleman but allowed it to also serve for the education of a lady, Poullain wrote his book for ladies but suggested that it could also serve for gentlemen. Poullain set a rigorous curriculum: geometry for the exercise of the mind in forming a clear idea of truth; the *Logique de Port-Royal*; the method and meditations of Descartes; Géraud de Cordemoy’s *Le Discernement du corps et de l’âme en six discours*; the *Physique* of Rohault; Descartes’s *Traité de l’homme* with the *Remarques* by Louis de La Forge; also de La Forge’s *Traité de l’esprit de l’homme*; the *Traité des passions*, the *Principes*, and *Lettres à la reine de Suède et à la princesse de Bohême* by Descartes; the New Testament; Lesclache’s philosophy; and an abridged edition of Gassendi’s works.<sup>50</sup>

The anonymous English author of the *Defence of the Female Sex* (probably Judith Drake) also denied that there were differences of sex in the soul, basing her claim on the rationalism of Descartes and the empiricism of Locke:

If we [women] be naturally defective, the Defect must be either in Soul or Body. In the Soul it can’t be, if what I have heard some learned Men maintain, be true, that all Souls are equal, and alike, and that consequently there is no such distinction, as Male and Female Souls; that there are no innate *Idea’s*, but that all Notions we have, are deriv’d from our External Senses, either immediately, or by Reflection.<sup>51</sup>

This author asserted that there is no difference in the quality of different minds (because the organs governing this part are not different), but merely in the quantity of experience guiding the mind.<sup>52</sup>

Both Poullain and the anonymous Englishwoman went beyond Descartes and Locke by applying the new way of ideas to the woman question. Furthermore, Poullain called immediately for philosophical principles to be put to work. For him, the new philosophy implied dramatic social change. If women's minds were, in fact, equal to men's, then why not open the world's professions to them?

### *Modern Anatomy and the Question of Sexual Difference*

The idea that a wedge could be driven between mind and body held great potential for the liberation of women. By declaring that the mind has no sex, feminists denied that women had a special sexual character.<sup>53</sup> They hoped and assumed that modern anatomy could prove that in the brain—the seat of the soul—there were no sex differences. Feminists had reason to be optimistic about the new anatomy, for there were sympathetic stirrings in sixteenth- and seventeenth-century medical circles.<sup>54</sup> Two important reevaluations of female nature were under way: one pertaining to female sex organs and another concerning the question of the female's role in generation.

The most important reform in medical views of female nature was the change in attitude toward sex organs. Since ancient times the uterus had been much maligned. Plato thought it an animal with independent powers of movement; Democritus cited the uterus as the cause of a thousand sicknesses. Galen and even (for a time) Vesalius reported that horns bud from the sides of the womb (see Figure 29).<sup>55</sup> By the 1590s, however, anatomists had reversed this picture of women as "imperfect men" or monsters of nature. In 1615 Helkiah Crooke reported that many now considered Galen's views on the similarity of sex organs "very absurd." In her sexuality the female was now considered perfect. Crooke and others waxed eloquent on woman's unique womb, ordained by nature to "conceive and cherish the seed." The Parisian doctor L. Couvay, too, argued that women were to be esteemed because only they can produce children and thereby replenish the human race.<sup>56</sup>

A second reform was the new view of the female's role in generation.<sup>57</sup> By the seventeenth century, the Aristotelian view that the

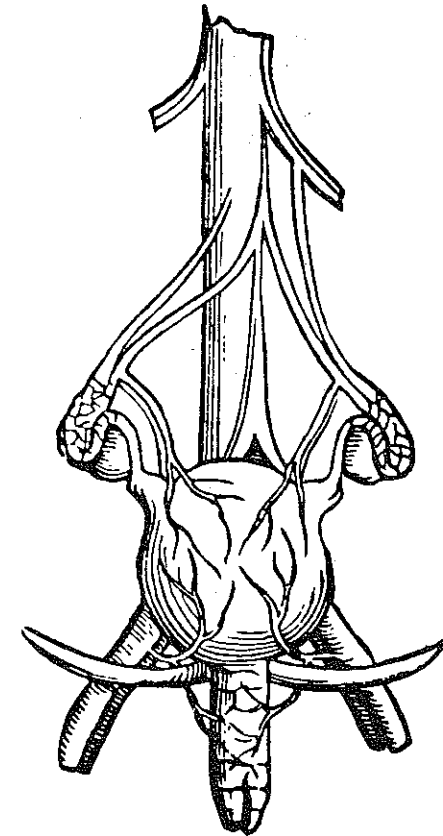


Figure 29. Female organs of generation with horns. From Vesalius, *Tabulae anatomicae sex* (1538), plate 87.

woman (through her menses) contributed only formless matter to generation, while the male (through his semen) contributed form or sentient soul, was called into question by one important school of thought among the "preformationists." Preformationists believed that a fully formed organism exists in miniature in the egg or sperm, in contrast with the epigenesists, who believed that a fetus gradually develops from a simple to a complex organism. In 1698 the London physician James Keill reported that there were two leading schools among preformationists: the ovists, who claimed that the female made the essential contribution (future generations were thought to preexist in the egg of the female and to be only

"quickened" by the male); and the animalculists or spermatists, who claimed that the male made the essential contribution. A proponent of the latter view, such as Antoni van Leeuwenhoek, might argue that preformed animalcules—or miniature people—existed in male sperm, having been placed there directly by God at the time of creation in sufficient quantity to provide for the preservation of the species until the end of time.<sup>58</sup> Some physicians, however, were predisposed to claim—even in the absence of evidence—that the contributions of the male and female were equal. The Tory pamphleteer and medical doctor James Drake, feeling obliged to take a stand, returned to the notion that *both* partners contribute equally to generation: "however old and exploded the Opinion of a Plastick Power on both sides [male and female] be, I must . . . embrace it, even tho' I know not exactly wherein it lies."<sup>59</sup>

Buffon, the leading naturalist of the eighteenth century, also insisted that the male and female contribute equally to generation. Buffon explicitly rejected Aristotle's view that women have no "prolific fluid" and therefore supply only passive material for generation. More important, he rejected Leeuwenhoek's theory of "homunculi" because this theory implied that it was not the first woman, but rather the first man who contained all mankind in his own body. Buffon, an epigenesist, rallied experimental evidence to show that both men and women have seminal fluids that play an equal role in procreation, though this required him to revive the long-abandoned analogy between women's testicles (ovaries) and men's testicles.<sup>60</sup> Buffon thought that the resemblance that offspring bear to *both* parents required a theory of generation based on the mingling of seminal fluids from both sexes. He therefore asserted that "the seminal fluids of the male and female are equally active, and equally necessary for the purposes of propagation . . . these two fluids are perfectly analogous; they are composed of parts not only similar in their form, but in their action and movement."<sup>61</sup>

Thus, ancient prejudices were being reexamined—at least as far as reproduction was concerned. But what about nonreproductive parts of the body—the brain, the skeleton, or the chest? Were these still thought to be governed by an all-pervasive temperament, as Galen had believed? Though there was a revolution in views of sexual difference in reproductive organs, there was no equivalent

revolution in views of secondary sexual differences in the seventeenth or early eighteenth century. Nor was there a revolution in views of sexual character (what we today call gender). Much like Descartes and Locke, anatomists of this period simply abandoned talk of cold and moist brains or melancholic humors, though their view of female nature still (implicitly, even at times explicitly) assumed the ancient theory of humors. A thoroughgoing revolution in views of sexuality was to come first in the eighteenth century (see Chapter 7).

If we look at a project central to the new anatomy in the sixteenth and seventeenth centuries—definitions and illustrations of the human body and skeleton—we see that pioneers like Andreas Vesalius did not openly subscribe to the theory of humors (as had the ancients); nor did he believe that sex differences penetrated the skeleton (as would the moderns). For Vesalius sex was only skin deep, limited to differences in the outline of the body and the organs of reproduction.

This can be seen in the *Epitome* of his great work on the fabric of the human body. Vesalius drew two manikins (paper dolls) designed to be cut out by medical students and "dressed" with their organs in an exercise intended to teach the position and relation of the viscera. One manikin represented a female form and displayed the system of nerves; the other represented a male figure and showed the muscles. Vesalius presented both the male and female manikins in order to demonstrate the position and nature of the organs of generation. Yet, when discussing parts of anatomy not having to do with reproductive organs, he did not differentiate the nonreproductive parts of the male from those of the female. Apart from the reproductive organs, Vesalius considered all other organs interchangeable between the two figures. In his instructions for constructing the manikins he made this explicit: "The sheet [of organs to be attached to the male manikin] differs in no way from that containing the figures to be joined to the last page [the drawing of the female manikin] except for the organs of generation."<sup>62</sup>

Nor did Vesalius find sex differences in the skeleton. In this same work, Vesalius drew male and female nudes and pointed out differences in the curves and lines of the two bodies and the two sets of reproductive organs (see Figure 30). To accompany his male and

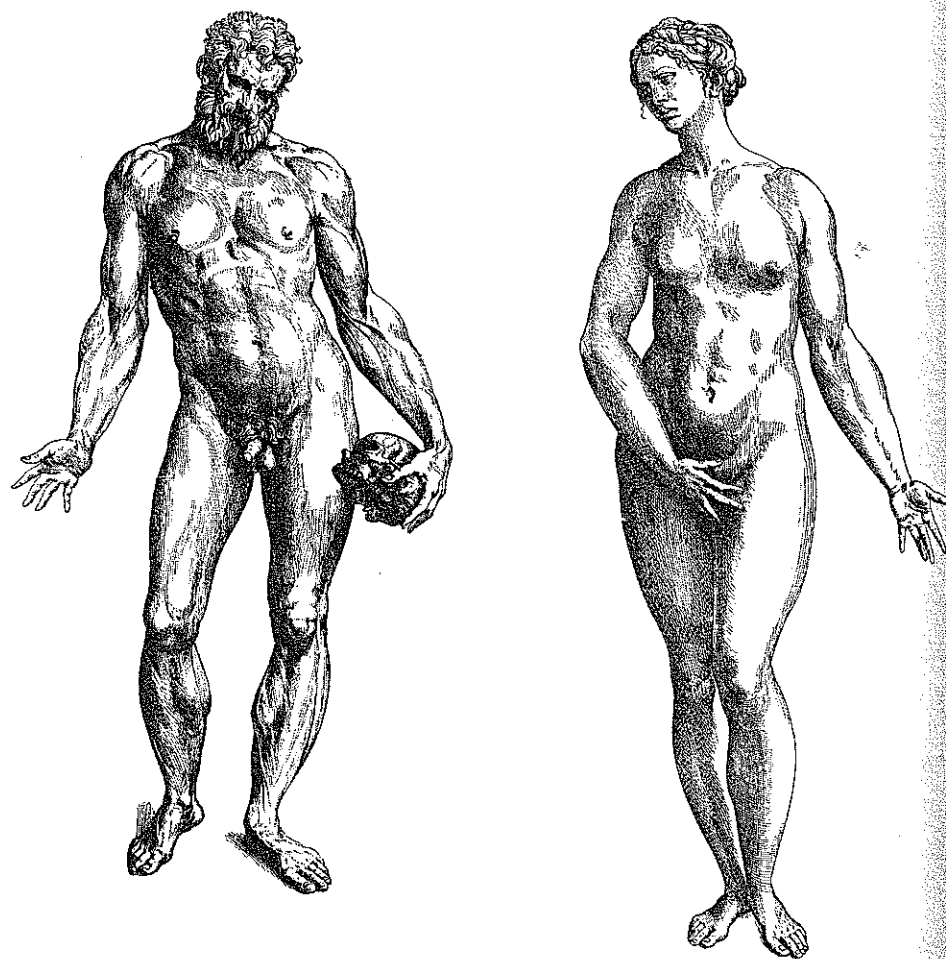


Figure 30. Male and female nudes used by Vesalius to illustrate differences in the shape of the two bodies and the two sets of reproductive organs. From his *Epitome* (Basel, 1543). By permission of the Boston Medical Library.

female nudes, Vesalius drew a single skeleton that he labeled a “human” skeleton (see Figure 31). Believing that one skeleton gives shape to both the male and the female body, Vesalius did not sexualize the bones of the “human” body. Though he made clear in textual notes that the skeleton was drawn from a seventeen- or eighteen-year-old male, Vesalius did not give a sex to his skeleton.

The indifference of early modern anatomists to the question of

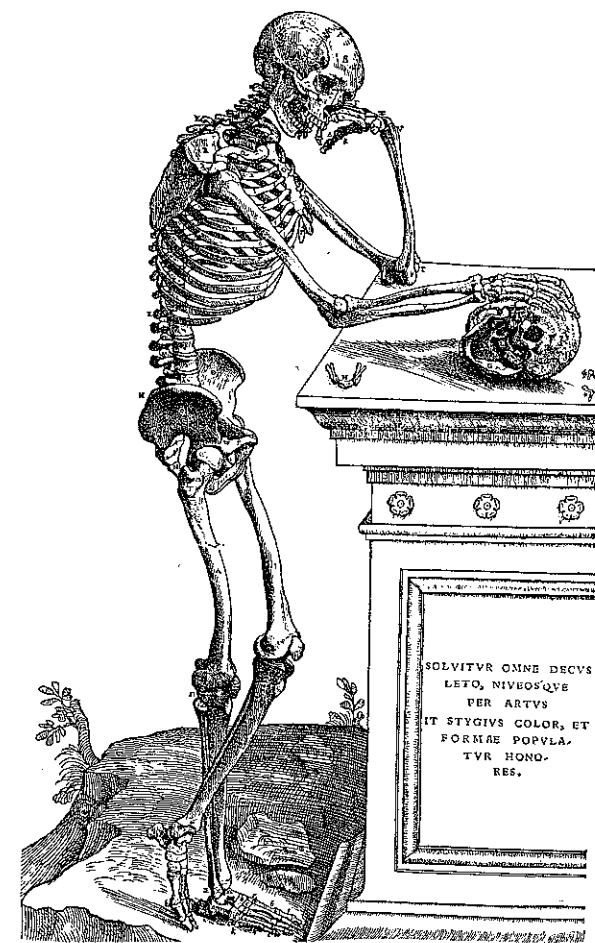


Figure 31. Bones of the human body, drawn to the same scale as the nudes. From Vesalius, *Epitome* (Basel, 1543). By permission of the Boston Medical Library.

sex differences did not derive from an ignorance of the female body. From as early as the fourteenth century women had, in fact, been dissected. The *Montpellier Codex* of 1363 includes an illustration showing the dissection of a female body.<sup>63</sup> The 1442 statutes of the University of Bologna reveal that the university received for dissection one male and one female body per year.<sup>64</sup> A statute enacted in France in 1560 required midwives to attend the dissection of fe-

male bodies so that they would know enough about female anatomy to be able to testify in abortion cases.<sup>65</sup> This trend did not change with the rise of modern anatomy. The frontispiece to Vesalius's 1543 *De humani corporis fabrica* depicts a public dissection in a theater teeming with men, dogs, a monkey, and one lone nun; on the table, under the knife, is a woman.<sup>66</sup> Vesalius based his drawings of female organs of reproduction in this work on dissections of at least nine female bodies. Vesalius did not procure these bodies without difficulties, however; at least one was stolen. Hearing that the mistress to a certain monk had died, Vesalius and his helpers snatched her body from the tomb.<sup>67</sup> This remained common practice for quite some time: William Cheselden, an English physician, reported in 1713 that he procured female bodies for dissection from "executed bodies and . . . a common whore that died suddenly."<sup>68</sup> Moreover, at least by the 1680s, skeletons of women were kept in major natural history collections. The Royal Society had one; the University of Leiden had two—"the Sceleton of a Woman of seventeen years old, who murdered her Son, and the Sceleton of a Woman called Catharine of Hamburgh strangled for Theft."<sup>69</sup>

The indifference of early modern anatomists to the question of sex differences (beyond reproductive organs) did not, however, lead them to "desexualize" the bodies they studied. On the contrary, until the nineteenth century the sex of bodies used for dissection was explicitly portrayed by including genitalia or breasts, or a wisp of hair falling over the shoulder (in the case of a woman) or a prominent beard (in the case of a man). In the late seventeenth century, the Dutch anatomist Godfried Bidloo produced a set of "true to life" plates unique for their explicit portrayal of the sex of the body dissected. At the same time, male and female bodies were used indiscriminately to illustrate various parts of the body. In William Cowper's 1697 publication of Bidloo's plates, a woman model appears in a series of plates describing the muscles in the upper half of the human body (see Figure 32).<sup>70</sup>

Godfried Bidloo and William Cowper, like Vesalius, focused on two major differences between men and women: external bodily form and reproductive organs. In 1697, in order to portray differences in symmetry and proportion between man and woman, Cowper reproduced two Bidloo figures that were drawn not from life



Figure 32. In early modern anatomy texts women, as often as men, were used as models to illustrate nonsexual parts of the body. From William Cowper, *The Anatomy of Humane Bodies* (1697; London 1737), plate 27. By permission of the Boston Medical Library.

but from classical statues; Bidloo claimed these figures exhibited "the most beautiful proportions of a man and woman as they were fixed by the ancients" (see Figure 33). The woman's distinctive parts (labeled A and B) are the breasts and genitalia, but Cowper did not attribute differences in the male and female outline to any structural differences "either in their whole frame, or in the intimate Structure of their Parts." Thus Cowper followed Bidloo in drawing abstractly "human" skeletons. Cowper's *Anatomy of Humane Bodies*



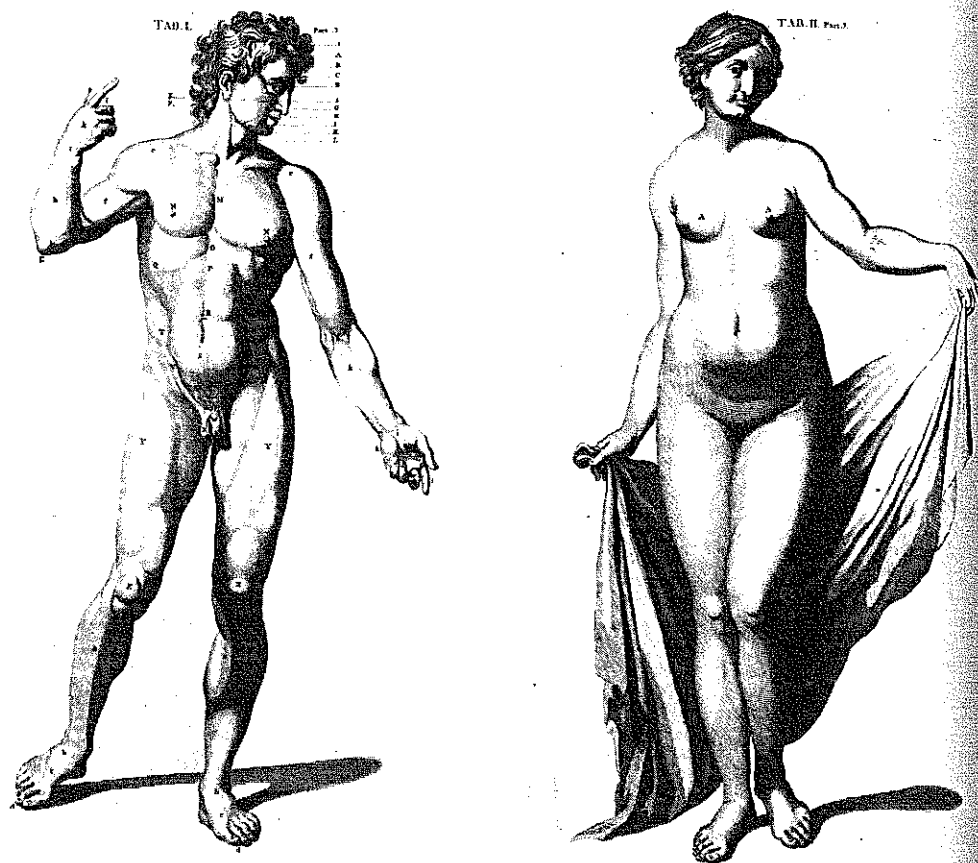


Figure 33. Cowper's male and female nudes drawn to classical proportions, showing differences in external form and reproductive organs. From Andrew Bell, *Anatomia Britannica: A System of Anatomy* (Edinburgh, 1798), plates 42 and 43. By permission of the Boston Medical Library.

begins with two skeletons displayed with various accoutrements—one with an hourglass, another with a drapery—but neither has an explicit gender.

What might at first blush seem an indifference toward the study of secondary sexual difference is, in fact, the product of an incomplete revolution. Though anatomists did not always subscribe explicitly to the ancient theory of humors, they continued for a time to fall back to the view that women are colder (even moister) than men; it took some time before new explanations took the place of

the old. Cowper, for example, could ignore the question of sex in the bones of the body, because he had an altogether different explanation for differences in the shape of male and female bodies. According to Cowper, the distinctive form of the female body does not derive from the shape of her bones but from "the great quantity of Fat placed under the skins of women."<sup>71</sup> Fat, of course, accumulates in the absence of heat. William Harvey, too, thought women's distinctive shape could be traced to the layer of fat women wore "as a furred mantle." Harvey found fat virtuous for promoting health, yet the reason for its abundance in women could be traced to a cause traditionally considered a liability—an absence of heat. For Harvey, heat explained many bodily features. Heat expended in "excessive and unseasoned" coition makes men thin. Heat also accounts for the larger brain in men; greater heat increases the supply of blood, which in turn promotes the growth of the brain.<sup>72</sup>

If those in the vanguard of modern anatomy did not focus on secondary sexual character, others did. Helkiah Crooke, barber-surgeon and member of the London College of Physicians, collected and translated the best of medical knowledge (primarily the opinion of the ancients), along with the greatest controversies from the work of the Swiss Gaspard Bauhin and the French André Du Laurens in 1615. Among the "notable controversies" recorded by Crooke was that surrounding the question of the "differences of the sexes." It is important to note that in this section Crooke passed immediately from a discussion of male and female sex organs (here he followed the moderns) to the more important question (for him) of "temperament." In this matter Crooke followed the ancients completely. Weighed in the balance of "Philosophie and of Physicke," Crooke concluded that men are generally "hotter" than women. Many factors conspired to breed a colder woman. First, the female is generated from a colder seed originating in the man's "feminine" left testicle. The seed from the *feminium* testicle is not "exquisitely boiled," but "colder and thinner, having much whey in it." Second, female infants are generated in a colder place (the left side of the womb); the left side is colder because the liver generates heat on the right. The very bodies of women betray their weaker heat: "the habit of a woman is fatter, looser, and softer—fat is not generated but by a weaker heat."<sup>73</sup>

For Crooke and others of his time, heat—the key concept in the ancient view of sexual difference—also explained the perennial problem of ambiguity in sex. Though Crooke did not actually believe Galen's stories of women being changed into men, he did believe that hermaphrodites grew more manly by virtue of an increase in heat. "Hermaphrodites," he explained, "had the parts of both sexes, which because of the weakness of their heate in their nonage [immaturity] lay hid, and brake out afterward as their heate grew into strength."<sup>74</sup> Ambroise Paré, the French barber-surgeon, similarly noted that "the nature of the eunuch . . . may seem to have degenerated into a womanish nature, by deficiency of heat; their smooth body, soft and shrill voice does very much assimilate women."<sup>75</sup> By the same token, a "manly woman" might simply have heat in excess of that appropriate to a woman.

Anatomists, like philosophers of the seventeenth and early eighteenth centuries, left untouched the question of whether sexual character extends beyond the organs of reproduction. In the case of the anatomists, silence allowed ancient views to persist unchallenged even as other parts of the ancient world view were being overthrown. When pressed, most university-trained anatomists (like William Harvey) still traced women's character to their cold and moist nature; most barber-surgeons (like Helkiah Crooke) continued to state quite openly that women were colder than men, and thus defective in sexual temperament. Most anatomists in this period believed that the mind did indeed have a sex, but this was not a view they could reconcile with the ideas of post-Galenic medicine.

## 7

## *More Than Skin Deep: The Scientific Search for Sexual Difference*

Sexual differences are not restricted merely to the organs of reproduction, but penetrate the entire organism. The entire life takes on a feminine or masculine character.

—Dr. J. J. Sachs, 1830

The revolution in scientific views of sexuality came in the late eighteenth century. Anatomists no longer satisfied with the embarrassingly outmoded theory of humors articulated a new vision for the origins and character of sexual differences, the relation of sex and gender, and the presence of sexuality in the body. From the 1750s through the 1790s, anatomists called for a finer delineation of sexual differences. Sexuality was no longer to be seen as residing exclusively in the sex organs. In 1775, for example, the French physician Pierre Roussel reproached his colleagues for considering women similar to men except in the matter of sexual organs: "the essence of sex," he explained, "is not confined to a single organ but extends, through more or less perceptible nuances, into every part."<sup>1</sup> The German anatomist Jakob Ackermann stated in 1788 that present definitions of sex differences were inadequate, failing as they did to describe the distinctively female body. In his two-hundred-page book detailing every imaginable difference between the bones, hair, mouths, eyes, voices, blood vessels, sweat, and brains of men and women, Ackermann called for anatomists to discover "the essential sexual difference" from which all others flow.<sup>2</sup>

Historians have come to recognize the middle of the eighteenth century as a time of profound transformation in views of sexuality

85. Lepenies, "Der Wissenschaftler als Autor," p. 141.
86. Hume, "Of Essay Writing," p. 570.
87. Lambert, *Réflexiones nouvelles sur les femmes*, pp. 110 and 113.

#### 6. Competing Cosmologies: Locating Sex and Gender in the Natural Order

1. Alexandre Koyré, *From the Closed World to the Infinite Universe* (Baltimore, 1957), pp. vii–viii. See also, e.g., Robert Merton, *Science, Technology and Society in Seventeenth Century England* (1938; New York, 1970); Boris Hessen, "The Social and Economic Roots of Newton's 'Principia,'" in *Science at the Cross Roads* (London, 1931); Paul Feyerabend, *Against Method* (London, 1975); and A. R. Hall, *From Galileo to Newton* (New York, 1963).
2. See Helkiah Crooke, *Mikrokosmographia, A Description of the Body of Man* (London, 1615).
3. See Aristotle, *Generation of Animals*, trans. A. L. Peck (London, 1943), I, i–ii, pp. 11–15, and IV, vi, p. 459. See also Sarah Pomeroy, *Goddesses, Whores, Wives, and Slaves* (New York, 1975); M. C. Horowitz, "Aristotle and Woman," *Journal of the History of Biology*, 9 (1976): 183–213; and G. E. R. Lloyd, *Science, Folklore and Ideology* (Cambridge, 1983).
4. Crooke, *Mikrokosmographia*, p. 271. On the continuity in medical views from the ancient to the medieval world, see Vern Bullough, "Medieval Medical and Scientific Views of Women," *Viator*, 4 (1973): 487; and Lester S. King, "The Transformation of Galenism," *Medicine in Seventeenth-Century England*, ed. Allen Debus (Berkeley, 1974), pp. 7–32.
5. Galen, *On the Usefulness of the Parts of the Body*, trans. Margaret May (Ithaca, 1968), vol. 2, pp. 628–629.
6. Ibid., vol. 2, p. 630. See also Esther Fischer-Homberger, *Krankheit Frau und andere Arbeiten zur Medizingeschichte der Frau* (Bern, 1979), pp. 14–15.
7. Crooke, *Mikrokosmographia*, p. 249. It was a common notion in eighteenth-century Europe that blacks also changed spontaneously into whites. See also Marvin Harris, *The Rise of Anthropological Theory* (New York, 1968); William Stanton, *The Leopard's Spots* (Chicago, 1960). Bert Hansen has pointed out that the ancients may have developed this view to explain the very real phenomenon of a prolapsed uterus (private communication, 1986).
8. This according to Crooke; see his *Mikrokosmographia*, pp. 45, 249.
9. Georges Ascoli, "Essai sur l'histoire des idées féministes en France du XVI<sup>e</sup> siècle à la révolution," *Revue de synthèse historique*, 13 (1906): 25–183.
10. For differing views on whether women benefited from the Renaissance, see Joan Kelly-Gadol, "Did Women Have a Renaissance," in *Becoming Visible: Women in European History*, ed. Claudia Koonz and Renate Bridenthal (Boston, 1977), pp. 137–164; Ruth Kelso, *Doctrine for the Lady of the Renaissance* (Urbana, 1956); and Constance Jordan, "Feminism and the Humanists: The Case of Sir Thomas Elyot's *Defense of Good Women*," in Re-

writing the Renaissance: *The Discourses of Sexual Difference in Early Modern Europe*, ed. Margaret Ferguson, Maureen Quilligan, and Nancy Vickers (Chicago, 1986), pp. 227–241.

11. Agrippa von Nettesheim, *Female Pre-eminence*, p. 9. Jacqueline Guillaume made a similar argument in the preface to her *Des dames illustres*.
12. This was a common argument; see *Wonders of the Female World* (London, 1683), pp. 104–193.
13. Anna van Schurman, *The Learned Maid, or Whether a Maid may be a Scholar?* (London, 1659), pp. 1–2. See also Una Pope-Hennessy, *Anna van Schurman: Artist, Scholar, Saint* (New York, 1909).
14. Marie le Jars de Gournay, *Egalité des hommes et des femmes* (Paris, 1622), pp. 8 and 18.
15. Jacques Du Bosc, *L'Honneste femme* (1632; Paris, 1658), pp. 117–119. This was a common opinion in Paris at this time; see Renaudot, ed., *Recueil*, pp. 90–96.
16. Samuel Sorbière, *Lettres et discours de M. de Sorbière sur diverses matières curieuses* (Paris, 1660), p. 71.
17. *The Guardian*, 165 (8 September 1713).
18. Agrippa von Nettesheim, *Female Pre-eminence*, pp. 1–2. The term *female worthies* is Natalie Davis's. On German lexicons of learned ladies in this period, see Jean M. Woods and Maria Faurstenwald, *Schriftstellerinnen, Künstlerinnen und gelehrte Frauen des deutschen Barock: Ein Lexikon* (Stuttgart, 1984).
19. Jean de La Forge, *Le Cercle des femmes savantes* (Paris, 1663).
20. Marguerite Buffet, *Nouvelles Observations sur la langue française* (Paris, 1668), pp. 200, 221–223.
21. Ibid., pp. 228–229.
22. Augustine made this argument using the analogy of superior and inferior angels. See Eleanor McLaughlin, "Equality of Souls, Inequality of Sexes: Woman in Medieval Theology," in *Religion and Sexism: Images of Women in the Jewish and Christian Traditions*, ed. Rosemary Ruether (New York, 1974), p. 218.
23. Ibid., pp. 219–221. The notion of a hermaphroditic God also justified the notion that souls have no sex. The eighteenth-century *Encyclopédiste* Louis le Chevalier de Jaucourt reported that this "monstrous" opinion was widely accepted, despite the fact that God, having no "corporeal organs" whatsoever, certainly had no "organs of generation" and thus no sex; "Femme (Anthropologie)" *Encyclopédie*, vol. 6, p. 470). See also Stuart Schneiderman, *An Angel Passes: How the Sexes Became Undivided* (New York, 1988).
24. Pierre Le Moyne, *La Galerie des femmes fortes* (Paris, 1647), p. 251, quoted in Lougee, *Le Paradis des Femmes*, p. 63.
25. *The Ladies Calling*, [attributed to Richard Allestree] (1673; Oxford, 1720), preface.
26. Crooke, *Mikrokosmographia* pp. 45–46. As a French medical doctor wrote: "the soul is to the body, that what the prince is to his estates, the prelate to his dioceses, the liege to his siege, the architect to his buildings, the laborer

- to his land, the artisan to his shop . . ." (Louis Couvay, *L'Honneste maîtresse* [Paris, 1654], p. 93).
27. Letter to Abbé Claude Picot, reprinted as a preface to René Descartes, *Principles of Philosophy*, in *The Philosophical Works of Descartes*, trans. Elizabeth Haldane and G. R. Ross (Cambridge, 1911), vol. 1, pp. 205–208.
  28. *Ibid.*, p. 210.
  29. René Descartes, *Discours de la méthode pour bien conduire sa raison, et chercher la vérité dans les sciences*, in *Oeuvres de Descartes*, ed. Charles Adam and Paul Tannery (Paris, 1897–1910), vol. 6, p. 2.
  30. Cavendish, *Philosophical and Physical Opinions*, "Letter to the Reader."
  31. Descartes, *Principles of Philosophy*, p. 218.
  32. Stéphanie-Félicité du Crest, comtesse de Genlis, *Le Club des dames, ou le Retour de Descartes* (Paris, 1784), preface.
  33. See René Descartes, "Prima cogitationes circa generationem animalium," in *Oeuvres de Descartes*, ed. Adam and Tannery, vol. 11, pp. 516–528; Descartes, "Traité de l'homme," in *ibid.*, pp. 119–215. See also Michèle Le Doeuff, "Women and Philosophy," *Radical Philosophy*, 17 (1977): 5.
  34. On this important point see Melissa Butler, "Early Liberal Roots of Feminism: John Locke and the Attack on Patriarchy," *American Political Science Review*, 72 (1978): 135–150; Susan Moller Okin, *Women in Western Political Thought* (Princeton, 1979); Carole Pateman and Teresa Brennan, "Mere Auxiliaries to the Commonwealth: Women and the Origins of Liberalism," *Political Studies*, 27 (1979): 183–200.
  35. John Locke, "The Reasonableness of Christianity, As Delivered in the Scriptures," in *The Works*, 6th ed. (London, 1759), vol. 2, pp. 585–586.
  36. John Locke, *The Educational Writings*, ed. James Axtell (Cambridge, England, 1968), p. 117, 344–346.
  37. Cockburn published her work anonymously. According to Thomas Birch, she felt that "the name of a woman would be a prejudice" against a philosophical work. See *The Works of Mrs. Catharine Cockburn* (London, 1751), vol. 1, preface.
  38. Paul Hoffmann, *La Femme dans la pensée des lumières* (Paris, 1977), pp. 45–52. See also Lieselotte Steinbrügg, "Vom Aufstieg und Fall der gelehrten Frau: Einige Aspekte der 'Querelle des Femmes' im XVIII. Jahrhundert," *Lendemains*, 25/26 (1982): 158–159; and Hilda Smith, *Reason's Disciples* (Urbana, 1982).
  39. Though Descartes detached the mind from the body, his vision of the sex organs remained traditional. Like Galen, Descartes considered the female vagina an inverted version of the male penis. Sex was determined in the fetus by its position in the mother's uterus. In another passage in his "Prima cogitationes," the male sex is determined by a predominance of solid and dry elements.
  40. Ruth Perry, "Radical Doubt and the Liberation of Women," *Eighteenth-Century Studies*, 18 (1985): 479.
  41. Genevieve Lloyd, *The Man of Reason: "Male" and "Female" in Western Phi-*

- losophy* (Minneapolis, 1984), pp. 38–50. See also Susan Bordo, *The Flight to Objectivity: Essays in Cartesianism and Culture* (Albany, 1987).
42. See Merchant, *The Death of Nature*; Brian Easlea, *Witch-Hunting, Magic, and the New Philosophy* (Brighton, 1980); Sally Allen and Joanna Hubbs, "Outrunning Atalanta: Feminine Destiny in Alchemical Transmutation," *Signs*, 6 (1980): 210–229; Evelyn Fox Keller, *Reflections on Gender and Science* (New Haven, 1985), chap. 3.
  43. As late as the nineteenth century, there was still talk of the "hermaphroditic Adam." The medical doctor Moreau de la Sarthe cited Mirabeau's work showing that the first human was neither man nor woman, but an "androgynous." The hermaphroditic Adam—like many plants and animals—had the ability to reproduce himself as witnessed by God's command to the solitary Adam to "be fruitful and multiply, and replenish the earth." According to Mirabeau and Moreau de la Sarthe, individuals of distinctive sex did not exist until the creation of woman, during the seventh day or epoch. Mirabeau, quoted in Jacques-Louis Moreau de la Sarthe, *Histoire naturelle de la femme* (Paris, 1803), vol. 1, pp. 63–66.
  44. Conway, *Principles*, pp. 77, 98, 146–147. See also Marjorie Nicolson, *Conway Letters* (New Haven, 1930); and Carolyn Merchant, "The Vitalism of Anne Conway: Its Impact on Leibniz's Concept of the Monad," *Journal of the History of Philosophy*, 17 (1979): 255–269.
  45. Henri Piéron, "De l'influence sociale des principes cartésiens. Un précurseur inconnu du féminisme et de la révolution: Poullain de la Barre," *Revue de synthèse historique*, 5 (1902): 153, 171. See also Marie Louise Stock, "Poullain de la Barre: A Seventeenth-Century Feminist" (Ph.D. diss., Columbia University, 1961); and Bernard Magne, "Le Féminisme de Poullain de la Barre: Origine et signification," Thèse pour le Doctorat de 3<sup>e</sup> cycle, Université de Toulouse, 1964.
  46. François Poullain de la Barre, *De l'éducation des dames pour la conduite de l'esprit dans les sciences et dans les mœurs* (Paris, 1674), pp. 327, 331–334.
  47. Poullain de la Barre, *De l'égalité des deux sexes*, preface. This work was translated into English as *The Woman as Good as the Man, or the Equality of Both Sexes* (London, 1677).
  48. Poullain, *De l'égalité des deux sexes*, pp. 59–62.
  49. *Ibid.*, pp. 28 and 25.
  50. Poullain, *De l'éducation des dames*, advertisement and pp. 307–310.
  51. [Drake], *An Essay in Defence of the Female Sex*, p. 32.
  52. *Ibid.*, pp. 12–13.
  53. In addition to Poullain and Drake, see Hannah Woolley, *The Gentlewoman's Companion* (London, 1675), p. 29; *Biographium Faemineum: The Female Worthies* (London, 1766), p. vii; and Martin, *Young Gentleman's and Lady's Philosophy*, vol. 1, p. vi.
  54. J. P. Lotichium summarized this literature in his *Gynaecologia* (Frankfurt, 1645). See also Ian Maclean, *The Renaissance Notion of Woman* (Cambridge, England, 1980).

55. Andreas Vesalius, *Tabulae anatomicae sex* (1538), plate 87, figures 2–4, in J. B. Saunders and C. D. O'Malley, *Illustrations from Works of Andreas Vesalius* (New York, 1950). Also Jakob Ackermann, *De discrimine sexuum praeter genitalia* (Mainz, 1788); translated as *Über die körperliche Verschiedenheit des Mannes vom Weibe ausser Geschlechtstheilen*, by Joseph Wenzel (Koblenz, 1788), appendix. The German edition is used throughout. See also Plato, *Timaeus*, p. 91c. In the ancient world the uterus was compared to a variety of animals—a tortoise, a newt, a crocodile; Harold Speert, *Iconographia Gyniatrica: A Pictorial History of Gynecology and Obstetrics* (Philadelphia, 1973), p. 8.
56. "Woman conserves, nourishes, protects the child, not only for nine months in her own body, but during the entire period of childhood. The man serves in his way, but not in the same fashion as the woman." Couvay, *L'Honneste matresse*, pp. 288–296. See also Crooke, *Mikrokosmographia*, p. 271.
57. For a fuller treatment of this topic, see Maryanne Horowitz, "The 'Science' of Embryology before the Discovery of the Ovum," in *Connecting Spheres*, ed. Boxer and Quataert, chap. 4.
58. James Keill, *The Anatomy of the Humane Body Abridged* (London, 1698), p. 93. See also Francis J. Cole, *Early Theories of Sexual Generation* (Oxford, 1930).
59. James Drake, *Anthropologia Nova; or, a New System of Anatomy*, ed. Judith Drake (London, 1707), vol. 1, p. 352 (note p. 352 follows p. 335).
60. Buffon, *Histoire naturelle*, vol. 3, p. 264. See also Carlo Castellani, "The Problem of Generation in Bonnet and in Buffon: A Critical Comparison," in *Science, Medicine, and Society in the Renaissance*, ed. Allen Debus (New York, 1972), vol. 2, pp. 265–288.
61. Buffon, *Histoire naturelle*, vol. 2, p. 329.
62. J.B. Saunders and C.D. O'Malley, eds., *The Illustrations from the Works of Andreas Vesalius* (New York, 1950), pp. 222–223.
63. See Fritz Weindler, *Geschichte der gynökologisch-anatomischen Abbildung* (Dresden, 1908), p. 41, figure 37. See also G. Wolf-Heidegger and Anna Maria Cetto, *Die anatomische Sektion in bildlicher Darstellung* (Basel, 1967).
64. Mary Niven Alston, "The Attitude of the Church towards Dissection before 1500," *Bulletin of the History of Medicine*, 16 (1944): 227–228.
65. Kate Campbell Hurd-Mead, *A History of Women in Medicine* (Haddam, Connecticut, 1938), pp. 358–359.
66. Vesalius, *De humani corporis fabrica*, frontispiece. I thank I. B. Cohen for pointing out to me the presence of the nun.
67. Saunders and O'Malley, eds., *Illustrations from the Works of Andreas Vesalius*, p. 170. Female bodies were hard to come by, but then so were male bodies. The story is told that Vesalius saw a body of a male who had been executed swinging from a tree. Waiting until nightfall, he returned and cut it down.
68. William Cheselden, *Anatomy of the Bones* (1713; Boston, 1795), p. 276.
69. "A Methodical Catalogue of all the Chiefest Rarities in the Publick Theatre and Anatomical-Hall in the University of Leyden," in *A Compleat Volume of the Memoirs for the Curious* (November, 1707), pp. 389–391.

70. William Cowper, *The Anatomy of Humane Bodies* (London, 1737). Cowper pirated his illustrations from Godfried Bidloo's *Anatomia humani corporis* (Amsterdam, 1685).
71. Cowper, *The Anatomy of Humane Bodies*, commentary to plate 2.
72. William Harvey, *Lectures on the Whole of Anatomy on the Male and Female Body*, trans. Gweneth Whitteridge (1616; London, 1964), pp. 53, 313–315.
73. Crooke, *Mikrokosmographia*, pp. 272–274.
74. *Ibid.*, p. 250.
75. Ambroise Paré, *The Works of that Famous Chirurgion Ambrose Parey*, trans. Thomas Johnson (1585; London, 1634), p. 27.

### 7. More Than Skin Deep: The Scientific Search for Sexual Difference

1. Pierre Roussel, *Système physique et moral de la femme, ou Tableau philosophique de la constitution, de l'état organique, du tempérament, des mœurs, et des fonctions propres au sexe* (Paris, 1775), p. 2. Carl Klose also argued that it is not the uterus that makes woman what she is. Even women from whom the uterus has been removed, he stressed, retain feminine characteristics. See his *Über den Einfluss des Geschlechts-Unterschiedes auf Ausbildung und Heilung von Krankheiten* (Stendal, 1829), pp. 28–30.
2. Ackermann, *Über die körperliche Verschiedenheit*, pp. 2–5.
3. Thomas Laqueur, "Organism, Generation, and the Politics of Reproductive Biology," in *The Making of the Modern Body: Sexuality and Society in the Nineteenth Century*, ed. Catherine Gallagher and Thomas Laqueur (Berkeley, 1987), pp. 1–41.
4. It is important to recall, however, that in the nineteenth century the uterus would increasingly be considered a source of female weakness, especially hysteria.
5. Moreau de la Sarthe, *Histoire naturelle de la femme*, vol. 1, pp. 68–69.
6. Klose, *Über den Einfluss des Geschlechts-Unterschiedes*, pp. 28–33.
7. Jouard, *Nouvel Essai sur la femme*, pp. 51–55.
8. See, e.g., Edmond-Thomas Moreau, *Quaestio medica: An praeter genitalia sexus inter se discrepent?* (Paris, 1750).
9. Bernard Albinus, *Table of the Skeleton and Muscles of the Human Body* (London, 1749), "Account of the Work."
10. Albinus quoted in Ludwig Choulard, *History and Bibliography of Anatomic Illustration*, trans. Mortimer Frank (Chicago, 1920), p. 277.
11. Albinus gave a description of a female skeleton in his *De sceleto humano* (Leiden, 1762, chap. 126) but did not provide an illustration.
12. Gaspard Bauhin, *Theatrum anatomicum* (Frankfurt, 1605), plate 4, p. 247. This skeleton was reprinted in Crooke's *Mikrokosmographia* and the English edition of Ambroise Paré's works (*The Works of . . . Ambrose Parey*, chap. 41), though it did not appear in Paré's work itself (see his *Oeuvres* [Paris, 1585]). It then dropped from sight.