Coming to Understand: Orgasm and the Epistemology of Ignorance

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Lay understanding and scientific accounts of female sexuality and orgasm provide a fertile site for demonstrating the importance of including epistemologies of ignorance within feminist epistemologies. Ignorance is not a simple lack. It is often constructed, maintained, and disseminated and is linked to issues of cognitive authority, doubt, trust, silencing, and uncertainty. Studying both feminist and nonfeminist understandings of female orgasm reveals practices that suppress or erase bodies of knowledge concerning women's sexual pleasures.

It is a common tenet of theorists working in the sociology of scientific knowledge (SSK) that an account of the conditions that result in scientists accepting apparently true beliefs and theories is as crucial as an analysis of those that result in their holding to apparently false theories and beliefs. In outlining the Strong Programme in SSK studies, David Bloor (1976) argues against the asymmetry position common to philosophies of science. On such a position, only false beliefs that have had a history of influence upon science, such as views about ether, humors, or phlogiston, are in need of a sociological account. True beliefs or theories, however, are viewed as in need of no such explanation in that their acceptance can be accounted for simply by their truth. Bloor and other SSK theorists argue that such appeals to truth are inadequate, insisting that the acceptance of a belief as true, even in science, involves social factors. The appeal to reality thus does not suffice in explaining why a belief has come to be accepted by scientists.

In a similar fashion it is important that our epistemologies not limit attention simply to what is known or believed to be known. If we are to fully understand the complex practices of knowledge production and the variety of features that

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account for why something is known, we must also understand the practices that account for *not* knowing, that is, for our *lack* of knowledge about a phenomena or, in some cases, an account of the practices that resulted in a group *unlearning* what was once a realm of knowledge. In other words, those who would strive to understand how we know must also develop epistemologies of ignorance.[1]

Ignorance, far from being a simple lack of knowledge that good science aims to banish, is better understood as a practice with supporting social causes as complex as those involved in knowledge practices. As Robert Proctor argued in his study of the politics of cancer research and dissemination, *Cancer Wars*, we must "study the social construction of ignorance. The persistence of controversy is often not a natural consequence of imperfect knowledge but a political consequence of conflicting interests and structural apathies. Controversy can be engineered: ignorance and uncertainty can be manufactured, maintained, and disseminated" (1995, 8).

An important aspect of an epistemology of ignorance is the realization that ignorance should not be theorized as a simple omission or gap but is, in many cases, an active production. Ignorance is frequently constructed and actively preserved, and is linked to issues of cognitive authority, doubt, trust, silencing, and uncertainty. Charles Mills, for example, argues that matters related to race in Europe and the United States involve an active production and preservation of ignorance: "On matters related to race, the Racial Contract prescribes for its signatories an inverted epistemology, an epistemology of ignorance, a particular pattern of localized and global cognitive dysfunctions (which are psychologically and socially functional), producing the ironic outcome that whites will in general be unable to understand the world they themselves have made" (1997, 18).

Although such productions are not always linked to systems of oppression, it is important to be aware of how often oppression works through and is shadowed by ignorance. As Eve Kosofsky Sedgwick argues in her *Epistemology of the Closet*, "ignorance effects can be harnessed, licensed, and regulated on a mass scale for striking enforcements" (1990, 5). Indeed, tracing what is not known and the politics of such ignorance should be a key element of epistemological *and* social/political analyses, for it has the potential to reveal the role of power in the construction of what is known and to provide a lens for the political values at work in our knowledge practices.

Epistemologies that view ignorance as an arena of not-yet-knowing will also overlook those instances where knowledge once had has been lost. What was once common knowledge or even common scientific knowledge can be transferred to the realm of ignorance not because it is refuted and seen as false, but because such knowledge is no longer seen as valuable, important, or functional. Obstetricians in the United States, for example, no longer know how to turn a breech, not because such knowledge, in this case a knowing-how, is seen as

false, but because medical practices, which are in large part fueled by business and malpractice concerns, have shifted knowledge practices in cases of breech births to Caesareans. Midwives in most settings and physicians in many other countries still possess this knowledge and employ it regularly. Epistemologies of ignorance must focus not only on cases where bodies of knowledge have been completely erased, or where a realm has never been subject to knowledge production, but also on these in-between cases where what was once common knowledge has been actively "disappeared" amongst certain groups. We must also ask the question now common to feminist and postcolonialist science studies of who benefits and who is disadvantaged by such ignorance (see, for example, Harding 1998; Tuana 1996b).

While we must abandon the assumption that ignorance is a passive gap in what we know, awaiting scientific progress and discovery, it would be premature to seek out a theory of ignorance with the expectation of finding some universal calculus of the "justified true belief" model. Why we do not know something, whether it has remained or been made unknown, who knows and who is ignorant, and how each of these shift historically or from realm to realm, are all open to question. Furthermore, while the movements and productions of ignorance often parallel and track particular knowledge practices, we cannot assume that their logic is similar to the knowledges that they shadow. The question of how ignorance is sustained, cultivated, or allowed is one that must be asked explicitly and without assuming that the epistemic tools cultivated for understanding knowledge will be sufficient to understanding ignorance. The general point, however, still holds that we cannot fully account for what we know without also offering an account of what we do not know and who is privileged and disadvantaged by such knowledge/ignorance.

Female sexuality is a particularly fertile area for tracking the intersections of power/knowledge-ignorance.[2] Scientific and common-sense knowledge of female orgasm has a history that provides a rich lens for understanding the importance of explicitly including epistemologies of ignorance alongside our theories of knowledge. And so it is women's bodies and pleasures that I embrace.

Epistemologies of Orgasm

Following in the footsteps of foremothers as interestingly diverse as Mary Daly (1978) and Donna Haraway (2000), I adopt the habit of invoking a material-semiotic presence. I write under the sign of Inanna, the Sumerian Queen of Heaven and Earth.[3] Let her be a reminder that sign and flesh are profoundly interconnected.[4]

> *What I tell you*
> *Let the singer weave into song.*
> *What I tell you,*

Let it flow from ear to mouth,
Let it pass from old to young:

My vulva, the horn,
The Boat of Heaven,
Is full of eagerness like the young moon.
My untilled land lies fallow.

As for me, Inanna,
Who will plow my vulva?
Who will plow my high field?
Who will plow my wet ground? (*Inanna* 1983, 36–37)

No doubt it sounds strange to ears schooled by a Foucaultian sensitivity to things sexual for me to frame an epistemology of ignorance around women's sexuality in general, and their orgasms in particular. Indeed, it was Michel Foucault who warned that the disciplining practices of the nineteenth century had constructed sex as "a problem of truth": "[T]he truth of sex became something fundamental, useful, or dangerous, precious or formidable; in short, that sex was constituted as a problem of truth" (1990, 56). Can my investigations of the power dimensions of ignorance concerning women's orgasms not fall prey to a constructed desire for the "truth of sex?"

One might suggest that I follow Foucault's admonition to attend to bodies and pleasures rather than sexual desire to avoid this epistemic trap. And indeed, I do desire to trace bodies and pleasures as a source of subversion. The bodies of my attention are those of women, the pleasures those of orgasm. But bodies and pleasures are not outside the history and deployment of sex-desire. Bodies and pleasures will not remove me, the epistemic subject, from the practice of desiring truth. Bodies and pleasures, as Foucault well knew, have histories. Indeed the bodies that I trace are material-semiotic interactions of organisms/environments/cultures.[5] Bodies and their pleasures are not natural givens, not even deep down. Nor do I believe in a true female sexuality hidden deep beneath the layers of oppressive socialization. But women's bodies and pleasures provide a fertile lens for understanding the workings of power/knowledge-ignorance in which we can trace who desires what knowledge; that is, we can glimpse the construction of desire (or lack thereof) for knowledge of women's sexuality. I also believe that women's bodies and pleasures can, at this historical moment, be a wellspring for resisting sexual normalization.[6] Although my focus in this paper will be on the former concern, I hope to provide sufficient development of the latter to tantalize.

I have no desire in this essay to trace the normalizing and pathologizing of sexual subjectivities. My goal is to understand what "we" do and do not know about women's orgasms, and why. My "we"s include scientific communities, both

feminist and nonfeminist, and the common knowledges of everyday folk, both feminist and nonfeminist. Of course I cannot divorce normalizing sexualities from such a study of women's orgasms, for, as we will see, what we do and do not know of women's bodies and pleasures interact with these practices. Although part of my goal is to trace an epistemology of orgasm, I do so because of a firm belief that as we come to understand our orgasms, we will find a site of pleasure that serves as a resource for resisting sexual normalization through the practices of becoming sexual.

In coming to understand, I suggest that we begin at the site of the clitoris.

Unveiling the Clitoris

Inanna placed the shugurra*, the crown of the steppe, on her head.*
She went to the sheepfold, to the shepherd.
She leaned back against the apple tree.
When she leaned against the apple tree,
her vulva was wondrous to behold.
Rejoicing at her wondrous vulva,
the young woman Inanna applauded herself.
—Inanna: Queen of Heaven and Earth:
Her Stories and Hymms from Summer

What we do and do not know about women's genitalia is a case study of the politics of ignorance. The "we"s I speak of here are both the "we"s of the general population in the United States[7] and the "we"s of scientists. Let me begin with the former. I teach a popular, large lecture course on sexuality. I have discovered that the students in the class know far more about male genitals than they do about female genitals. Take, for example, the clitoris. The vast majority of my female students have no idea how big their clitoris is, or how big the average clitoris is, or what types of variations exist among women. Compare to this the fact that most of my male students can tell you the length *and* diameter of their penis both flaccid and erect, though their information about the average size of erect penises is sometimes shockingly inflated—a consequence, I suspect, of the size of male erections in porn movies. An analogous pattern of knowledge-ignorance also holds across the sexes. That is, both women and men alike typically know far more about the structures of the penis than they do about those of the clitoris.

This is not to say that women do not know anything about their genitalia. But what they, and the typical male student, know consists primarily in a more or less detailed knowledge of the menstrual cycle and the reproductive organs. Women and men can typically draw a relatively accurate rendition of the vagina, uterus, fallopian tubes, and ovaries, but when asked to provide me with a drawing (from memory) of an external and an internal view of female

sexual organs, they often do not include a sketch of the clitoris; and when they do, it is seldom detailed.

This pattern of knowledge-ignorance mirrors a similar pattern in scientific representations of female and male genitalia. Although the role of the clitoris in female sexual satisfaction is scientifically acknowledged, and well known by most of us, the anatomy and physiology of the clitoris, particularly its beginnings and ends, is still a contested terrain. A brief history of representations of the clitoris provides an interesting initial entry into this epistemology of ignorance. Let me begin with the "facts."

As I and many other theorists have argued, until the nineteenth century, men's bodies were believed to be the true form of human biology and the standard against which female structures—bones, brains, and genitalia alike—were to be compared (see Laqueur 1990; Gallagher and Laqueur 1987; Schiebinger 1989; and Tuana 1993). The clitoris fared no differently. Medical science held the male genitals to be the true form, of which women's genitals were a colder, interior version (see Illustration 1). As Luce Irigaray (1985) would say, through this speculum women's genitals were simply those of a man turned inside out and upside down. It thus comes as no surprise that the clitoris would be depicted as,

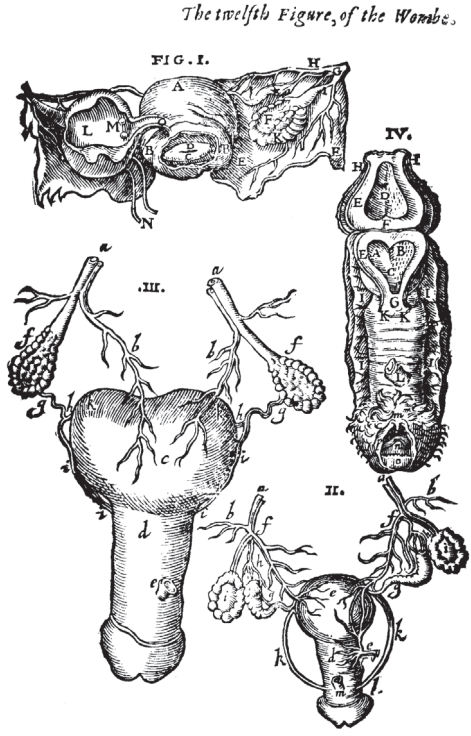

Illustration 1: *The workes of that famous chirurgion Ambrose Pare*, translated out of Latine and compared with the French by Thomas Johnson. London, Printed by T. Cotes and R. Young, Anno 1634. Page 127.

at best, a diminutive homologue to the penis. A history of medical views of the clitoris is not a simple tale. It includes those of Ambroise Paré, the sixteenth-century biologist, who, while quite content to chronicle and describe the various parts and functions of women's reproductive organs, refused to discuss what he called this "obscene part," and admonished "those which desire to know more of it" to read the work of anatomists such as Renaldus Columbus and Gabriello Fallopius (Paré 1968, 130). A history of the clitoris must also include the subject, well dissected by Thomas Laqueur (1989, 1986), whether, despite the proliferation of terms such as *kleitoris*, *columnella, virga* (rod), and *nympha* in texts from Hippocrates to the sixteenth century, these meant anything quite like what "clitoris" meant after the sixteenth century when the link between it and pleasure was bridged.

What was so "discovered" was, of course, complex. Renaldus Columbus, self-heralded as he who discovered the clitoris, refers us to "protuberances, emerging from the uterus near that opening which is called the mouth of the womb" (1559, 11.16.447; Laqueur 1989, 103). He described the function of these protuberances as "the seat of women's delight" which "while women are eager for sex and very excited as if in a frenzy and aroused to lust . . . you will find it a little harder and oblong to such a degree that it shows itself a sort of male member," and when rubbed or touched "semen swifter than air flows this way and that on account of the pleasure even with them unwilling" (1559, 11.16.447–8; Laqueur 1989, 103). Though a different clitoris than we are used to, I will later argue that Columbus provides an interesting rendition of this emerging flesh relevant to an epistemology of knowledge-ignorance.

While much pleasure can result from a thorough history of the clitoris, let me forebear and leap ahead to more contemporary renditions of this seat of pleasure. Even after the "two-sex" model became dominant in the nineteenth century, with its view of the female not as an underdeveloped male but as a second gender with distinctive gender differences, the clitoris got short shrift. It was often rendered a simple nub, which though carefully labeled, was seldom fleshed out or made a focus of attention (see Illustration 2). Even more striking is the emerging practice from the 1940s to the 1970s of simply omitting even the nub of this seat of pleasure when offering a cross-sectional image of female genitalia (see Illustrations 3 and 4). It is important to remember that this display, or lack thereof, is happening at a time when displays of the penis are becoming ever more complex (see Illustration 5).

Enter the women's health movement, and illustrations of women's genitals shift yet again, at least in some locations. Participants in the self-help women's movement, ever believers in taking matters into our own hands, not only took up the speculum as an instrument of knowledge and liberation but questioned standard representations of our anatomy. The nub that tended to disappear in standard anatomical texts took on complexity and structure in the hands of these feminists. In the 1984 edition of the Boston Women Health Collective's

Illustration 2: Figure 4.3, Sagittal section of female internal anatomy (Rosen and Rosen 1981, 138).

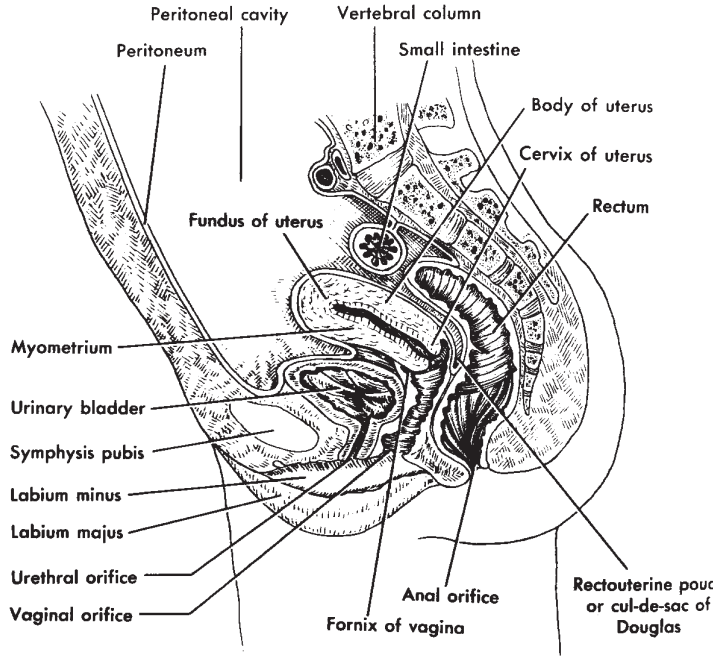

Illustration 3: Figure 24–6, Median sagittal section of female pelvis (Kimber, Gray, Stackpole, Leavell, and Miller 1966, 712).

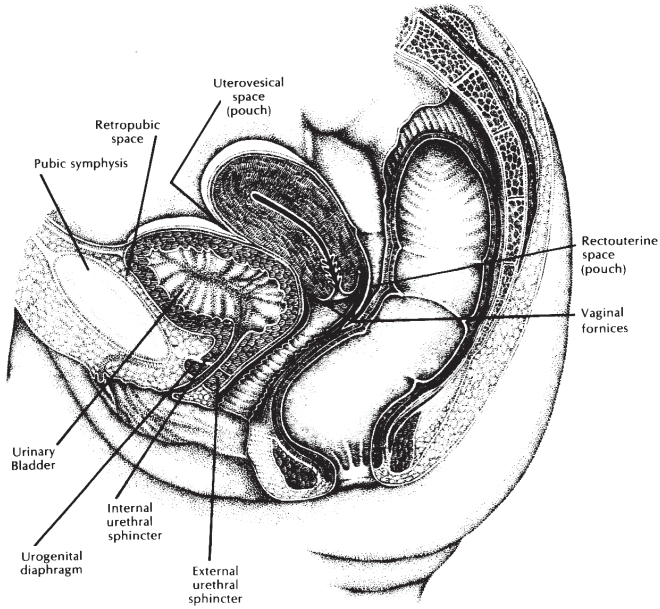

Illustration 4: Figure 5–13, Female pelvic organs (Christensen and Telford 1978, 182).

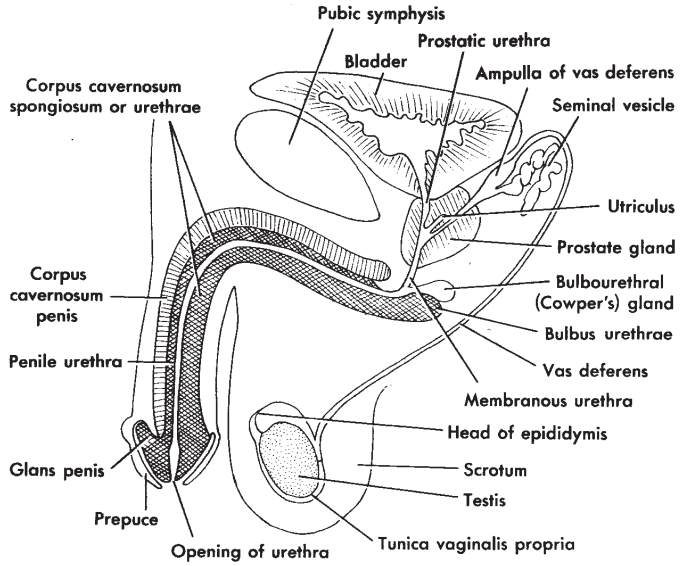

Illustration 5: Figure 24–3, Diagram of midsagittal section of male reproductive organs (Kimber, Gray, Stackpole, Leavell, and Miller 1966, 708).

book, *Our Bodies, Ourselves*, the clitoris expanded in size and configuration to include three structures: the shaft, the glans, and the crura. This new model received its most loving rendition thanks to the leadership of the Federation of Feminist Women's Health Centers and the illustrative hands of Suzann Gage (1981) in *A New View of Woman's Body* (see Illustration 6).

On such accounts, the lower two-thirds of the clitoris is hidden beneath the skin of the vulva. The clitoral glans surmounts the shaft, or body of the clitoris, which is partly visible, and then extends under the muscle tissue of the vulva (see Illustration 7). To this is attached the crura, two stems of tissue, the corpora cavernosa, which arc out toward the thighs and obliquely toward the vagina. The glans of the clitoris, they explain, is a bundle of nerves containing 8,000 nerve fibers, twice the number in the penis, and which, as you know, respond to pressure, temperature, and touch. The "new view" presented to us provides not only far more detail about the clitoral structures, but also depicts the clitoris as large and largely internal. Unlike typical nonfeminist depictions of the clitoris as largely an external genitalia (see Illustration 8) , the new view rendered visible the divide between external and internal (see Illustration 9).

Now to be fair, some very recent nonfeminist anatomical texts have included this trinity of shaft, glans, and crura.[8] But none of these texts focus attention on coming to understand the sexual response patterns of these and other bits.[9] Feminist imagery diverges significantly from nonfeminist in providing us

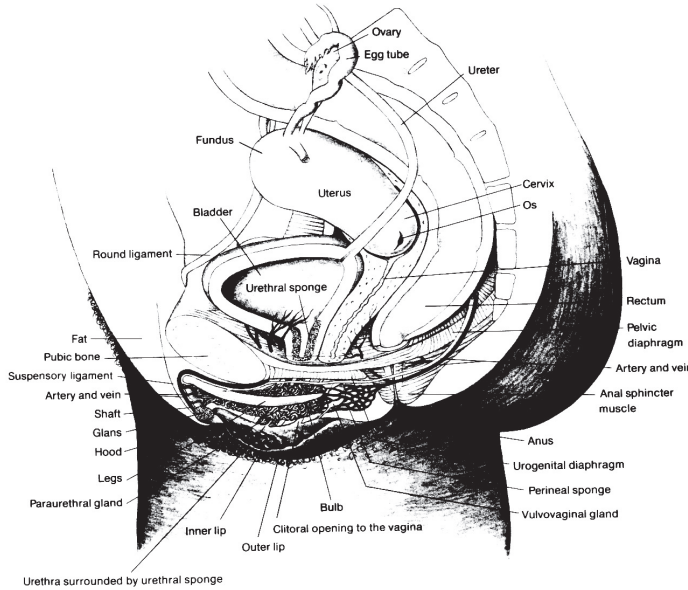

Illustration 6: Figure 3.9, A cross section of the clitoris (Federation of Feminist Women's Health Centers 1981, 41).

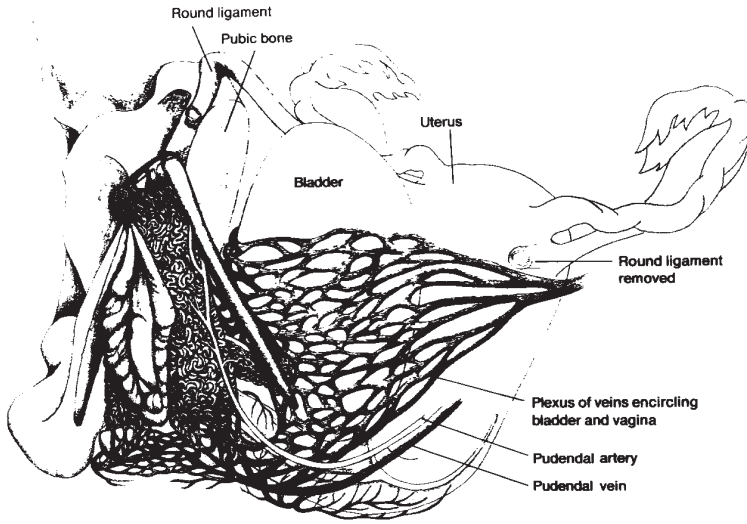

Illustration 7: Figure 3.10, How the clitoris is situated in the pelvis (Federation of Feminist Women's Health Centers 1981, 42).

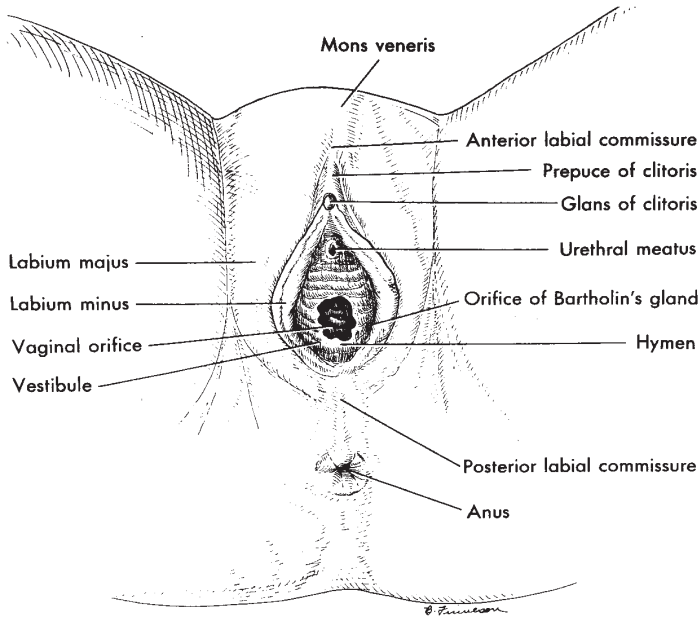

Illustration 8: Figure 24–8, External female genitalia (Kimber, Gray, Stackpole, Leavell, and Miller 1966, 717).

far more detailed views of the impact of sexual stimulation on the glans and crura of the clitoris, as well as the labia majora and the bulbs of the vestibule, the latter of which possess a very extensive blood vessel system that becomes very engorged during arousal, doubling, even tripling in size, we are told, during sexual arousal (see Illustration 10). The always-found illustrations of male erections (see Illustration 11), are now accompanied by an illustration of female erections (see Illustration 12), something absent in nonfeminist texts. Feminist texts also lovingly detail the other bits that are part of our seat of delight. Reminding us that the clitoris, impressive though it be, is not our only sensitive bit, feminists also provide us with images of the urethral sponge that lies between the front wall of the vagina and the urethra, which expands with blood during sexual arousal (see Illustration 13). It was this structure that was allegedly "discovered" with Columbus-like gusto (Christopher, this time, not Renaldus) by Ernst Graffenburg (1950) and popularized as the "G-spot." Although a few nonfeminist anatomical illustrators, post-Graffenburg, provide us glimpses of this pleasurable sponge (see Illustration 14), apparently neither they nor Graffenburg have gotten the hang of the feminist speculum, for they continue to overlook feminist presentations of the other sponge, the perineal sponge located between the vagina and the rectum, which also engorges when a woman is sexually aroused (see Illustration 15). Pressure on any of these engorged structures can result in pleasure and orgasm.

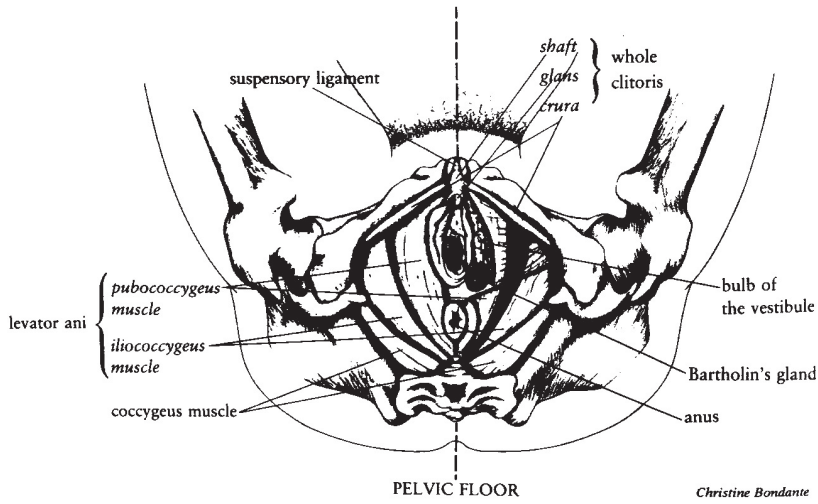

Illustration 9: Figure of the pelvic floor, clitoris, etc. (Boston Women's Health Book Collective 1984, 206).

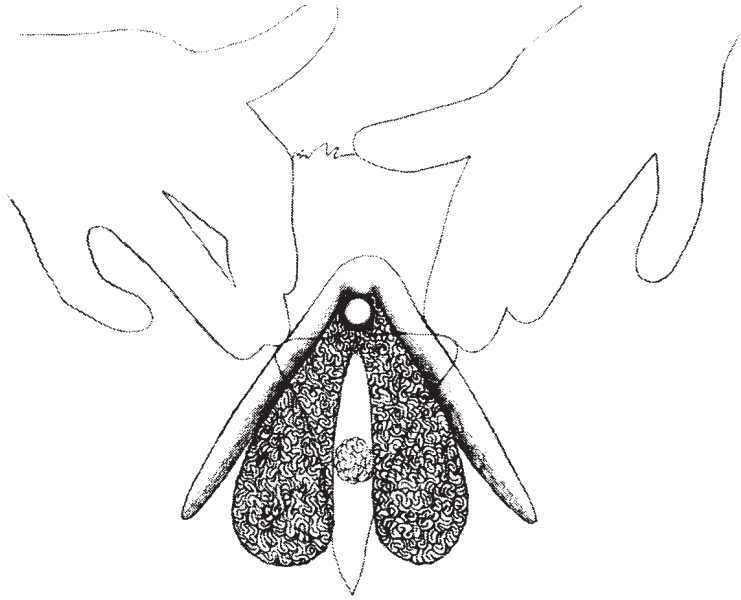

Illustration 10: Figure 3.23, An inner view of the clitoris during the plateau phase (Federation of Feminist Women's Health Centers 1981, 51).

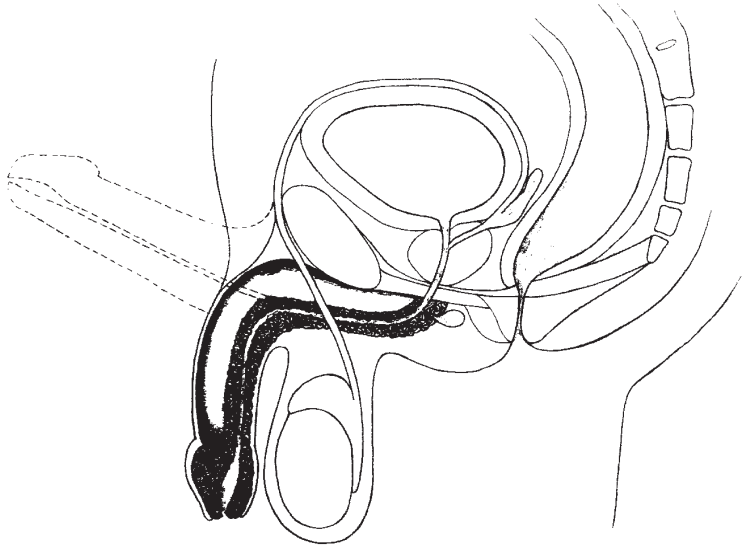

Illustration 11: Figure 3.17, Side view of the penis (Federation of Feminist Women's Health Centers 1981, 49).

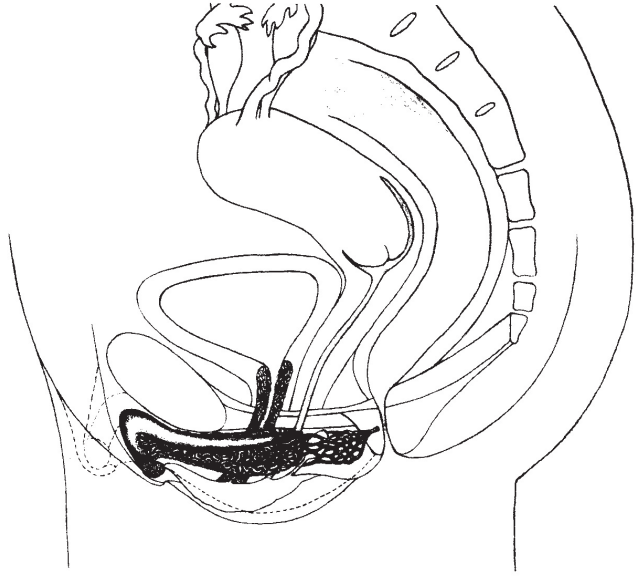

Illustration 12: Figure 3–16, Side view of the clitoris (Federation of Feminist Women's Health Centers 1981, 48).

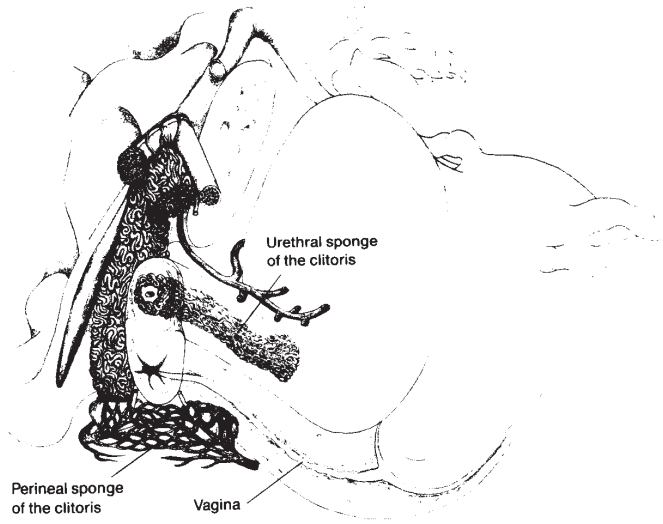

Illustration 13: Figure 3.12, Urethral sponge (Federation of Feminist Women's Health Centers 1981, 43).

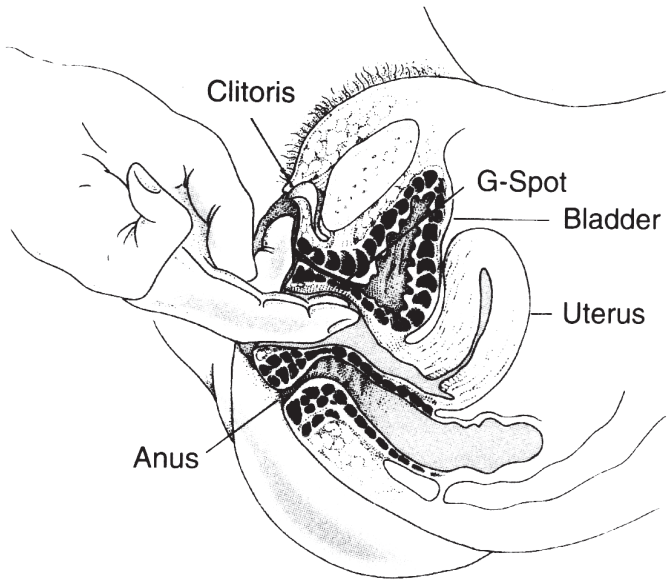

Illustration 14: Figure 5.7, The Grafenberg spot (Rathus, Nevid, and Fichner-Rathus 2002, 167).

Illustration 15: Figure 3.14, Self-examination of the perineal sponge (Federation of Feminist Women's Health Centers 1981, 45).

We have a classic case of separate and unequal when it comes to contemporary nonfeminist depictions of female and male genitals. All the abovementioned contemporary anatomy textbooks include detailed renditions of the structures of the penis, with the *corpus cavernosum* and the *corpus spongiosum*, important sites of male engorgement, carefully drawn and labeled, while offering only the merest bit of a nub as a sufficient representation of the clitoris.[10]

Fingering Truth

So how do we put our finger on the truth of women's clitoral structures? Whose cartographies do we believe? For those of us who follow the speculum, the feminist influenced model of the three-fold clitoral structures have become scripture, with each detail ever more lovingly drawn. But rather than follow desire and insist that the feminist depictions of the clitoris are the truth, let me rather trace the ebbs and flows of this knowledge/ignorance.

Despite fifteen years of clear illustrations of this new view of clitoral structures, our impact has been surprisingly minimal, at least so far. A review of anatomical illustrations in standard college human sexuality textbooks reveals a surprising lack of attention to the functions and structures of the clitoris (see Illustration 16).[11] No surprise, then, that my students have, at best, a passing knowledge of the depths and complexity of its structures. These are the very same students, I remind you, who have relatively detailed knowledge of the structures of female reproductive organs and of the structures of male genitalia, though the terminology they use to label those parts often turns to street talk

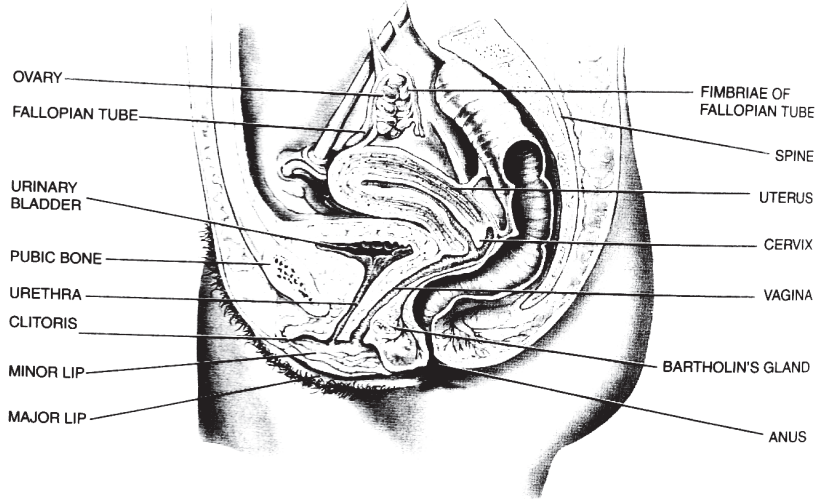

Illustration 16: Figure 2.4, Female sexual and reproductive organs (Kelly 1994, 44).

rather than the high Latin of medical textbooks. The human sexuality textbook writers have clearly bought the line that "size doesn't matter," and continue to depict the clitoris as a modest, undifferentiated nub of flesh.

A politics of ignorance is at work here, one linked to the politics of sex and reproduction. Whether female and male genitalia are seen as homologous or analogous (or somewhere in between), centuries of scientific theories and lay beliefs have treated their pleasures differently. The importance of male pleasure and ejaculation for conception has been little disputed from the Greeks to the present. In contrast, the question of female seed and the link between it and female pleasure was always a point of controversy. Many scientists from the Greeks and well into the sixteenth century disputed the very existence of female seed or semen, though those in the earlier centuries who did ascribe to the existence of female seed often argued for the importance of female pleasure as the vehicle for its release (see Tuana 1988 and 1993). The infertility of prostitutes, for example, was often explained as due to a lack of pleasure in intercourse (Cadden 1993, 142–43). But by the thirteenth century and onward, the link between conception and female pleasure in sex was typically denied even by those who allowed for the existence of female seed. Women's sexual pleasure came to be seen as inessential to reproduction, although many scholars admitted that it might be useful in promoting the desire for intercourse.

Now to this view of the function (or lack thereof) of female erotic pleasure add the politics of sex, namely the view that the only or at least the main function of sex is reproduction. To this add the politics of female sexuality, namely the tenet common in scientific and popular accounts well into the nineteenth century that women were more lustful than men and that their sexuality was a danger to men,[12] and a path is cleared to an understanding of why clitoral structures get lost in the process. The logic becomes quite clear: A) There is no good reason to pay attention to the clitoris, given that it allegedly plays no role in reproduction and that sex is to be studied (only) in order to understand reproduction. B) Worse, there is good reason to not pay attention to the clitoris lest we stir up a hornet's nest of stinging desire.[13] From Pandora on, and well into the nineteenth century, women's stinging desire and limb-gnawing passion had been branded the cause of the fall of mankind. What better reason to construct and maintain an epistemology of ignorance? What better way to disqualify and perhaps even control women's sexual satisfaction?[14]

But I simplify here to make my point. It is not true that history records no moments in the contemporary period when scientists focused their speculums on clitoral structures. Leaving Sigmund Freud aside for the moment, genitals came under scrutiny during the end of the nineteenth century as science constructed the category of the "invert," namely, those who mixed with members of their own sex. Evolutionary theory linked the newly "uncovered" sexual identity of the homosexual to degeneracy, and widespread societal fears of the

degeneration of the race (that is, the white race), led to broadened support for eugenics movements. Scientists, now more intent than ever before on social control, began to examine bodies for signs of degeneration to provide support for proper "matings" and to discourage the dangerous mixing of people across racial or sexual boundaries. Belief in the degeneration of the race led many to believe that so-called "inverts" were proliferating. Anxiety led to a desire to be able to track such undesirables and an equally strong desire to believe that their perversity and devolution would be clearly marked on their bodies. Given the desire for such knowledge, it did not take long before genitals, or at least deviant genitals, would become a focus of the scientific gaze, hornet's nest or not. Although through images to be kept only for the eyes of professionals, whose objectivity and dispassionate nature would protect them from corruption, science began to turn its gaze on the structures of the clitoris to seek out and control deviancy.

The Sex Variant study, conducted in New York City from 1935–1941, was one example of scientific investigations launched to interrogate the marks of deviance that had been imprinted onto the structures of the body. The professed goal of the study was to identify inverts so that physicians could then try to stop them from reproducing and further contaminating the race. Gynecologist Robert Latou Dickinson, the principle investigator of the Sex Variant study, believed that deviance and degeneration would be mapped on women's genitals. Clitorises were examined, measured, and sketched, along with the various contours of vulva, breast, and nipple sizes. Dickinson concluded that, indeed, the genitals of inverts were a symbol of their deviance, arguing that their genitals were different from those of "normal" women—their vulvae, larger; their clitorises, notably erectile; their labium, longer and more protruding; their vaginas, distensible; their hymens, insensitive; and their uteruses, smaller (see Illustration 17). As an aside, it should be noted here that Dickinson's gynecological studies included *only* so-called inverts. (the "normal" vulva, he apparently drew from memory.) This was also a period when the genitals of "inferior" races, particularly those of African descent, were examined and measured, with investigators once again believing that proof of inferiority would be marked on their genitals.[15]

The point here is that this epistemology is not about truth. I am not arguing that the feminist model of the three-fold structures of the clitoris finally uncovered the long submerged truth of the clitoris. Nor am I arguing that feminists were, finally, practicing good science and being objective. These cartographies were and are fueled by our desire to transform normative heterosexuality's vagina-only attention to pleasure. Nor am I claiming that there were no discourses on the clitoris as a source of sexual pleasure in medical and popular literature until feminists and their speculums entered the scene. Indeed, one can find dozens, if not hundreds, of accounts of female orgasm resulting from this feminine seat of pleasure in texts as disparate as those written by midwives

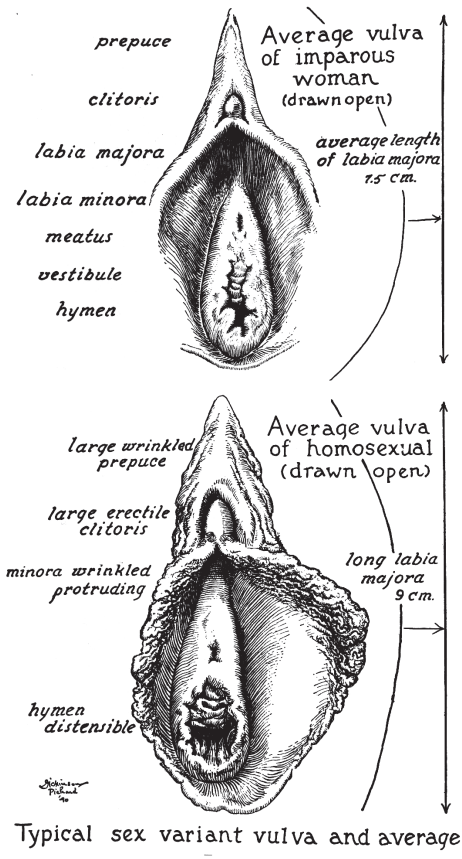

Illustration 17: Figure 3, Typical sex variant vulva and average (Dickinson 1941, 1102).

and penned by pornographers. Nor am I arguing that the speculum was never focused on the female vulva. However, a complex absence exists, a gap that I find important, one often repeated today. What is missing or only sketchily attended to in nonfeminist anatomies, at least when the focus is on the "normal" rather than the "deviant," is the desire to map the geographies and functions of the clitoris and our other pleasurable bits. What nonfeminist anatomists sketch seldom goes beyond the identification of this pleasurable (or dangerous) lump of flesh. What I am arguing is that the history of our knowledges-ignorances of the clitoris—indeed, our lived experiences of its beginnings and ends—is part of an embodied discourse and history of bodies and pleasures. It is a chapter in the tale of power/knowledge-ignorance.

The Issue of Pleasure

Who would want a shotgun when you can have a semiautomatic?

—Natalie Angier, *Woman: An Intimate Geography*

Let me remain a moment at this site of pleasure. Remember with me that until the nineteenth century not only women's desire for sex but the very pleasures they received from it were seen as far greater than those of men. In the words of Tiresias, he who had lived both as a woman and as a man, when it comes to the issue of pleasure:

> If the parts of love's pleasures be divided by ten,
> Thrice three go to women, one only to men.
> (Apollodorus 3.6.7)

This image of women's sexuality shifts, at least for certain women, as we move into the nineteenth century, and with this move, we can locate a shift of knowledge-ignorance.

> *My lord Dumuzi is ready for the holy loins.*
> *The plants and herbs in his field are ripe.*
> *"O Dumuzi! Your fullness is my delight."*
>
> *. . . . He shaped my loins with his fair hands,*
> *The shepherd Dumuzi filled my lap with cream and milk,*
> *He stroked my pubic hair,*
> *He watered my womb.*
> *He laid his hands on my holy vulva,*
> *He smoothed my black boat with cream,*
> *He quickened my narrow boat with milk.* (*Inanna* 1983, 41, 43)

Many of our sociological surveys of sexuality, though not all, figure sex as it is figured in the story of Inanna, between a woman and a man. Although this is far too narrow a story to tell if what we want is an account of bodies and pleasures, let me focus on the differences between this ancient account and contemporary embodiments of heterosexual female sexuality.

A 1994 survey of heterosexual women and men in the United States between the ages of 18 and 59 reveals that one out of every three women surveyed reported that they were uninterested in sex and one out of every five women reported that sex provided little pleasure, in both cases double the number of men reporting a lack of interest or pleasure in sex (Laumann, Gagnon, Michael, and Michaels 1994). Add to this the fact that almost 25 percent of the women surveyed reported being unable to reach orgasm, in comparison with 8 percent

of men, and we begin to see an impact of knowledge-ignorance on bodies and pleasures. The pleasure gap surrounding heterosexual women's and men's first coital experiences is even more startling: 79 percent of men reported that they were certain they had an orgasm during their first sexual experience, while only 7 percent of the women could so report (Sprecher, Barbee, and Schwartz 2001).

These are astonishing figures in themselves, but they become all the more startling when set alongside of women's multi-orgasmic capacities. Women's capacity for multiple orgasm, though taken to be a revelation by contemporary scientists, was a commonplace in many scientific and popular circles in the past.

> *He caressed me on the . . . fragrant honey-bed.*
> *My sweet love, lying by my heart,*
> *Tongue-playing, one by one,*
> *My fair Dumuzi did so fifty times.*
>
> *Now my sweet love is sated.* (*Inanna* 1983, 48)

What was once taken to be ordinary knowledge of women's more robust sexuality and her greater orgasmic capacity submerged into the mire of ignorance sometime during the turn of the last century, where it went dormant (or perhaps just pornographic) for about fifty years and then resurfaced in the new science of sexuality.

Woman's multi-orgasmic capacity became a subject for contemporary scientific study when Kinsey's 1953 study, *Sexual Behavior in the Human Female,* revealed that almost half of the women studied reported the ability to experience multiple orgasms. Shere Hite's 1976 report on female sexuality confirmed Kinsey's results. 48 percent of the women in Hite's survey reported that they often required more than one orgasm to be sexually satisfied (1976, 602–603). William H. Masters and Virgina G. Johnson (1966) similarly documented women's ability to have more than one orgasm without a significant break. They noted that if proper stimulation continues after a woman's first climax, she will in most cases be capable of having additional orgasms—they report between five and six—within a matter of minutes. Masters and Johnson also report that with direct clitoral stimulation, such as an electric vibrator, many women have from twenty to fifty orgasms.

Despite having science and all those measuring tools on our side, efforts continue to suppress this bit of knowledge. As just one example, Donald Symons in *The Evolution of Human Sexuality* (1979), strikes a typical pose when he assures his readers that the multiply orgasmic woman ". . . is to be found primarily, if not exclusively, in the ideology of feminism, the hopes of boys, and the fears of men" (1979, 92).

Foucault warned us away from desire as a category implicated in the construction of human identities and cultures, but urged a greater attention to pleasure. His *History of Sexuality* (1990) documents the uses of pleasure in the practices of normalizing power and includes pleasure, not just desire, as fundamental to understanding the genealogy of sexuality. But Foucault's account also includes a creative, indeed resistant, aspect of pleasure, in which pleasure could be a site for resisting sexual normalization and a wellspring for enriching the art of living.[16]

At a time when popular culture and science alike are convinced of men's greater sexual drives, when a long entrenched fear of the power of women's sexuality is still in the background, when a clear double standard of sexuality disciplines women and men alike, and when heterosexuality remains the normalized sexuality, it is perhaps no surprise that far more women than men are dissatisfied when it comes to the issue of pleasure. But I desire to flesh out pleasure in ways that have the potential to resist this type of normalization. As a first step, I stand Inanna and Tiresias alongside the nineteenth century's passionless woman and the twentieth century's preorgasmic but sexually active woman, and by coming to understand the politics of knowledge-ignorance behind their presence, invoke the female orgasm.

The Either/Or of Women's Orgasms

Let me return to my history of the clitoris. In this section I will complicate this study of the epistemology of ignorance-knowledge regarding female sexuality by bringing function to form, turning my attention to accounts of the role of the clitoris in female orgasm. To understand the almost complete circumcision of female orgasmic potentiality affected by labeling practically any clitoral "excitability" deviant during the first half of the twentieth century, we must turn to Freud. The longest playing of the orgasm debates in the twentieth century began with Freud's declaration of not one but two types of orgasm: the vaginally adult kind and her immature kid sister, the clitoral orgasm (1962, 124). From this one little act of counting to two erupted a huge, now almost centuries-long debate.

Let me begin my account by returning to Columbus. While Columbus's clitoris and mine are not located in the same place, the link he makes between it and sexual pleasure mark a movement I would like us to remember. His account bears repeating. He tells us that he discovered "protuberances, emerging from the uterus near that opening which is called the mouth of the womb" that were, in his words, "the seat of women's delight," which when rubbed or touched "semen swifter than air flows this way and that on account of the pleasure even with them unwilling" (1559, 11.16.447–48; Laqueur 1989, 103). Columbus functions according to an older economy in which women's pleasure in sex mattered because it was needed for conception.

While still marked by a male economy—both in representation ("it shows itself a sort of male member") and in function ("even with them unwilling")—Columbus's depiction of the clitoris evinces another economy that dissolves the boundary between inside and out, between the so-called "external" and the "internal" genitalia. It also provides an interesting example of how knowledge once found can be lost. Columbus, a man of his time, viewed female genitalia as homologous to male genitalia but marked by a lack of heat that resulted in them remaining, for the most part, inside the body. In identifying a "protuberance" that emerges from the uterus, Columbus acknowledged that it, like the penis, grew in size when aroused, but he did not limit female pleasure to it. He acknowledged other sites of pleasure, such as the circular folds of the cervix that cause a friction from which lovers experience wonderful pleasure and the various bits of flesh closer to the vulva by which "pleasure or delight in intercourse is not a little increased" (1559, 11.16.445; Laqueur 1989, 105). Columbus's geography described various linked structures as contributing to woman's pleasure, but he had no desire to determine where one part or orgasm stops and another begins. Nor was there a desire to locate pleasure in a clearly defined site. Protuberances, folds, and bits of flesh alike are, for Columbus, that from which pleasure flows.

What Columbus had put together, Freud would cast asunder. While Freud retained a remnant of the one-sex model, arguing that "portions of the male sexual apparatus also appear in women's bodies, though in an atrophied state" (1964, 114), he argues for an important psychical difference between the pleasures of men and those of women. In boys there is a relatively unproblematic "accession of libido" during puberty. In girls, however, he tells us that there is "a fresh wave of repression in which it is precisely clitoroidal sexuality that is effected" (1962, 123). That is, to become a woman the girl must abandon the pleasures of the clitoris and discover those of the vagina. "When erotogenic susceptibility to stimulation has been successfully transferred by a woman from the clitoris to the vaginal orifice, it implies that she has adopted a new leading zone for the purposes of her later sexual activity" (1962, 124). This is an economy that requires a level of differentiation not found in Columbus. Freud's is a map of the female genitals that requires that we can, and do, distinguish between the clitoris and all its bits, on the one hand, and the vagina and its bits of flesh on the other. And it is here, despite the trace of the one-sex model, that Freud imposes a two-sex economy that divides the clitoris from the other bits. But he does so to perpetuate an even older economy that perceives the purpose of female pleasure, when properly channeled, to be heterosexual reproduction. Indeed, "the intensification of the brake upon sexuality brought about by pubertal repression in women serves as a stimulus to the libido of men and causes an increase in its activity" (1962, 123). In other words, repressed female sexuality increases male desire—quite a modern trope.

The story, of course, shifts in the 1960s with the tools of Masters and Johnson and the politics of feminism. Masters and Johnson (1966) rejected the purported distinction between clitoral and vaginal orgasm, arguing physiologically speaking for only one kind of orgasm. Peering through their speculums, they concluded that allegedly vaginal orgasms, which they revealingly identified as those experienced during intercourse (notice the functionality of the definition), were no different than allegedly clitoral orgasms, for both resulted from the same phenomena, namely clitoral stimulation. We are told that penile coital thrusting draws the clitoral hood back and forth against the clitoris and vaginal pressure heightens blood flow in the clitoris, further setting the stage for orgasm.

These findings were, and still are, met with skepticism in the scientific community, but not in the feminist community. Following closely on the heels of Masters and Johnson's pronouncements and the second wave of feminism that hit in the late 1960s, feminist theorists such as Ann Koedt (1970) and Alix Shulman (1971) insisted that we women should all "think clitoris" and reject the myth of the vaginal orgasm. Their concern was to discredit the vaginal orgasm and the years of pressure placed on women who did not have the "right kind." But to make the case, a frustrating reversal occurred where *only* the clitoris was *the* source of sensation—and remember we do not yet have the enlarged *Our Bodies, Ourselves* (1984) conception of the clitoris to turn to. Shulman tells us that the vagina has so little sensation that "women commonly wear a diaphragm or tampon in it, and even undergo surgery on it, without feeling any sensation at all" (1971, 294). And although Shulman does not deny that some women might sometimes experience orgasm through intercourse, for after all some women, she tells us, sometimes experience orgasm through breast stimulation or mental stimulation or even through dreams, she does disparage the level of pleasure intercourse can provide: "Masters and Johnson observe that the clitoris is automatically 'stimulated' in intercourse since the hood covering the clitoris is pulled over the clitoris with each thrust of the penis in the vagina—much, I suppose, as a penis is automatically 'stimulated' by a man's underwear whenever he takes a step. I wonder, however, if either is erotically stimulating by itself" (1971, 296).

Despite Masters and Johnson and feminist slogans, the days of vaginal orgasm are not (yet) numbered. Josephine Singer and Irving Singer (1972), for example, argue still for two types of orgasms, the vulval and the uterine. They contend that what Masters and Johnson observed were vulval orgasms, which remain the same despite the source of stimulation, clitoral or vaginal. But they argue that the uterine orgasm occurs only in response to deep thrusting against the cervix that slightly displaces the uterus and stimulates the tissues that cover the abdominal organs. This view of two types of orgasm has received additional support from scientists who argue that orgasms that result from deep cervical or uterine stimulation are controlled by a different neural

pathway and produce different subjective experiences than do those generated through clitoral stimulation (for example, see Alzate 1985; Perry and Whipple 1981; and Whipple 1995).

One response to the orgasm debates is to ask what keeps them so entrenched? As breasts and other non-genital bits attest to, the origins of orgasms are a complex matter. Why the persistence in counting even when we are reassured (repeatedly) that they are all equally "good" (see McAnulty and Burnette 2001, 119)? Though I have no doubt that the answer to this question is complex, let me explore two of its components: the geography of the genitals, and the persistence of the belief that the function of sex is reproduction.

Those who sketch anatomical renditions of male and female genitals insist on making a distinction between internal and external genitalia. A factor of arbitrariness is clearly marked on this distinction. For males the penis is wholly an external genital, but testicles get divided in two, with the scrotum being listed as an external sex organ and the testes as internal. Since lots of bits of the penis are internal, one wonders why we even bother to make this distinction. But when it comes to the analogous division of female genitals, more than arbitrariness is at play. The politics of reproduction gets written explicitly into this division, for in the female another descriptive phrase for the internal female sex organs is "the female reproductive system" (Rathus 2002, 106). This division reinforces the orgasm debates and provides a way to "make sense" of the claim for different kinds of orgasms, those that originate from outside and those from inside.

What we have here is an instance of the politics of knowledge-ignorance. This division of female genitals evinces the persistence of a politics of viewing reproduction as central to sexuality, so that it becomes a defining element in the demarcation of female genitalia. If you set sail by Columbus's map, you would not arrive at the planned destination. Still, like his earlier navigator namesake, where you do arrive is interesting too. Seeing orgasm and reproduction as a piece of a whole cloth, Columbus had no desire to demarcate the clitoris as "external" and hence not part of the female reproductive system. But once the clitoris and its orgasmic pleasures were seen as inessential to reproduction, few anatomists saw any value in charting its contours and it was relegated into that little undifferentiated nub that could easily be deemed "external" and "nonreproductive," with the "true" genitals, those that matter, being the internal genitalia.[17]

This politics of knowledge-ignorance is in turn marked by a persistent refusal to admit that the new feminist-inspired view of female genitals dissolves the basis for the internal/external divide, for, on its view, the clitoris is always already both. And once one has this richer understanding of all the bits involved in female orgasm, and little political commitment to retaining a teleology of reproduction in accounts of pleasure, then nothing turns on demarcating types of orgasm based on physiological location. In *Women's Experience of Sex,* Shelia

Kitzinger sums up this view thusly: "Asking whether orgasm is in the clitoris or in the vagina is really the wrong question" (1985, 76). But here, despite feminist insistence that their accounts were about truth—"I think that we were revealing the truth. And how can you argue with anatomy?"[18]—we find ourselves in that complex intersection between knowledge-ignorance and power-politics. The desire to "cut nature at its joints" often requires value-laden, strategic decisions. Feminists cut nature at different joints than do others who represent the clitoris because their values concerning the politics of sex differ from the values of nonfeminist anatomists. Perhaps the body speaks, but understanding what it says requires interpretation.

What we learn from feminist explorations of our genital geography is twofold. First, if you view the clitoris as an important knowledge project, whether because you are convinced that orgasm is primarily clitoral and your geographies aim to understand pleasure or because, like Columbus, you think orgasm is central to reproduction and you aim to understand reproduction, then you will focus far more attention on the structures of the clitoris than if you see it as an uninteresting though pleasant nub. What we attend to and what we ignore are often complexly interwoven with values and politics. Second, if you discover new knowledge about something others do not take seriously, do not expect your knowledge projects to have much effect. The veil of ignorance is not so easily lifted.

Sisterhood Is Powerful

I've talked so far about scientific views of human female orgasm, but another way to enrich our understanding of this epistemology of ignorance-knowledge and attend to bodies and pleasures is to include in this account our simian sisters and how their stories and ours are woven together in theories of evolution. In making this move, I would like to return to the issue of pleasure and keep in the foreground why women's multiple orgasmic pleasures are so seldom acknowledged. Lest one think that only feminist accounts of orgasm are political, one need only look at the orgasm debates in evolutionary theory to see that nonfeminist accounts also wear their societal values on their sleeves (see Lloyd 1993). First of all, and not at all surprising given what I've already pointed out, the typical evolutionary accounts of female sexuality explain all basic aspects of sexuality in terms of reproduction. It is rare to find an account in which sexuality is treated as an autonomous set of functions and activities only partially explained in terms of reproductive functions.

The reduction of sexuality to reproduction is well illustrated by primate studies. In reconstructing how early man and woman behaved, researchers have generally turned to chimpanzees, with whom we shared a common ancestor a mere five million years ago. Despite our kinship, and some important similarities

between humans and chimpanzees, such as the long period of infant dependency, social bonds that persist over generations, and the need to learn what to eat and how to obtain it, a striking difference also exists, namely, the fact that female chimps have sex only during estrus, which begins and ends during their fertile period. Add to this that such occurrences are comparatively rare in a chimpanzee community because females spend most of their adult lives either pregnant or lactating (see Dixson 1998, 43), and the use of chimp sexual behavior as a blueprint for human sexual behavior becomes questionable. However, one effect of this comparison is to link all sexual behavior, chimpanzee and human alike, to reproductive success. The vast majority of chimpanzee sexual behavior occurs during the female fertile period, and thus it is easy to argue that it is linked to reproductive success.

But another contender for a snapshot of early hominid sexual behavior, the bonobos, also shared that same five million-year-old ancestor. Bonobos, unlike chimpanzees and far more like humans, frequently separate sex from reproduction, and female bonobos' sexuality, like the sexuality of female humans, is not tied to their ovulation cycles. Though female bonobos have pink genital swellings as do chimps, theirs begin and end weeks before and after their fertile periods and last for approximately 70 percent of their cycle. Bonobo sexuality is not only *not* linked to fertile periods, its functions and enactments go far beyond simple reproductive success. Bonobos use sex to decrease tensions caused by potential competition, typically competition for food. When bonobos come upon a food source such as a tree filled with ripe fruit, their initial response is a sexual freeplay that calms the group down before they turn to feeding. Sexual encounters also often follow displays of aggression, especially among males. After two males fight, one will often place his rump against the other's genitals or reach out and stroke the other's penis, again as a way to release social tension. Females also use sexual behavior to enhance bonding, both with males and with females. Females, who join new communities when they reach sexual maturity, will have sex with each member of the group as a way to gain acceptance. Females also maintain sexual relations with other females as a way to form alliances that will help ensure access to food and collaborative efforts to control male behavior.[19]

Lest this foraging in the jungles of primate sexuality has made it difficult to follow the logic of my analysis, my point here is that knowledge and ignorance production emerge from values and prior assumptions concerning proper ends. If we have for centuries insisted that the proper function of sexuality is reproduction, then it is crucial to "civilize" it, that is, to put it in service of family values. Given the persistence of the belief that the primary purpose of human sex is reproduction, and I would add, an equally imbedded fear of female sexuality, it comes as no surprise that our mostly male evolutionary theorists would pick the chimp over the bonobos to model the evolution of human sexuality. A female

chimpanzee may have sex with more than one male, but at least she modestly reserves her passions for procreation.

Seeing how sex fares, it would be foolhardy to predict that female orgasms would fare any better. And indeed, if we turn our attention to evolutionary accounts of female orgasms, their existence and function, we find another story of family values. But to understand the plot line of this story, we have to return to our primate sisters. Although evolutionary theorists have accepted the existence of human female orgasm, until recently they wanted to make them *uniquely* human. In other words, although it was accepted that male primates exhibit orgasmic responses during ejaculation, most theorists denied that female nonhuman primates experienced orgasm, another piece in an epistemology of ignorance.

In asking why theorists denied our primate sisters their orgasms, let's begin with some of the facts. Donald Symons in his influential book *The Evolution of Human Sexuality* (1979), chronicled the empirical data marshaled by those who wondered about such orgasms. He noted that numerous primatologists reported a "clutching reaction" in which female rhesus monkeys grasped the male, but only during the ejaculatory mount, the last of two to eight mounts. Though some argued that the timing of this clutch supported a possible ejaculation-triggering vaginal spasm, others denied any such association. Others studying rhesus monkeys noted rhythmic contractions of thigh muscles and around the base of the tail in females after a number of mounts and thrusts. Others studying stumptail monkeys noted that females who mount other females sometimes exhibit the same behavior patterns that a male stumptail exhibits as he ejaculates, namely "a pause followed by muscular body spasms accompanied by the characteristic frowning round-mouthed stare expression and the rhythmic expiration vocalization" (Symons 1979, 28). Others studying rhesus monkeys found that after sessions of clitoral and vaginal stimulation some of the monkeys had vaginal contractions.

Despite the mounting evidence for nonhuman primate orgasm, Symons concludes: "While the possibility that nonhuman female mammals experience orgasm during heterosexual copulation remains open, there is no compelling evidence that they do" (1979, 82). He argues that what evidence there is for nonhuman primate orgasm occurs only in "unnatural" settings such as laboratories or zoos in which primates experience "more intense and varied sexual behavior than occurs in natural circumstances" (1979, 82–83). Notice that the only orgasms that count for Symons are those that occur during heterosexual copulation in so-called natural settings.

The evidence is now turning against the view that orgasm is uniquely human, though the debates still rage. Alan Dixson (1998), for example, reports evidence of uterine contractions in female stumptail macaques during copulations with males as well as while engaging in so-called mounting behavior between females.

Studies also document elevated heart rates similar to those experienced in human females during orgasm, as well as vaginal contractions, clitoral tumescence, limb spasm, and body tension during normal bouts of pelvic thrusting. Jane Goodall, I would add, also notes that adolescent female chimpanzees laugh softly as they masturbate (see Goodall 1988). Dixson concludes that "orgasm should therefore be viewed as a phylogenetically ancient phenomenon among anthropoid primates; the capacity to exhibit orgasm in the human female being an inheritance from ape-like ancestors" (1998, 133).

So, again, why the decades of denial of orgasm to our primate sisters in the face of their embodied pleasures? What is the logic of this epistemology of knowledge-ignorance? The desire to make the human female orgasm unique was linked to the desire to argue for the so-called "pair-bond," that is, monogamous heterosexual coupling—the family values script. Western sexual values and the sexual antics of bonobos are about as far afield from each other as they can get, but even the more sexually sedate chimpanzee female mates with multiple partners during her estrus. Evolutionary theorists opted instead for a picture right out of a Norman Rockwell painting, the idea being that orgasm evolved by sexual selection in the human female to facilitate bonding and long term relationships between the sexes. According to David Barash, "sex may be such a device [to sustain the pair-bond], selected to be pleasurable for its own sake, in addition to its procreative function. This would help explain why the female orgasm seems to be unique to humans" (1977, 296–97). Female orgasm here serves as a female's reward and motivation to engage in frequent intercourse, but only with one partner, which helps cement the pair bond, ensures reproduction, and increases male cooperation and assistance with rearing offspring. Here we see how an epistemology of ignorance surrounding female orgasm, in this case those of our simian sisters, can be put in the service of family values.

There are, as you might suspect, a number of problems with this story. Females of other primate species, such as gibbons, who do not exhibit obvious signs of female orgasm, are primarily monogamous. But the theory also associates orgasm with intercourse in assuming that orgasm is a reward for engaging in frequent intercourse. In both humans and many nonhuman primates, heterosexual intercourse is a far less reliable path to orgasm than other types of genital stimulation. Orgasm through intercourse alone and apart from any additional clitoral stimulation is relatively rare for human females: somewhere between 20 to 35 percent of women in the United States report always or almost always experiencing orgasm from intercourse alone (see Hite 1976; Masters and Johnson 1966). Evolutionary theorists want to wed the bonobos-like social bonding function of sexuality to gibbon-like monogamy, but without attention to when we human women are laughing softly.

Now introduce human female multi-orgasmic capacity into the evolutionary picture, and the pair-bond story becomes even less credible, a patriarchal pipe

dream, if you will. The human female stands before us, lacking any visible sign of estrus and a capacity for far more orgasmic pleasure than the human male. Now compare this to the oft-told evolutionary tale about the differences in the so-called cost of sex:

> The unconscious evolutionary logic of males and females differs. Physiologically, if a man mated with a different woman every night he could sire thousands of children, whereas an equally promiscuous woman could bear at most some twenty children during her adult life. The dramatic variance in reproductive potential between males and females suggests that human males, unlike females, may have benefited significantly by copulating with as many lovers as possible. Thus, in males at least, the desire for "sex for sex's sake," the taste for sex without emotional attachment, very likely has been genetically reinforced. (Margulis and Sagan 1991, 43)

Where this tale goes awry yet again reflects the politics of ignorance. Let's begin by checking out these numbers. First of all men do not have unlimited sperm supplies. The daily human sperm production is about 185 million sperm per day and most men ejaculate somewhere between 150–360 million sperm. A man's sperm count drops by 72 percent if he ejaculates more than once a day, and ejaculating more than 3.5 times a week significantly decreases total sperm supplies, compromising fertility (Small 1995, 111). Now remember he is consorting with females who show no visible signs of fertility, and if we accept the "sex for sex's sake" hypothesis, is competing with many other males. Assuming a generous window of 5 days in a 28–day cycle where fertilization is possible, then, even assuming that the male restricts all his ejaculations to intercourse and assuming he does not go over the 3.5 ejaculations per week to keep his sperm count up to peak performance, but allowing that he mates randomly with different females, it is unlikely that any of his 14 ejaculations per month will result in conception. Now add to this the supposition that other males, given their projected promiscuity, may also be having sex with the same females. This requires that we add sperm competition to the picture, yet again reducing male reproductive potential.[20] The facts, it seems, make the dramatic variance in reproductive potential postulated between males and females highly questionable.

Now stand this male whose ejaculations cannot go over 3.5 per week without reducing reproductive efficacy alongside the female who is capable of twenty to fifty orgasms in each of her sexual encounters. One way to retell this story is to account for the evolutionary advantage of female orgasmic capacity as an inducement to copulate with a variety of males rather than one partner and thus promote sperm competition. But another way to retell this story is to break sex off from its exclusively reproductive role and acknowledge that sex

has other functions. Following the antics of the bonobos, we might see female sexual potency as a means of assuring societal harmony and diffusing tensions or as a way to ensure the assistance of others, and not just male others, in procuring food and assisting in the care of offspring. But these are stories that are very seldom told.

My point in all this is not to argue for the superiority of my "what if" story of human sexual evolution, but to point out as clearly as I can the dramatic suppression of female orgasmic capacity in current evolutionary accounts. Human women's orgasms are not denied, but they are carefully cultivated to avoid rupturing certain societal scripts. Returning to the issue of pleasure once again, I would ask what we might discover about bodies and pleasures if we cultivated our female sexuality through scripts from different disciplinary practices.

Bodies and Pleasures

I return to my tropes, Inanna and Tiresias, now standing beside a female bonobo, and add a fourth to this gathering, Annie Sprinkle, porn-star-turned-performance-artist/sex educator. If bodies and pleasures are to be seen as a resource, it is important not to think that our goal is to find those pleasures free from sexual normalization, free from disciplinary practices. Here I follow LaDelle McWhorter, who claims that "instead of refusing normalization outright, we need to learn ways to use the power of its disciplines to propel us in new directions" (1999, 181). Though we cannot simply remove ourselves from disciplinary practices, she argues that it is possible to affirm "development without affirming docility, [through] affirming the free, open playfulness of human possibility within regimes of sexuality without getting stuck in or succumbing to any one sexual discourse or formation" (1999, 181). McWhorter, following Foucault, suggests that one path to this playfulness is to deliberately separate practice from goal and simply engage in disciplinary practices for their own sake, for the pleasures they bring, rather than for some purpose beyond them. "What if we used our capacities for temporal development not for preparation for some task beyond that development but for the purpose of development itself, including the development of our capacities for pleasure? What if we used pleasure rather than pain as our primary disciplinary tool?" (1999, 182). Following Foucault, what we must work on ". . . is not so much to liberate our desires but to make ourselves infinitely more susceptible to pleasure" (Foucault 1989, 310).

Annie Sprinkle, in her one-woman show, "Herstory of Porn: Reel to Real," describes the new direction her work took in the mid-1980s when she devoted her talents to displaying the beauty of sex and the undiscovered power of orgasms. "Some people discover Jesus and want to spread the word. I discovered orgasms and want to spread the word" (Sprinkle 1999). Sprinkle's new productions attempt to refocus attention from power to pleasure. "There's a lot of people who talk about violence, rape, and abuse. But, there's not a lot of people that

talk about pleasure, bliss, orgasm, and ecstasy" (Sprinkle 1999). Sprinkle's work has transformed over time. At one point her performances focused attention on female orgasmic ejaculations, providing audiences with sights seldom before seen on stage and ones that were, as the title of her performance explains, real, not reel. She has also advocated and really performed the nongenital breath or energy orgasm in which one "can simply lie down, take a few breaths, and go into an orgasmic state."

Sprinkle is not advocating a new homologous model of female orgasm—women ejaculate too—or an ultimate radical feminist rejection of penetrative sex. Rather than setting up new disciplinary practices with clearly defined markers between "good" feminist sex and "bad" nonfeminist sex, Sprinkle explores pleasure and refers to herself as a "metamorphosexual." I am not here claiming that Sprinkle's pleasures are outside sexual normalization, but I do think she stands before us as one who explores pleasure for its own sake. I offer her pleasures as an example of how we might, in McWhorter's words, "live our bodies as who we are, to intensify our experiences of bodiliness and to think from our bodies, if we are going to push back against the narrow confines of the normalizing powers that constrict our freedom" (1999, 185).

Sprinkle's pleasures are themselves part of disciplinary practices. It is important if we go the way of pleasure that we not desire pleasures that escape power. For Sprinkle's body and pleasures are situated in economies partially shaped by the feminist speculum. A more complete story would situate Sprinkle in the decades of practices of the feminist health movement and feminist efforts to take back our bodies and our sexualities. This pleasurable account I must leave for another time. Here I will simply tantalize by repeating Sprinkle's gospel that we return to our bodies and to our orgasms, and spread the word.

Conclusion

It comes as no surprise that a correlation often exists between ignorance and pleasure. The feminist quest to enhance knowledge about women's bodies and their sexual experiences had as its goal the enhancement of women's pleasures. As should now be clear, knowledges and pleasures are complexly interrelated. Indeed the old adage that "ignorance is bliss" takes on new meanings when read through the lens of an epistemology attentive to both knowledge and ignorance. Whose pleasures were enhanced by ignorance and whose were suppressed by knowledge are complex questions that must be asked repeatedly in any study of the science of sexuality.

My goal in this essay was twofold. First, I wanted to share a genuine fascination with the study of the science of sexuality, particularly in relation to female sexuality. While much effort has gone into studying the formation of sexual *identities*, far less has been devoted to the science of sexuality. While I do not want to suggest that this aspect of sexual science or our sexual experiences

are divorced from the constructions of sexual identities, I do believe that a fascination with the latter has deferred full attention from the former. While sexual identity issues will always be an aspect of any study of the science of sexuality, it is my conviction that an inclusion of sexuality will highlight other axes of power.

My second goal in writing this essay was to begin to outline the importance and power of attending to what we do not know and the power/politics of such ignorances. Although my account is preliminary and suggestive, I have presented the following claims:

- Any complete epistemology must include a study of ignorance, not just knowledge.
- Ignorance—far from being a simple, innocent lack of knowledge—is a complex phenomenon that like knowledge, is interrelated with power; for example, ignorance is frequently constructed, and it is linked to issues of cognitive authority, trust, doubt, silencing, etc.
- While many feminist science studies theorists have embraced the interrelationship of knowledge and values, we must also see the ways in which ignorance, too, is so interrelated.
- The study of ignorance can provide a lens for the values at work in our knowledge practices.
- We should not assume that the epistemic tools we have developed for the study of knowledge or the theories we have developed concerning knowledge practices will transfer to the study of ignorance.

"In Conclusion"

Inanna went to visit Enki, the god of wisdom, who possessed the holy laws of heaven and earth. She drank beer with him. They drank beer together. They drank more and more beer together, until Enki, god of wisdom, agreed to give Inanna all the holy laws. She accepted the holy laws, gathered them together, placed them in the Boat of Heaven, and sailed back across the water. [My vulva, the horn, the Boat of Heaven, is full of eagerness like the young moon.] Upon reaching land and unloading the holy laws, Inanna discovered that she returned with more holy laws than had been given her by Enki.
—Inanna: Queen of Heaven and Earth: Her Stories and Hymms from Summer

I hope by now you are laughing softly with me. Lean back against the apple tree. Feel the delicate fire running under your skin. Our vulvae are wondrous to behold. Rejoice at your wondrous vulva and applaud yourself.

Notes

My thanks to Lynn Hankinson Nelson, Alison Wylie, and the anonymous reviewers for their very helpful editorial suggestions.

1. I choose to employ the phrase "epistemologies of ignorance" despite its potential awkwardness (theories of knowledge of ignorance) for a number of reasons. The alternative term, agnoiology, has histories I have no desire to invoke. First employed by James Frederick Ferrier (1854) to refute William Hamilton's (1858–60) thesis of the unknowableness of the Absolute Reality, Ferrier posits ignorance as properly attributable only to an *absence or lack* of knowledge of that which it is possible for us to know and precludes the term "ignorance" from being applied to anything that is unintelligible or self-contradictory. Ferrier used the term agnoiology to distinguish what was truly knowable—and thus the proper subject matter of epistemology—from that which was unknowable (1854, 536). The term agnoiology has been resuscitated by Keith Lehrer (1990) as part of an argument demonstrating that skepticism has not been philosophically refuted; he argues that the possible truth of the skeptical hypothesis entails that we can never achieve completely justified true belief. Hence, Lehrer concludes that we do not know anything, even that we do not know anything. His point is that rational belief and action do not require refuting the skeptical hypothesis, nor do they need the validating stamp of "knowledge."

2. Perhaps more important, I wish to retain the rhetorical strength of "epistemology" when investigating ignorance. Too often, as evidenced by both Ferrier and Lehrer, ignorance is only a vehicle to reveal the proper workings of knowledge or, in the case of Lehrer, rational belief and action. Ignorance itself is not interrogated but is set up as the background against which one unfurls enriched knowledge. It is my desire to retain a focus on ignorance, to foreground ignorance as a location for understanding the workings of power. Just as we have epistemology/ies of science, of religion, and so on, I wish to argue for an epistemology of the complex phenomenon of ignorance as well as to suggest that no theory of knowledge is complete that ignores ignorance.

3. I will use this particular rhetorical form to both visually remind readers of Foucault's notion of power/knowledge (1980) and to add to it my emphasis on ignorance. I am not here claiming that Foucault did not understand how the workings of power/knowledge served to suppress knowledge practices, but with our contemporary philosophical emphasis on what we do know, I think the constant reminder to attend to what we do not know is crucial. Without the reminder, the politics of ignorance are too often erased.

4. The story of Inanna and the translations that I quote are part of a large body of Sumerian tales, legends, and poems about the Queen of Heaven and Earth inscribed on various clay tablets dating back to 2000 B.C.E.

5. For an interesting discussion of Haraway's use of such rhetorical signs, see her *How Like a Leaf* (2000).

6. This conception of bodily being is developed extensively in Tuana 1996a and 2001.

7. McWhorter, in her recent *Bodies & Pleasures* (1999), convincingly (and pleasurably) argues that a neglected aspect of Foucault's philosophy is his account of pleasure

as creative and as a resource for political resistance. My use of Foucault in this essay owes much to her reading.

8. It is important to emphasize that what we do and do not know is often "local" to a particular group or a particular culture. I locate my "we" in this section as the common knowledge of laypeople in the United States both because the studies and surveys that I will employ were limited to this group and in recognition of the fact that knowledge-ignorance about women's sexuality varies tremendously from one culture/country to another.

9. Richard D. McAnulty and M. Michele Burnette (2001, 67) describe the clitoris as composed of shaft and glans, but make no effort to provide an illustration. Spencer A. Rathus, Nevid, and Fichner-Rathus (2002) is the first textbook designed for college human sexuality classrooms that includes an illustration of what they label the "whole clitoris," namely, the shaft, glans, and crura.

10. McAnulty and Burnette, for example, while admitting a more complex structure for the clitoris, simply indicate that "the glans of the clitoris has a high concentration of touch and temperature receptors and should be the primary center of sexual stimulation and sensation in the female" (2001, 67). Later, when discussing the female sexual response cycle, they simply note that the diameter of the clitoral shaft increases (2001, 114).

11. For an interesting discussion of anatomical conventions in depicting female genitalia see Moore and Clarke 1995.

12. I've examined the various editions of Albert Richard Allgeier and Elizabeth Rice Allgeier (1984, 1988, 1998), Curtis O. Byer and Louis W. Shainberg (1985, 1988, 1991, 1998, 2001), Gary Kelly (1988, 1994, 1998, 2001), McAnulty and Burnette (2001), and Rathus, Nevin, and Fichner-Rathus (1993, 2000, 2002). Only Rathus, Nevin, and Fichner-Rathus include this expanded model of the clitoris. But while they provide the most detailed discussion of women's multi-orgasmic capacity, their images and discussion of the female response phases are surprisingly traditional, with the clitoris once again relegated to a mere nub.

13. I support these claims in my book, *The Less Noble Sex* (1993).

14. The reference here is to Hesiod's depiction of the creation of the first woman, Pandora. After she was molded in the shape of a goddess by Hephaistos, Zeus ordered Aphrodite to bequeath to her "stinging desire and limb-gnawing passion" (Hesiod 1983, line 66–67).

15. As just one of literally thousands of examples of the view that women's greater susceptibility to sexual temptation required control, I refer the reader to David Hume's (1978) discussion of chastity and modesty. Hume argues that women have such a strong temptation to infidelity that the only way to reassure men that the children their wives bear are their own biological offspring is for society to "attach a peculiar degree of shame to their infidelity, above what arises merely from its injustice"; also, because women are particularly apt to overlook remote motives in favor of present temptations, he argues "'tis necessary, therefore, that, beside the infamy attending such licenses, there should be some preceding backwardness or dread, which may prevent their first approaches, and may give the female sex a repugnance to all expressions, and postures, and liberties, that have an immediate relation to that enjoyment" (1978, Bk. 3, Pt. 2, Sec. 12, Para. 6/9, 571–72).

16. Scientists believed that enlarged clitorises were both a result of and a reason for hypersexuality, and both sex deviants and racially "inferior" women were viewed as sexually deviant because of heightened sexual "excitability." For further discussion of these themes see Fausto-Sterling 1995 and Terry 1995 and 1999.

17. See McWhorter 1999 for an insightful analysis of the difference between desire and pleasure. "The art of living" is, of course, Beauvoir's phrase.

18. This view of female genitals is surprisingly resilient. A recent story in my local State College, Pennsylvania newspaper, *The Center Daily Times*, reported that two women who were running nude were acquitted of charges of streaking. The story explains that the streaking law requires that the genitalia be exposed, something that the judge in this case decided is nearly impossible for women, since, in the judge's view, female genitalia are all internal! My thanks to David O'Hara for calling this story to my attention.

19. Suzann Gage, the illustrator of *A New View of a Women's Body* (1981), as reported in Moore and Clark, 1995.

20. For a discussion of bonobo behavior as an evolutionary model for human sexuality, see Small 1995.

21. For a discussion of current theories of sperm competition, see Baker and Bellis 1995.

References

Allgeier, Albert Richard and Elizabeth Rice Allgeier. 1984, 1988, 1998. *Sexual interactions*. Lexington, Mass.: D. C. Heath and Co.

Alzate, Heli. 1985. Vaginal eroticism: A replication study. *Archives of Sexual Behavior* 14 (6): 529–37.

Annie Sprinkle's Herstory of Porn. 1999. Produced and directed by Annie Sprinkle and Carol Leigh (Scarlot Harlot). 69 min. Hardcore Documentary. Videocassette.

Apollodorus. 1976. *The gods and heroes of the Greeks: The library of Apollodorus*. Trans. Michael Simpson. Amherst: University of Massachusetts Press.

Baker, R. Robin, and Mark A. Bellis. 1995. *Human sperm competition: Copulation, masturbation, and infidelity*. London: Chapman and Hall.

Barash, David. 1977. *Sociobiology and behavior.* New York: Elsevier North-Holland.

Bloor, David. 1976. *Knowledge and social imagery*. London: Routledge and Kegan Paul.

Boston Woman's Health Book Collective. 1984. *The New our bodies, ourselves: A book by and for women*. New York: Simon and Schuster.

Byer, Curtis O., and Louis W. Shainberg. 1985, 1988, 1991, 1998, 2001. *Dimensions of human sexuality*. Boston: McGraw Hill.

Cadden, Joan. 1993. Meanings of sex difference in the Middle Ages: Medicine, science and culture. Cambridge: Cambridge University Press.

Christensen, John B., and Ira Telford. 1978. *Synopsis of gross anatomy* 3rd ed. New York: Harper and Row.

Columbus, Renaldus. 1559. *De re anatomica*. Venice.

Daly, Mary. 1978. *Gyn/ecology: The metaethics of radical feminism*. Boston: Beacon Press.

Dickinson, Robert Latou. 1941. The gynecology of homosexuality, Appendix VI. In *Sex variants: A study of homosexual patterns*, ed. George W. Henry. New York, London: Paul B. Hoeber.

Dixson, Alan. 1998. *Primate sexuality: Comparative studies of the prosimians, monkeys, apes, and human beings*. Oxford: Oxford University Press.

Fausto-Sterling, Anne. 1995. Gender, race, and nation: The comparative anatomy of "Hottentot" women in Europe, 1815–1817. In *Deviant bodies: Critical perspectives on difference in science and popular culture*, ed. Jennifer Terry and Jacqueline Urla. Bloomington: Indiana University Press.

Federation of Feminist Women's Health Centers. 1981. *A new view of a woman's body: A fully illustrated guide; illustrations by Suzann Gage; photographs by Sylvia Morales*. New York: Simon and Schuster.

Ferrier, James F. 1854. *Institutes of metaphysic*. Edinburgh: Blackwood.

Foucault, Michel. 1980. *Power/knowledge: Selected interviews and other writings, 1972–1977*. Ed. and trans. Colin Gordon. New York: Pantheon Books.

———. 1989. Friendship as a way of life. In *Foucault live*. Trans. John Johnston. Ed. Sylvere Lotringer. New York: Semiotext(e).

———. 1990. *The history of sexuality, volume I: An introduction*. Trans. Robert Hurley. New York: Random House.

Freud, Sigmund. 1962. *Three essays on the theory of sexuality*. Trans. and Ed. James Strachey. New York: Avon.

———. 1964. Femininity. In *Standard edition of the complete psychological works*. Volume 22. Trans. and Ed. James Strachey. London: Hogarth Press.

Gallagher, Catherine and Thomas Laqueur, eds. 1987. *The making of the modern body: Sexuality and society in the nineteenth century*. Berkeley: University of California Press.

Goodall, Jane. 1988. *In the shadow of man*. Boston: Houghton Mifflin.

Grafenburg, Ernst. 1950. The role of the urethra in female orgasm. *The International Jounral of Sexology* 3: 145–48.

Hamilton, William. 1858–60/2001. Lectures on metaphysics and logic. In *Works of William Hamilton*, ed. Savina Tropea. Bristol: Thoemmes Press.

Haraway, Donna J. 2000. *How like a leaf: An interview with Thyrza Nichols Goodeve*. New York, London: Routledge.

Harding, Sandra. 1998. *Is science multi-cultural? Postcolonialisms, feminisms, and epistemologies*. Bloomington: Indiana University Press.

Hesiod. 1983. *Theogony, works and days, and the shield*. Trans. Apostolos Athanassakis. Baltimore: Johns Hopkins Press.

Hite, Shere. 1976. *The Hite report: A nationwide study of female sexuality*. New York: Dell.

Hume, David. 1978. *A treatise of human nature*. Ed. Lewis Amherst Selby-Bigge. New York: Oxford University Press.

Inanna: Queen of heaven and earth, her stories and hymns from Sumer. 1983. Trans. Diane Wolkstein and Samuel Noah Kramer. New York: Harper and Row.

Irigaray, Luce. 1985. *Speculum of the other woman*. Trans. Gillian C. Gill. Ithaca: Cornell University Press.

Kelly, Gary F. 1988, 1994, 1998, 2001. *Sexuality today: The human perspective*. Boston: McGraw Hill.

Kimber, Diana Clifford, Carolyn E. Gray, Caroline E. Stackpole, Lutie C. Leavell, Marjorie A. Miller. 1966. *Anatomy and physiology* 15th ed. New York: Macmillian.

Kinsey, Alfred C., and the staff of the Institute for Sex Research, Indiana University. 1953. *Sexual behavior in the human female*. Philadelphia: Saunders.

Kitzinger, Sheila. 1985. *Women's experience of sex: The facts and feelings of female sexuality at every stage of life*. New York: Penguin Books.

Koedt, Ann. 1970. The myth of the vaginal orgasm. In *Notes from the second year: Women's liberation*, ed. Shulamith Firestone and Ann Koedt. New York: Radical Feminism.

Laqueur, Thomas. 1986. Orgasm, generation, and the politics of reproductive biology. *Representations* 14: 1–41.

———. 1989. 'Amor Veneris, vel Dulcedo Appeleur.' In *Fragments for a history of the human body*, ed. Michel Feher. New York: Zone.

———. 1990. *Making sex: Body and gender from the Greeks to Freud*. Cambridge, : Harvard University Press.

Laumann Edward O., John H. Gagnon, Robert T. Michael, and Stewart Michaels. 1994. *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press.

Lehrer, Keith. 1990. *Theory of knowledge*. Boulder: Westview Press.

Lloyd, Elisabeth A. 1993. Pre-theoretical assumptions in evolutionary explanations of female sexuality. *Philosophical Studies* 69:139–53.

Margulis, Lynn, and Dorion Sagan. 1991. *Mystery dance: On the evolution of human sexuality*. New York: Summit Books.

Masters, William H., and Virginia E. Johnson. 1966. *Human sexual response*. Boston: Little, Brown.

McAnulty, Richard D., and M. Michele Burnette. 2001. *Exploring human sexuality: Making healthy decisions*. Boston: Allyn and Bacon.

McWhorter, LaDelle. 1999. *Bodies & pleasures: Foucault and the politics of sexual normalization*. Bloomington: Indiana University Press.

Mills, Charles S. 1997. *The racial contract*. Ithaca, N.Y.: Cornell University Press.

Moore, Lisa Jean, and Adele E. Clarke. 1995. Clitoral conventions and transgressions: Graphic representations in anatomy texts, c1900–1991. *Feminist studies* 21(2): 255–301.

Paré, Ambroise. 1968. *The collected works of Ambroise Paré*. Trans. Thomas Johnson. New York: Milford House.

Perry, John Delbert, and Beverly Whipple. 1981. Pelvic muscle strength of female ejaculators: Evidence in support of a new theory of orgasm *Journal of Sex Research* 17 (1): 22–39.

Proctor, Robert N. 1995. *Cancer wars: How politics shapes what we know and don't know about cancer*. New York: Basic Books.

Rathus, Spencer A., Jeffrey S. Nevid, and Lois Fichner-Rathus. 1993, 2000, 2002. *Human sexuality in a world of diversity*. 5th Ed. Boston: Allyn and Bacon.

Rosen, Raymond, and Linda Reich Rosen. 1981. *Human sexuality*. New York: Alfred A. Knopf.

Schiebinger, Londa L. 1989. *The mind has no sex? Women in the origins of modern science*. Cambridge: Harvard University Press.

Sedgwick, Eve Kosofsky. 1990. *Epistemology of the closet*. Berkeley, Los Angeles: University of California Press.

Shulman, Alix. 1971. Organs and orgasms. In *Women in sexist society,* ed.Vivian Gornick and Barbara K. Moran. New York, New American Library.

Singer, Josephine, and Irving Singer. 1972. Types of female orgasm *Journal of Sex Research* 8 (4): 2550–267.

Small, Meredith F. 1995. *What's love got to do with it? The evolution of human mating.* New York: Anchor Books.

Sprecher, Susan, Anita Barbee, and Pepper Schwartz. 2001. "Was it good for you, too?": Gender differences in first sexual intercourse experience. In *Social psychology and human sexuality*, ed. Roy F. Baumeister. Philadelphia: Taylor and Francis.

Symons, Donald. 1979. *The evolution of human sexuality*. New York: Oxford University Press.

Terry, Jennifer. 1995. Anxious slippages between "us" and "them": A brief history of the scientific search for homosexual bodies. In *Deviant bodies: Critical perspectives on difference in science and popular culture*, ed. Jennifer Terry and Jacqueline Urla. Bloomington: Indiana University Press.

———. 1999. *An American obsession: Science, medicine, and homosexuality in modern society*. Chicago: University of Chicago Press.

Tuana, Nancy. 1988. The weaker seed: The sexist bias of reproductive theory. *Hypatia: A Journal of Feminist Philosophy*, 3 (1): 35–39.

———. 1993. *The less noble sex: Scientific, religious and philosophical conceptions of woman's nature.* Bloomington: Indiana University Press.

———. 1996a. Fleshing gender, sexing the body: Refiguring the sex/gender distinction, *Spindel Conference Proceedings. Southern Journal of Philosophy.* Vol. XXXV.

———. 1996b. Re-valuing science. In *Feminism, science, and the philosophy of science*, ed. Lynn Hankinson Nelson and Jack Nelson. Dordrecht, Netherlands: Kluwer.

———. 2001. Material locations: An interactionist alternative to realism/social constructivism, *Engendering rationalities*, ed. Nancy Tuana and Sandra Morgen. Bloomington: Indiana University Press.

Whipple, Beverly. 1995. Research concerning sexual response in women *The Health Psychologist* 17 (1): 16–18.