

ABSTRACT

Title of Document: UNLIKELY RHETORICAL ALLIES: HOW SCIENCE WARRANTED U.S. WOMEN'S RIGHTS IN NINETEENTH-CENTURY DISCOURSES OF SEXUALITY.

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This dissertation reads the nineteenth-century discourses on female sexuality of the free love and social purity movements against the background of the scientific discoveries of the time. At the same time that scientists produced new knowledge of the body, American feminists in social movements for free love and social purity began to critique how the marriage system allowed the sexual subjugation of women, to demand the right to control when they chose to have sex and under what conditions, and to urge the elimination of sexual double-standards, repressive ideologies of female sexuality, and even the marriage system itself. The central scientific disciplines of physiology, bacteriology, embryology, heredity provide the basis for these women's arguments. Each chapter of this dissertation recounts the scientific discoveries in a particular discipline, then traces the dissemination of the new scientific knowledge through medical popularizations, and then reads the discourse of the reformers as entering this larger conversation about sexuality and women's rights. Using the rhetorical theories of Lloyd Bitzer's "rhetorical situation" and Stephen Toulmin's model of argument, it shows how women drew on the exigence, framework, and warrants of the new sciences to make arguments for women's rights. Reading these women's arguments against the background of science

reveals new dimensions to their arguments. It also shows that science provided the warrants for women's rights. Finally, it concludes that new warrants from science "refreshed" old arguments for women's rights, giving new life and new meaning to the claims of free love rhetors Mary Gove Nichols, Victoria Woodhull, Juliet Severance, Angela Heywood, Lois Waisbrooker, and Hulda Potter-Loomis, among others. This dissertation counters the traditional view of the relationship between science and feminism by showing that science was a source of feminist arguments. This project participates in the growing recovery and rereading of nineteenth-century women's rhetorical practices and enlarges our view of what these women spoke about and what their sources of argument were.

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WOMEN'S RIGHTS IN NINETEENTH-CENTURY DISCOURSES OF
SEXUALITY

By

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Chapter 1: Introduction

“The season of love is that of battle” (Darwin, *The Descent of Man* 48).

From 1900 to 1910, when Dr. Clelia Mosher sought funding for her research on menstruation to question whether it debilitated women, no institution would grant her request (Jacob par.16). Debunking the myths associated with women’s bodies would not be profitable for an industry based on treating women’s “illnesses.” Mosher, a determined young physician, did not let her lack of resources deter her from what she knew was important work. She had already published a study refuting the idea that men and women breathed differently because of the physiological restrictions of women’s reproductive organs. (Men were assumed to breath from the diaphragm while women were assumed to breath from the upper chest [Jacob par. 9]). This study became her master’s thesis at Stanford in 1894. Entering Johns Hopkins Medical School in 1896 as one of thirteen women in an incoming class of forty-one students (Jacob par. 11), Mosher looked forward to countering other myths about the female body.

In 1914, Mosher was finally able to publish her findings derived from a study she performed while at Johns Hopkins in the 1890s. Her findings proved that painful menstruation did not have to hinder women from fully participating in education and the workplace: through diet, less constricting dress, and deep breathing exercises that became known as the “Moshers” (Jacob par. 19), women could attain their “physical freedom” (Mosher, *Woman’s Physical Freedom*). After serving her country during the first world war as a medical director of the Bureau of Refugees and Relief in France (Jacob par. 24), Mosher returned to take a position as a Professor of Hygiene at Stanford and published two works detailing her arguments for women’s rights using medical evidence: *Woman’s*

Physical Freedom in 1923 and *Personal Hygiene for Women* in 1927. Her work was corroborated by other physicians and she achieved success in helping to alleviate a century of restricting ideologies about women's bodies.

However, there was one study that Mosher never published that would have secured her status as a feminist medical pioneer. While obtaining her medical degrees and working in clinics in the 1890s, Mosher initiated a survey that she gathered from at least forty-seven women. The subject of this survey was not women's breathing patterns or their experiences with menstruation. The questions included how many times per week these women experienced intercourse, how often they desired intercourse, and how often they experienced "venereal orgasm" (*The Mosher Study*). Long before Kinsey would ask the questions that made his study of American sexual habits famous, Mosher was studying the sexual habits of women in "Victorian" America--a place where, we are told, women were taught not to have sexual feelings. It would seem that Mosher had set out to abolish even more myths about women; the collection of papers that she entitled "Statistical Survey of the Marriages of Forty-Seven Women" would have shown how middle-class women in the late nineteenth century worked (all but eight of the thirty-eight women responding to this question had held jobs before marriage), desired sexual intercourse (thirty-five out of forty-four), and as one remarked, found it quite enjoyable, experienced orgasm, and practiced birth control (*The Mosher Study*; Jacob; Degler). Mosher's study of sexual beliefs and practices certainly paints a picture different from the chaste, passionless "Victorian" woman. But she was not the only one challenging such stereotypes through the use of science. Women in the free love movement had been doing so since the 1830s.

Nineteenth-century science seems an unlikely ally to a movement arguing for sexual freedom for women. The scientific and medical fields perpetuated stereotypes about women: women have smaller skulls and therefore less intelligence than men; women are less evolved than men; women cannot do the same work as men since they menstruate and bear children; women's menstruation hinders them from receiving education; women are passionless and asexual, and only abnormal women have sexual feelings. But these anti-feminist views were not the only ideas disseminated, merely the ones that have received the most critical attention. The nineteenth-century conversation about women's bodies among the scientific, medical, and feminist discourse communities was multi-voiced and multi-faceted. Not only were there liberating ideas about women's bodies and abilities to contest some of the prevailing ideologies in scientific and medical discourses, but women themselves also critiqued the more limited theories. This dissertation tells the story of women who embraced sexuality and urged its acceptance and indulgence, using science to support their ideals of sexual freedom and free love.

Contemporary Criticism

The relationship between science and nineteenth-century feminism has been heavily examined, notably by critics, like Carol Smith-Rosenberg (1974; 1985), who examine science's role in defining women by their bodies. Much scholarship, such as Cynthia Eagle Russett's *Sexual Science: The Victorian Construction of Womanhood* (1989), argues that the scientific breakthroughs of the nineteenth century fueled the oppression of women. Another critic, Fiona Erskine (1995), even blames "men of science" for "the dissolution of the women's movement by conferring the imprint of

evolutionary science on traditional concepts of female difference and female subordination” (117).

The relationship between science and feminism is complicated in this study by analyzing the rhetorical strategies of women who used the sciences to their advantage. Many nineteenth-century women critiqued scientific arguments in order to challenge gender oppression, while others shaped scientific knowledge for their own feminist needs. This dissertation concentrates on how science informs women’s arguments on sexuality to promote changes in how their sexuality was conceived and how women, and men, should relate to this sexuality. While I am not ignoring or refuting feminist work that shows the anti-feminist uses of science, my goal is to expand our conception of the relationship between the rhetoric of science and the rhetoric of feminist advocacy, by showing how women not only suffered from but also took advantage of science. My project highlights the ways science in the nineteenth and early twentieth centuries frames and informs certain discourses on sexuality in order to reveal the symbiotic relationship between the sciences and the social reform movements. While many of the reformers’ arguments to support women’s sexual freedom were not new, the sciences provided them with new warrants and support, thus changing the ways sexuality was discussed.

While scholars of nineteenth-century women’s rhetoric have recovered and regendered the rhetorical tradition, demonstrating the richness of this period for rhetoric aimed at social advocacy, they have often focused on the more mainstream or prevalent rhetoric of women’s rights in the movements for suffrage, abolition, and temperance, such as Karlyn Kohrs Campbell’s (1989) study of suffrage rhetoric, Shirley Wilson Logan’s (1999) study of abolitionist and racial uplift rhetoric, and Carol Mattingly’s

(2002) work on temperance rhetoric, to name a few. At the same time, scholars such as Susan Wells (2001) have shown how women participated in the discourse of science in the medical schools, writing anatomical treatises, textbooks, public health manuals, and research articles. However, these two fields--rhetorical discourse aimed at social advocacy and at forming and disseminating scientific knowledge--are rarely examined together. The interconnections of these two areas are revealed when we examine the rhetoric of sexuality in the nineteenth century and the efforts at social reform in the free love movement. Women involved in movements not only for free love, but also for temperance, social purity, medical reform, and racial uplift critiqued many of the dominant ideologies of women's sexuality by using scientific warrants. Women who spoke and wrote about sexuality in the nineteenth century participated in the discourse of science in unique ways, and analysis of their rhetorical choices offers insight into how more professional discourses affected the popular realm.

This chapter reconstructs the free love movement whose rhetoric is the main focus of this dissertation, first identifying the common threads that constitute it, then surveying some of the major free love rhetors examined in this dissertation. It then shows how the discourse of other movements involved in women's rights overlapped with free love discourses. Finally, it provides an overview of nineteenth-century science in order to build the basis for reading free love discourse in the new context provided by the sciences.

Free Love Advocacy and Social Movement Discourse

While many first-wave feminists in the nineteenth century recognized marriage as a battleground, their arguments mainly focused on legal rights in the institution of

marriage. However, other groups took matters further and advocated reforms in sexual relations between men and women. While temperance and “social purity” reformers delved more closely into the politics of the home, it was the free love advocates who made sexual relations between partners their primary focus. They took the public ideals of citizenship and equality into the most private of places--the bedroom.

The free love movement, while never as cohesive or organized as the women’s suffrage or temperance movements, included many women actively writing and speaking publicly about the “taboo” topic of sex. Some free love advocates argued for the abolition of marriage as an institution because it degraded women. Central to their ideology was the idea of women as sexual beings, a counterargument to some of the dominant ideas about women’s sexuality at the time. Among the women advocating free love were Fanny Wright in the 1820s and 1830s, Mary Gove Nichols in the 1840s and 1850s, Victoria Claflin Woodhull and Tennessee Claflin in the 1870s, and Juliet Severance, Angela Heywood, Lois Waisbrooker, Lillian Harman, Hulda Potter-Loomis, Lillie White, Dora Forster, and Voltairine de Cleyre in the 1880s and 1890s. Their contributions to the history of women’s rights, the history of social reform movements, the history of science, and the history of women’s rhetoric have yet to be fully recognized.

“Free love,” as they named the movement, began to emerge in the 1850s before having its heyday in the 1870s. It began to wane after the persecution of free love advocates by the Comstock law in the 1880s and 1890s, and a movement toward anarchism and eugenics by many former free lovers. The movement began with small groups of people meeting to discuss social questions about marriage, later forming small communes such as Oneida, Modern Times, and Berlin Heights, and finally bringing their

ideas to the general public through periodicals and lectures. They disseminated their ideas in periodicals such as *Nichols' Journal of Health, Water-Cure, and Human Progress* (1853-54) and *Nichols' Monthly* (1855-57), both edited by Mary Gove and Thomas Nichols; *Woodhull and Claflin's Weekly* (1870-76), edited by Victoria Woodhull and Tennessee Claflin; *The Word* (1872-93), edited by Ezra and Angela Heywood; *Foundation Principles* (1880s-1894) and *Clothed with the Sun* (1900-1902), edited by Lois Waisbrooker; and *Lucifer, the Light-Bearer* (1883-1907), edited by Moses Harman, Lillian Harman, Lois Waisbrooker, and Lillie White,¹ which later became *The American Journal of Eugenics* (1907-1910), edited by Moses Harman.²

Women played key roles in creating and editing these journals, and were the more public faces of the movement since they were the ones who lectured on free love ideology to audiences across the country. Another unique aspect of the free love periodicals was their insistence on publishing all letters to the editor, even from opponents. They also invited women from around the country, particularly those in rural areas, to write in and share their stories in the periodicals.³ Free love periodicals and lectures helped to set up a “counterpublic,” to use the term Michael Warner ascribes to those who challenge the dominant “public,” where women were empowered to challenge the dominant ideologies constructing their bodies through telling their stories. It is mostly through these periodicals and writings that a “movement” can be discerned in the dialogue between different social reformers, many of whom probably never met. Thus,

¹ Lillian Harman (Moses Harman's daughter), Waisbrooker, and White often took over the editing of the periodical when Moses Harman was in prison for violating obscenity laws.

² Joanne Passet has documented these titles and years of publication.

³ These letters are only recently gaining attention from scholars like Joanne Passet (2003) and Jesse Battan (1993, 1999, 2004), who both examine how the periodicals affected their readers. Closer study of these letters could shed new light on literacy practices in the nineteenth century, particularly since this literacy also includes knowledge about sex.

free love is a movement made into a cohesive discourse community by its rhetorical practices.

In addition to its lack of cohesiveness, another complication to analyzing this movement stems from the ambiguity of the term “free love” itself. Not only did it change throughout the last decades of the nineteenth century, but different theorists also had different ideas about how the term should be applied. Joanne Passet (2003) explains that while for some “free love” meant a lifelong commitment, though not necessarily within a marriage, for others it meant a kind of “serial monogamy.” Some advocates for “free love” championed chaste relationships and some championed multiple partners (2). Many free lovers seemed to be more theorists than practitioners of free love, since many of them were married. However, it is not known if Victoria Woodhull was legally married to her second husband Colonel Blood. Similarly, Lillian Harman earned fame for her publicized “free union” with Edwin C. Walker and their subsequent arrest. Most of the women active in the movement, including Woodhull, Nichols, Waisbrooker, and Severance, were divorced from at least one legal union. It was often after their first disastrous marriages that they began to espouse free love ideology, though many of them married second husbands who also promoted free love. Yet, while they may have differed on the application of free love theory, their rhetoric does show similarities that enable us to piece together what “free love” means in this discourse community.

While not all of these women explicitly embraced the term “free love,” they did embrace its theories. Victoria Woodhull and Juliet Severance seem to be the most explicit in their use of the term, Woodhull even proclaiming in her 1871 speech at Steinway Hall, *“And the Truth Shall Make You Free:” A Speech on the Principles of Social Freedom,*

“Yes, I am a Free Lover. I have an *inalienable, constitutional and natural* right to love whom I may, to love *as long* or as *short* a period as I can; to *change* that love *every day* if I please, and with *that* right neither *you* nor any *law* you can frame have *any* right to interfere” (23; emphasis in original). Woodhull makes no distinction between the terms “free love” and “social freedom,” using both interchangeably. Juliet Severance (1881), however, distinguishes between the two: “I am not only a believer in Social freedom, but I am a believer in Free love, and that word Free-love signifies to me the most exalted condition ever reached by mortal or angel” (*A Lecture on Religious, Political, and Social Freedom* 15). To Severance (1891), “Social freedom declares every person has a right to live in his social relations according to the dictates of his own conscience and reason, the same as he has religiously” (*A Discussion of the Social Question* 11). She then defines “free love”:

There is really but one question in the matter, which is this: “Shall mutual love (as is proposed by Free-lovers) or selfish lust (as it exists to-day in and out of marriage) be the basis of the relations of the sexes?” If you reply that mutual love should be the basis, then you are a Free-lover. If you reply that it should be lust, you are in sympathy with the present laws and customs of society, in which purity of life for woman becomes an impossibility. (*A Discussion of the Social Question*16)

Under Severance’s definition, the terms “free love” and “social freedom” are distinct, yet many of the texts conflate these two terms, or use one more frequently than the other. “Social freedom” has more to do with the right of individuals to choose their lifestyles and free love is one such lifestyle. Severance shows here that whether someone is

practicing free love has more to do with the ideologies behind their unions, and the basis of their unions, than with legal definitions (thus, free lovers could be married and still be practicing free love). Angela Heywood (1881) supports such a definition in her conception of free love. She insists, “One is not a Free Lover because she cohabits with one or more men, or with none at all, but rather by the import and tone of Association” (qtd in McElroy, *Individualist* 40). Both Severance and Heywood show the emphasis in free love discourse on love, rather than economic necessity or social pressure, as the basis of free love unions.

In their advocacy and use of the term “free love,” these feminists also had to fight accusations of promiscuity. While most female free love advocates disdained “promiscuity,” they championed the right of the individual to practice it. They did, however, draw a line between the definition of “promiscuity” and “free love,” clarifying that practicing free love did not necessarily mean practicing promiscuity. Later male free love advocates often promoted “variety” as the basis of free love, which free love advocate Lois Waisbrooker rebelled against. Thus, while free love was subject to multiple interpretations in practice and theory, at its basis was the right of the individual to choose his or her sexual practices without intervention from church or state and to choose those unions based on love. In using the term and theory behind free love, however, many women opened themselves up to criticism, which is why some preferred to use the term “social freedom.” In this dissertation, I use the term “free love,” which many activists used themselves.

Commonality among the different free love theories rests on their conceptions of marriage and of sexuality. The “free” in “free love” emphasizes the right for women and

men to choose their partners regardless of institutional involvement. Revealing marriage as an institution that fosters the degradation and inequality of women, many advocates of free love urged the rights of the individual in choosing sexual unions. A number of these advocates rejected the ideologies behind marriage altogether. They pointed out that the institution of marriage did not stop men and women from cheating, nor did it protect women from abuse. Furthermore, they revealed the inconsistencies in laws that punished certain sexual behavior outside of marriage, but turned a blind eye to the same practices within the marriage system. Like the suffragists, they objected to the laws that rendered a woman's legal identity obsolete once she was married. To free love advocates, institutional marriage perpetuated so many inequalities that women could not attain freedom within it.

Another unifying feature among the different rhetors in this movement is their insistence on "plain speaking" on sexual matters as a rhetorical accommodation, though some took this tenet further than others. Many free love advocates urged "plain speaking" about sexual matters, blaming ignorance and modesty for many of the abuses women suffered within the marriage system. Later free love advocates, particularly Victoria Woodhull, made it their mission to reveal hypocrisy both in the system that denied sexual knowledge to women and in the men who condemned "promiscuous" women and the free love movement, yet who by their actions showed that they did not revere the institution of marriage, such as Henry Ward Beecher.⁴ The free lovers' insistence on "plain speech" also contained class implications. In his reading of the "plain speech"

⁴ Woodhull's notoriety increased after she published the scandal of Beecher's affair with the wife of his protégé, Theodore Tilton in her radical newspaper. Woodhull's defense of her scandalous announcement was her insistence on shedding light on hypocrisy and stimulating discussion about sexual practices (see *Tried as by Fire*).

employed by free love periodicals such as *Lucifer* and *The Word*, Jesse Battan (1993) notes that the free lovers were also breaking class boundaries by disdaining polite euphemisms and embracing the “sniggering vulgarity of backstreet conversations” (“The Word” 121).

The need for a language to express sexuality occupied many free love advocates. Woodhull (1874) noted that direct terms were essential; they are “not to be explained ... in terms of glittering generalities, or of poetic fancy, or in gingerly words that may leave any in doubt as to what is intended, but plainly, honestly and earnestly, so that no one can misunderstand” (*Tried as by Fire* 1). The sexual education she endorsed required “plain speech,” though many of the terms she employed would not be considered very radical in our day. The same cannot be said for the editors of *Lucifer* and *The Word*. *Lucifer*’s editors printed a story about a young girl asking her mother the meaning of “fuck” and the mother responding with “plain speech” and visual aids (Battan, “The Word” 101). Radical Angela Heywood, writing for *The Word*, exposed the hypocrisy of “cultured men,” whose speech to working class women she characterized as insulting and degrading (112). She was weary of their hypocrisies and advocated the speech often attributed to the lower classes in order to “revitalize” the language constrained by “Victorian prudery” (112). She even argued to replace “penis” with “cock,” to make words “truer to their function” (qtd in Battan, “The Word” 113-114). Many free love advocates celebrated the language deemed “vulgar” and pointed out that these words contained more truths than prudish euphemisms. They also took language deemed “private” into the “public,” foreshadowing some of the arguments of late twentieth-century feminists.

Also central to the idea of free love was conceiving women as sexual beings. While some advocates, such as Mary Gove Nichols, argued for chaste relationships, as they did so, they did not deny the sexuality and sexual feelings of women. Free love theory, then, opened the doors to discussing details about sexual unions on both personal and political levels, a tenet that second-wave feminists later embraced.

Nineteenth-century free love advocates can also be seen as the foremothers of the birth control and abortion rights movements. Though many of them vacillated on their opinions about birth control, most deemed it a necessary evil: since women were not granted the freedoms they should have, birth control practices and devices were necessities. They believed that no unwanted children would be born under a free love system, but until others came to embrace their philosophies, women had to rely on birth control methods. Many free love advocates, including the Heywoods, were jailed for distributing information about contraception. Most of them also condemned abortion, viewing it as a symptom of the problems inherent in the sexual system. The arguments these women used to promote their free love theories were the same arguments used by later feminists instrumental in the birth control movement, such as Margaret Sanger. A few, moreover, were outspoken in supporting both birth control and abortion, notably Angela Heywood, whose rhetorical techniques seem similar to the more radical factions of the 1970s second-wave feminists.

Motherhood was also a central concern of free love advocates. Like the suffragists, they believed in voluntary motherhood, but several took this concept further than just arguing that women should be able to choose how many children they bore. Free love advocates argued that women should be able to become mothers with men of their

choice, even if those unions were not sanctioned by law. Many free love advocates saw partnerships as more spiritual than lawful, and promoted relationships that were not defined by legalities but by love between partners. In addition, like many of the “argument from difference”⁵ feminists of the nineteenth century, free love advocates wished to elevate the position of women and professionalize the role of motherhood. In many of their theories, women who were granted sexual freedom would then be able to enter more fruitful unions, conceive children out of love, and bear and raise healthier and happier children. Though motherhood was not considered the only end of sexual freedom and free love, it was an end whose improvement often produced stronger agreement from their audiences. D’Emilio and Freedman (1988) note that the free lovers often highlighted the benefits of free love to reproduction in order to make their arguments more acceptable to middle-class audiences (164).

The emphasis on motherhood as a result of sexual freedom and the articulated goals of producing “superior” children led to the eventual waning of free love advocacy as a social movement, as this emphasis merged into more explicitly eugenic discourse. Free love advocates throughout the mid to late nineteenth century often credited free love unions with producing healthier and more intelligent children. This discourse evolved into eugenic discourse, and many free love feminists explicitly endorsed eugenics, or what they considered the science of proper breeding. Even Lois Waisbrooker, who argued against male interpretations of eugenics, did not reject the goal of producing “superior” children as an outcome of free love. The movement from free love to eugenics

⁵ Rhetorical scholars Karlyn Kohrs Campbell (1989) and Nan Johnson (2002) have focused on the prevalence of the argument from difference, or “argument from expediency” to use Campbell’s term. They find that many nineteenth-century women argue for rights on the basis of women’s differences from men, rather than their similarities. I find evidence of both types of arguments in free love discourse.

culminated in the dissolution of many free love periodicals. One example of this shift is the renaming of the free love periodical *Lucifer, the Light Bearer* into *The American Journal of Eugenics* in 1907. Reading free love discourse through the lens of scientific discoveries will illuminate this rhetorical and ideological shift.

Women advocating free love came to it from various backgrounds and experiences, but all found a common ground in critiquing sexual practices. The texts left behind by these women allow us to reconstruct this movement and its connections to scientific discourse. The following section surveys some of the prominent feminist rhetors in the movement and their main arguments.

Who Were the Free Lovers?

Many of the women involved in the free love movement advocated their views in books, pamphlets, lectures, and periodicals and became the more public faces of the free love movement. These women came from differing backgrounds, but they share some similarities. Many began advocating free love after disastrous first marriages. Some later turned their back on free love ideology, finding more conservative causes or adopting even more radical theories of anarchism. Whether they came from the more conservative or the more radical factions of the movement, their arguments share similarities that enable us to enlarge our view of women's rhetorical practices in the nineteenth century.

Mary Gove Nichols

Mary Sargeant Neal Gove Nichols (1810-1884)--novelist, speaker, and physician--participated in both medical and free love discourse communities. Born in 1810 in Goffstown, New Hampshire, to the freethinker William Neal and his Calvinist wife

Rebecca Neal, Mary Neal grew up with an interest in books and became a schoolteacher during the 1820s (Passet 20-21; Silver-Isenstadt 22). She was interested in her brother's anatomy textbooks and read them secretly, until her brother discovered his missing books and angrily told her that such topics were not appropriate for a woman to study (Silver-Isenstadt 22). She nevertheless continued her secret study of medicine, though she knew she could not study for a medical degree. No school was granting women medical degrees in the 1820s (22). After a first marriage to Hiram Gove, a frequently jealous man eleven years her senior (22), where she endured five pregnancies with only one child surviving and consequently suffered ill health, Mary Gove became interested in the alternative medical movement known as the "water cure." This homeopathic medical movement emphasized natural remedies and preventative practices over surgical treatments and drugs. In 1837, after hearing Sylvester Graham speak in Lynn, Massachusetts, Gove embraced his philosophy of natural healing, along with vegetarianism and dress reform (Passet 21). She became a water cure physician herself after self-study and apprenticing. In 1845, she apprenticed at Dr. Robert Wesselhoeft's water-cure medical school in Brattleboro, Vermont (Silver-Isenstadt 72), and then served as a resident physician at Dr. Joel Shew's New Lebanon, New York, water-cure establishment (72-73).⁶ As a reformer and then a physician, Gove lectured to women on health and physiology in the 1830s and 40s, where she addressed sexuality and explained women's physiology. She later married Thomas L. Nichols, with whom she edited several journals and briefly operated a water cure medical school. The two also joined a

⁶ Joel Shew founded several water cure facilities and professional journals. His wife Mary Shew also published works on water cure. For additional information about the medical facilities he founded, see Silver-Isenstadt, 72-73.

free love commune, Modern Times. They later converted to Catholicism and moved away from their free love roots.⁷

Gove Nichols was a more conservative theorist of the free love movement. While she acknowledged the presence of women's sexual feelings, she often spoke against their "abuses," writing anti-masturbation tracts and attributing many female illnesses to masturbation. She advocated temperate sexual relationships based in love. Much of Gove Nichols's rhetoric of women's rights is found in her published medical lectures. In *Lectures to Women on Anatomy and Physiology* (1846), she elaborates lifestyle choices to keep women healthy that include less constricting dress, a healthy vegetarian diet, and fresh air and exercise, necessities that she feels women are denied. Her theories on women's health also allude to sexuality, and, like sweets or coffee, Gove warns that sex should not be indulged in excess. However, she does not explicitly urge women to deny their sexual feelings, but rather to recognize overindulgence as harmful to their health. Her later work, *Marriage: Its History, Character, and Results; its Sanctities, and its Profanities; its Science and its Facts. Demonstrating its Influence, as a Civilized Institution, of the Happiness of the Individual and the Progress of the Race* (1854), co-written with Thomas L. Nichols, provides a critique of the marriage system in which women's health suffers as a result of husbands' overindulgence and wives' excessive childbearing. She attributes "hereditary evils to children born in a sensual and unloving marriage" and illness, weakness, and crime to the conditions under which children are born to tired, ill mothers suffering under the marriage system ("Murders" 305). She also condemns the "false virtue" of those who allow such conditions to continue (305).

⁷ For more biographical information on Gove Nichols, see Jean Silver-Isenstadt's 2002 work, *Shameless: The Visionary Life of Mary Gove Nichols*.

Gove Nichols's rhetoric often seems more in line with "social purity" aims in her emphasis on a certain mode of living, but it also shares many similarities with later free love rhetoric. Like Woodhull, Gove Nichols condemns the churches and medical establishments that define "virtue" as being "chaste as ice" ("Murders" 305), insisting, "It is not natural, or true, for women to be without the amative passion" (306). This redefinition of what is "virtuous" and this critique of the moralists and physicians who withhold sexual knowledge from women while insisting upon chastity are key features of free love rhetoric. Gove Nichols was radical for her time and a precursor to the more extremist free love advocates who followed her decades later. Later radicals like Woodhull and Severance were in debt to the rhetorical strategies she initiated. Scholar Dawn Keetley (2000) proposes that Gove Nichols's key contribution to the history of women's rights is her "rewriting" of the "diseased" institution of marriage. As a physician and free love advocate, Gove Nichols brought the issue of women's bodies and women's health to the forefront of the debate over marriage and sexual practices, an important step in using contemporary science to promote free love ideology.

Victoria Claflin Woodhull

Victoria Claflin Woodhull (1838-1927) is perhaps the most notorious free love feminist of the nineteenth century, and her arguments reached large audiences, thus making her one of the faces of the movement to the general public. She was born in Homer, Ohio, to a poor family, and was the seventh of ten children. Her mother, Roxanna Hummel Claflin, was illiterate and her father, Reuben "Buck" Claflin, traveled with a carnival, running fortune-telling and palm-reading shows. Woodhull and her sister Tennessee often participated in these shows as teenagers, which led to Woodhull's later

career as an actress (Passet 96). After marrying the older Canning Woodhull, an alcoholic, Woodhull bore two children, a mentally-challenged son, Byron, and a daughter, Zulu Maud. Her early experiences with her father's shows, her career as an actress, and her hardships during her first marriage all influenced her often flamboyant rhetoric of free love.⁸

Woodhull made a career out of breaking gender conventions as the first woman to address a congressional judiciary committee, the first woman stockbroker, and the first American to publish Karl Marx's *Communist Manifesto*. She was a prominent lecturer, a publisher of a radical newspaper, and certainly not least, the first woman to run for president. During her lecturing career, Woodhull spoke to large audiences, even conducting lecture tours and lecturing for pay throughout the 1870s. Her lectures included advocacy of free love⁹ and women's rights.¹⁰ These lectures were attended by many who seemed drawn to her notoriety, rather than her speech. Branded "Mrs. Satan" by cartoonist Thomas Nast, Woodhull attracted crowds who expected to hear scandalous talk from a scandalous woman. Instead, as the reviews of her speeches, reprinted at the end of her pamphlet *The Human Body the Temple of God; or the Philosophy of Sociology* (1890), suggest, they found a woman who "advocated free love; but in a sense so high and language so pure that the very personification of chastity could not *justly* find fault with it" (425; emphasis in original).

⁸ Woodhull's scandalous life has long interested biographers, and it is difficult to separate fact from fiction in accounts of her life. Several recent biographies have given more insight into the life of this controversial figure, including Lois Beachy Underhill's *The Woman Who Ran for President* (1995) and Mary Gabriel's *Notorious Victoria* (1998).

⁹ Her endorsement of free love often caused a rift with more mainstream suffragists.

¹⁰ Her suffrage argument, identified as the "new departure" strategy, was picked up by many key suffragists, including Susan B. Anthony, who used it as her defense when she was arrested for voting.

Woodhull was a controversial figure due to her advocacy of free love and sense of sensationalism, and her notoriety increased after her arrest for exposing Henry Ward Beecher's extramarital affair in her radical periodical, *Woodhull and Claflin's Weekly*. With her sister Tennessee Claflin, she continually tested the patience of Anthony Comstock and his obscenity laws.¹¹ Her prolific writing makes her a key figure in the free love movement. Passet views Woodhull as an important figure, as a "bridge connecting the utopian free love theories" of the Nichols and Berlin Heights free love communities to the radical anarchist free love movement of the late nineteenth century (Passet 91). Like Gove Nichols, Woodhull later cut her ties to free love ideologies. But her rhetoric made an impact on the free love feminists of the 1880s and 1890s and her arguments illustrate how the movement began to shift away from a focus on women's sexual freedom and toward eugenics.

In her arguments for free love, Woodhull often employed redefinitions of cherished ideals and terms, and, like Gove Nichols, Woodhull attempted to expose the hypocrisy of the uses of "virtue." Her sister, Tennessee Claflin, a less known and less prolific rhetor who probably collaborated with Woodhull on some of her speeches,¹² illustrates this same strategy in an article from *Woodhull and Claflin's Weekly*, "Virtue; What It Is and What It Isn't," in the August 30, 1873 issue. Claflin recognizes the way "virtue" is used to constrain women: "The world enslaves our sex by the mere fear of an epithet; and just so long as it can throw a vile term at us, which we cower before, it can

¹¹ See Frisken (2000; 2004) and Lefkowitz-Horowitz (2000; 2002) for more on Woodhull's brushes with this law. These historians show how Comstock's pursuit of Woodhull became a personal vendetta.

¹² Scholars have often questioned the authenticity of Woodhull's speeches because of their collaborative nature. In addition to her sister, Woodhull collaborated with her husband, Colonel Blood, and philosopher Stephen Pearl Andrews, and many have attributed some of her speeches to these men. The rhetorical techniques in some of these speeches, however, continue to be used by Woodhull long after her association with these men ended. Thus, I conclude that she did have input into these speeches, even when she collaborated with others.

maintain our enslavement. It is not free love alone, but every other epithet intended to degrade, that woman must grow strong enough to defy before she will be free....”

Woodhull takes these arguments further in her speeches by presenting redefinitions of “virtue” and “vulgarity” in relation to women’s sexuality:

Others again seem to glory over the fact that they never had any sexual desire, and to think that this desire is vulgar. What! Vulgar! The instinct that creates immortal souls vulgar! Who dare stand up amid Nature, all prolific and beautiful, whose pulses are ever bounding with the creative desire, and utter such sacrilege! Vulgar, indeed! Vulgar, rather, must be the mind that can conceive such blasphemy. No sexual passion, say you? Say, rather, a sexual idiot, and confess that your life is a failure, your body an abortion, and no longer bind your shame upon your brow or herald it as purity. Call such stuff purity. Bah! Be honest, rather, and say it is depravity. (*Tried as by Fire* 24-25)

This rhetorical strategy of inverting a cherished belief by juxtaposing it with negative terms continues through much of Woodhull’s writing. It is this strategy that acts as a basis for later free love discourse, found in the texts of Lois Waisbrooker and Voltairine de Cleyre. Though her career as a free love speaker was considerably shorter than these women’s, Woodhull thus left her mark on free love discourse.

Woodhull’s discourse of free love also shows evidence of explicit engagement with scientific and medical discourse. While not able to refer to a medical practice, like Gove Nichols, Woodhull did show her knowledge of women’s physiology and diseases by referring to testimony by medical experts. Her 1874 speech delivered during a lecture

tour, *Tried as by Fire, or the True and the False Socially*, which I consider to be a synthesis of her philosophy and the best illustration of her rhetorical strategies, not only relies on the arguments from a legal perspective evident in her 1871 speech, “*And the Truth Shall Make You Free: A Speech on the Principles of Social Freedom*,” but also relies on an evolutionary perspective, as well as the work of physician John M. Scudder. Woodhull sets herself up as an interpreter of science, saying, “I am only reiterating what is known to be true, by those who have investigated the subject, medically and physiologically, when I say that a change for the better must soon be made...” (*Elixir* 10). Woodhull’s reliance on testimony from physicians then becomes another key feature of free love discourse.

Finally, Woodhull’s shift into more explicitly eugenic discourse illustrates the changing movement, though her eugenic theories arrive much earlier than the more explicit shift in the movement. She goes from arguing for healthier and more intelligent children as a product of free love practice in her 1873 and 1874 speeches, to arguing less for women’s rights and more for eugenics in her books *Stirpiculture; or, The Scientific Propagation of the Human Race* (1888) and *The Rapid Multiplication of the Unfit* (1891). Woodhull’s strategies of redefinition, of testimony from physicians, and of eugenics then illustrate the progression of the rhetoric of the free love movement.

Juliet Severance

Referred to as the “Woodhull of Wisconsin,” Juliet Severance (1833-1919) also left her mark on the lecture circuit, though she is not as well-known as Woodhull is today. Severance also brought values of spiritualism to her free love rhetoric, believing that only free love could help humanity attain higher evolution. Like Gove, Severance

bridged the gap between the medical community and the free lovers as both a physician and free love advocate.

Juliet Hall Worth Stillman Severance was born in 1833 in Madison County, New York, as the thirteenth of seventeen children (Passet 121-122). She was a distant cousin of another prominent feminist reformer, Lucretia Mott (122). Severance's family worked in dairy farming, and her daily contact with animals led to her interest in medicine (122). As devout Quakers, her family believed in educating females, and Severance was well-educated (122). In 1857, she attended the Hygeio-Therapeutic College in New York City, a water cure medical school founded by physicians Russell Trall and Joel Shew, a school whose program stressed the naturalness of women's bodies and the naturalness of female orgasm (Passet 123). These values attracted Severance, who favored "scientific notions" over popular, superstitious ones. Severance became a voice for many causes, having also aided in the Underground Railroad and joined labor parties working to improve job conditions. Like her mentor, Russell Trall, as a physician she counseled patients on sexual matters and provided information on contraception and abortion (Passet 126).¹³

Severance's lectures include both medical topics, such as *A Lecture on the Philosophy of Disease, and How to Cure the Sick Without Drugs* (1876), and social topics, such as *A Lecture on Religious, Political, and Social Freedom* (1881). Her rhetorical strategies are similar to Woodhull's in emphasizing the law's abuse of women within the marriage system and in comparing marriage to sexual slavery. However, she is also similar to Gove Nichols in her insistence on the naturalness of women's sexual feelings and on women's rights to take control of their own health. Like Gove Nichols, she believed the free love system was the key to helping women improve and maintain

¹³ No biography of Severance exists and Passet is the only scholar to treat this rhetor at length.

their health. Severance also participated in the redefining of “virtue,” stating, “We should insist that virtue is not necessarily feminine, but that men as well as women should be expected to be pure in their lives and that virtue consists in living true to organic law in every department of being; that a person may be ‘not virtuous’ just as truly as by unnatural repression as by excessive indulgence, that both should be avoided” (*A Lecture on Religious, Political, and Social Freedom*, 15). While her insistence that men and women should be held to the same standard here seems closer to a “social purity” ideal, her definition of what is “virtuous” relies on free love ideology: one who is virtuous can have sexual feelings and experiences.

Severance, a voice for health reform, dress reform, and free love reform, professed free love ideology, but did not attract scandal to the same extent as Woodhull. She did raise eyebrows when she married Anson Severance shortly after his divorce, prompting some to call her a “practical” (versus theoretical) free lover (Passet 127). Yet, Severance continued her advocacy of free love and never renounced it, as Gove Nichols and Woodhull did. As a physician, she also had a more explicit connection with scientific discourses, and many of her writings reflect the medical debates of the time.

Angela Heywood

While Woodhull was the most notorious, Angela Fiducia Heywood (1840-1935) was in fact the most shockingly outspoken free love feminist. Born into a poorer family of farmers in Deerfield, New Hampshire, Angela Fiducia (whose name means “angel of fidelity”) worked as a domestic servant, cook, and factor worker, which stimulated her interest in labor reform (McElroy, *Individualist* 22). Like Woodhull, Heywood had little formal education but was self-educated. With her husband, the social radical Ezra

Heywood, she edited *The Word: A Monthly Journal of Reform*, and contributed articles to this and other radical periodicals. The “plain speech” policy of *The Word* is often attributed to Angela Heywood, though Ezra Heywood was the one often imprisoned for it. She seems to be one of the most radical free love advocates, not only in her language, but also in her stances on abortion and women and economics.¹⁴

Heywood took the insistence on “plain speech” much further than Woodhull and the tone of much of her writings has led some scholars to refer to her as “ill-tempered” and bitter (Gordon 104). Referring to marriage as “The Penis Trust,” Heywood espoused radical ideas that other free lovers would merely hint at, such as abortion. In an 1893 article in *The Word*, she notes that women’s bodies were controlled by laws regulating birth control and abortion. To argue for women’s rights to contraception and abortion, she invokes a metaphor of abortion as “body housekeeping”:

Not I, but Congressmen force the sex issue. Is it “proper,” “polite,” for men, real *he* men, to go to Washington to say, by penal law, fines and imprisonment, whether woman may continue her natural right to wash, rinse or wipe out her own vaginal opening,--as well as legislate when she may blow her nose, dray [*sic*] her eyes, or nurse her babe. Cold water prevents conception; will men therefore indite pumps and reservoirs?... This indicates that man is not so alarmed about preventing conception, for doth not CASTRATION accomplish it with a vengeance? (Heywood 131; emphases and caps in original)

¹⁴ While no comprehensive biography of Heywood exists, Jesse Battan’s (1993) and Wendy McElroy’s (2001) works have gone far in illuminating her life. See also Garraty and Carnes’ (1999) entry on Heywood in *American National Biography*.

In her arguments, Heywood predates many modern feminists by noting that men control women's bodies through their laws, not only banning the practices of contraception and abortion, but also stopping the dissemination of information about women's control of their bodies.

Heywood did not have an outright association with scientific discourse, since she was not a physician and did not rely on expert medical testimony. Therefore, her discourse illustrates how even texts which do not mention scientific breakthroughs should be read in the context of the science of the time. Many of her arguments would not have been as strong if they lacked the knowledge that the scientific community had made available about women and sexuality.

Lois Waisbrooker

Lois Waisbrooker (1826-1909) is another rhetor who foreshadows the radical feminist rhetoric of the late twentieth century, or "second wave" feminism, in her views of how men were destructive to women and of how birth control "enslaved rather than liberated women" (Passet 121). Waisbrooker, born Adeline Eliza Nichols (no relation to Mary Gove or Thomas L. Nichols), was born in Catharine, New York. Her father was a day-laborer and her mother died of consumption at age 36 (Passet 113). Waisbrooker often referred to herself as being from "the lower strata of life" (qtd in Sears 231), and started her career as a domestic servant. She was widowed before she was twenty after a first marriage to George Fuller at seventeen, which her father pressured her into because she was pregnant. The birth of her daughter five months after her marriage produced a stigma that would later influence her advocacy of free love.

Waisbrooker, as she renamed herself, became an activist for many causes, promoting abolition and teaching African American children in Muskingum County, Ohio, during the 1850s until she was forced to quit in 1856 because her father pressured her into marrying yet another man she deemed “a stranger” to her (Passet 114). Like Woodhull and Severance, Waisbrooker promoted spiritualism in addition to lecturing on free love and eugenics. She also called for the “scientific study of women’s sexual desire” (Passet 120). In fact, many of her arguments blend the spiritual with the scientific in her advocacy of free love.

Writing in the late nineteenth century and early twentieth century, Waisbrooker often set up her works as proposals with axioms to be proven, using evidence from science, spiritualism, and women’s rights discourse. Like other free lovers, she promoted changes in the conditions under which women entered and sustained sexual relationships. Her rhetoric is often similar to social purity advocates in her aim to find the “purest” use of sex (*Fountain of Life* 14), but she is aligned with free love in her protests against marriage and patriarchy.

However, Waisbrooker’s ideals clashed with the ideals of other free love advocates. She critiqued the (mostly male) advocates of “variety,” but still championed sexual freedom (*Fountain of Life* 40). In this way, she was more conservative than Woodhull or Severance who advocated the right of individuals to choose their own sexual practices, no matter what those practices may be. She also argued against the shift towards the more eugenic theories of the later free love advocates, claiming, “the transformation from sex slavery to living for the next generation is not freedom” (*Eugenics* 65). Furthermore, her ideals clashed with Heywood’s “plain speech” policies.

In an 1885 editorial printed in her journal *Foundation Principles*, she took issue with *The Word's* policy on “plain speech,” advocating a more scientific language instead:

A letter from Mrs. Heywood of Princeton, Mass., speaks of the organs of sex as “Race Creating.” We like the term. It carries with it honor, dignity,--such as should ever be accorded to those life centers. “Race Creating”; take in the full meaning of the term, and then think lightly--speak lightly--or act lightly in connection with those functions if you can. We believe in calling things by their legitimate names, when we speak of them; but we do not believe in (even privately) using the language of the street--of the rabble, simply because we can. Even allusions thereto hurt.

(Qtd in McElroy, *Individualist* 83).

Thus, Waisbrooker disagreed with some of the more “vulgar” language being used by Heywood and opted for a language that would professionalize free love theory--the language of science. Unlike Gove Nichols and Woodhull, Waisbrooker never renounced or converted from her free love views. She published articles, journals, and novels until her death.

Free Love Feminists

The free love rhetors surveyed here share many rhetorical similarities, even when they diverge in their views. Their goals of increased sex education, freedom to choose when to conceive, and change in how sexuality was conceived were eventually successful, even if some of their more radical ideas, such as the abolition of marriage as an institution, were not. By 1907, when free love ideology had waned and many of its advocates had either ceased to embrace it or turned to eugenics, the message of the free

lovers had become more mainstream: sex education, birth control, and women's rights were no longer considered unspeakable ideas from radical people (D'Emilio and Freedman 166). I, however, believe their greatest rhetorical success was their initiation of discussion and dialogue about sexuality. Whether couched in terms of spiritualism, individualism, or science, the free lovers achieved their goal of bringing private matters into the public sphere of debate. Their influence on twentieth-century women's movements is clear, yet for many years, historical criticism has dismissed them as "the lunatic fringe,"¹⁵ or treated them only as extensions of the men they were associated with.¹⁶ They have only recently gained attention from scholars as social reformers,¹⁷ and have received even less attention from scholars of women's rhetoric, perhaps because of what seem like very odd rhetorical strategies and goals. This dissertation aims to explain their vexing rhetoric by reading it through the backdrop of the scientific discoveries of the time.

¹⁵ Taylor Stoehr's introduction to *Free Love in America: A Documentary History* (1979) illustrates this tendency. It does not treat the male free love advocates as social reformers or theorists, and marginally includes the women.

¹⁶ For example, John Spurlock's study of the free love movement, *Free Love: Marriage and Middle-Class Radicalism in America* (1988), constructs these women only as extensions of the men they were associated with: Gove Nichols is merely an extension of her husband, Thomas L. Nichols; Victoria Woodhull is portrayed as a puppet of her mentor Stephen Pearl Andrews and her companion Colonel Blood; and Lois Waisbrooker, Lillian Harman, and Angela Heywood are treated marginally, often through the men they were associated with, namely Moses Harman and Ezra Heywood. In Spurlock's study, it would seem that women do not come to consciousness about free love without the men in their lives. Additionally, Spurlock even blames the visible women, such as Victoria Woodhull, for the strained relationships between other movements and free love advocates and for the public's negative perceptions of the movement (216). Furthermore, Spurlock's study mistakenly groups together free love advocates as middle class, which figures like Woodhull, Heywood, and Waisbrooker complicate

¹⁷ The roles of the women in the free love movement are also given their due in the brief summaries provided by Linda Gordon (1977), and John D'Emilio and Estelle Freedman (1988), but it is Joanne Passet's book length study, *Sex Radicals and the Quest for Women's Equality* (2003), that most firmly addresses the key roles of the women in the free love movement.

Free Love versus Social Purity

Tracing the ties to other movements helps elucidate the key features of free love discourse. The free love movement had ties to several other movements, including women's suffrage, of course, but also the medical movements of dress reform and water cure, spiritualist movements, and late nineteenth-century anarchist movements. However, it is with the social purity arguments of the nineteenth century that free love discourse most clearly overlaps. The social purity movement had much in common with the free love movement in how advocates addressed sexuality, but their final aims were quite different. While rhetors in both movements critiqued the institution of marriage, social purity advocates did not urge its abolition, but its reform. The arguments for social purity were also successful since their proposals were actually implemented, such as reforms in divorce laws and age of consent. However, often their ideals were no less radical than the free lovers' for their time, though their rhetorical techniques were ultimately more persuasive.

Social purity advocates occupy a central place in the connection between science and reform discourse. Both male and female physicians often subscribed to social purity ideals and many reform societies aligned with social purity goals included both physicians and lay reformers. Key figures of the social purity movement included physicians Elizabeth Blackwell and Emma Drake,¹⁸ as well as popular speakers such as Frances Willard.

Elizabeth Blackwell (1821-1910) was one of the most prominent advocates of social purity. One of the first women to earn a medical degree, Blackwell drew on

¹⁸ Very little is known about Emma Drake's life. She was a physician who published several advice manuals in the late nineteenth and early twentieth centuries.

scientific, medical, and social discourses in her advocacy of social purity. Born in Bristol, England, Blackwell moved to America at age eleven after her father sought more venues for his abolitionist aims (Garraty and Carnes 2.892). Members of Blackwell's family were involved in several reform movements and there was a strong sense of women's rights in her family. Her brother Henry married reformer Lucy Stone, and her brother Samuel married preacher Antoinette Brown. After a friend's death of cancer, Elizabeth Blackwell was prompted to give up her career as a teacher in favor of medical study (2.893). She began her study at Geneva Medical School in New York, after a lengthy debate among students and administrators on whether to accept her. In 1849, Blackwell received her medical degree and then left to study midwifery in London and Paris. After returning to America to open her own practice, Blackwell decided to settle in London in 1869, where she ceased medical practice to turn her energies to reform (2.893).

During her reform career, Blackwell promoted both medical and social reforms. She published many essays and gave several addresses on the medical education of women, and she was also involved in the anti-vivisectionist medical movement. In addition, Blackwell brought her ethos as a physician to discussions of prostitution and sexual reform. She published essays on "rescue work" and human sexuality. Furthermore, Blackwell was one of the leading voices in the campaigns against Britain's Contagious Disease Acts that punished only women for the spread of venereal disease (see Chapter 3). She was a prolific writer and speaker and published a collection of her essays, entitled *Essays in Medical Sociology*, in 1902. In many of these essays, her key argument for reform concerns the double-standard between men and women.

Frances Willard was another prominent social purity reformer who shared similar goals with Blackwell. Willard was born in Churchville, New York, to businessman and farmer Josiah Willard and teacher Mary Hill. The family moved often, from New York to Ohio, to Wisconsin, to accommodate Josiah and Mary's educational goals. Educated by her mother and then at Milwaukee Female College and North Western Female College, Frances Willard earned her degree in 1859 (Garraty and Carnes 23.410). After working as a teacher, she turned her attention to several reform movements, including suffrage and temperance. She founded the Women's Christian Temperance Union in 1874, an organization that she helped to expand on an international scale. A prolific writer, Willard addressed many issues of women's rights in her goals of "home protection": from women's right to vote to women's right to preach; from temperance to "scientific motherhood." The title of her 1895 work illustrates the scope of her reform goals: *Do Everything: A Handbook for the World's White Ribboners*.

Blackwell, Willard, and others advocating social purity urged the elimination of the double standard that repressed women's sexuality but encouraged male sexual license. While they recommended more chaste relationships than many of the free love feminists, social purity activists did not negate the importance of women's sexuality. They, too, refuted the "passionless" ideology, or the idea that women were without sexual desires. But social purity advocates critiqued this ideology for different aims. In contrast to the free love advocates who often encouraged sexual relationships outside of marriage, social purity advocates wanted men to be held to the same standard as women, with both in more chaste relationships before and after marriage. Thus free love and social purity arguments overlap in their critiques of marriage, but diverge in their ultimate ends.

In addition to their views on how sexuality should be expressed, social purity advocates differed from free love goals in their views on the role of laws in women's lives. Rather than repudiating all legal intervention in sexual relationships, as free love advocates did, social purity advocates argued for changes in laws governing prostitution, age of consent, and marital rape. As Blackwell urged, their agenda included legislation, then education (Blackwell, *Essays* 118). Though laws had never treated women equally, activists like Willard hoped that arguing for "home protection" would result in more equitable laws, even if these reforms were a result of arguments that emphasized the differences between men and women and women's special circumstances, called the argument from expediency by Karyln Kohrs Campbell. Willard incorporated such diverse issues as temperance, labor reform, and social purity under her goal of "home protection":

Only by convincing Labor that a high tariff meant material protection for the home, was that election won; only by convincing wage-workers and women that the outlawing of the saloon means protection for those who dwell within the home, will Prohibition ever gain the day; only by convincing wage-workers and temperance voters that through equal suffrage women will help to protect both the external and the internal interests of the home, will the Woman Question ever be wrought out in government. But beneath this trinity of issues is the fount from which they follow and that is Home itself, and back of Home is the one relationship that makes it possible. ("A White Life for Two" 319)

Changes in laws dealing with sexuality, such as laws regulating prostitution, age of consent, and marital rape, would also fall under her “home protection” mantra. Thus, social purists tried to work with the laws, in contrast to the free lovers, and their less confrontational rhetoric accommodates that end. However, these two movements were similar in using scientific warrants to support their characterizations of sexuality.

The social purity movement was also instrumental in establishing sex education. Willard often used the argument that education would create better mothers, and she did the same for sex education. For Blackwell, most of the abuses of sexuality would be solved through sex education with an emphasis on the importance of self control (*Essays* 250). Unlike the free lovers, however, Blackwell insisted on specific circumstances for discussions of sexuality, deeming sex not a “topic of idle gossip, of unreserved publicity, nor of cynical display” (*The Human Element in Sex* 57). Her views contrast with Woodhull’s, who provided a forum for sexual discussions in her radical newspaper, and who also urged that sex should be “the topic of conversation at the breakfast table, at dinner, at supper--everywhere--until the whole matter is well understood by everybody” (*Tried as by Fire* 13). Blackwell would have condemned the type of sex speech Woodhull initiated and participated in with Woodhull’s expose of Henry Ward Beecher. Blackwell was especially emphatic that equal instruction be given to males and females about sex, since males often received mixed messages (*Essays* 213). Thus, social purists advocated that moral education include a sex education focused on abstinence, taught primarily by parents and educators, which would help to eliminate the double standard between men and women. It was the social purists’ view of sex education that was instituted in schools in the twentieth century.

While this dissertation primarily concentrates on rereading the discourse of the free love movement through the background of science, it also elaborates on the social purists' role. Social purity advocates used the knowledge about women's sexuality and about venereal disease coming out of the scientific community and the discourses of those findings in their arguments for eliminating the double-standard between men and women concerning sexuality. In order to successfully situate the free love movement's discussion of sexuality, this dissertation looks at the overlap of free love discourse with other movements discussing sexuality, including social purity, racial uplift, and birth control. Each chapter analyzes free love texts alongside texts from one of these other movements in order to trace the prevalence of scientific warrants to feminist arguments.

Nineteenth-Century Science and Questions of Sexuality

While the rhetorics of advocates for free love and social purity share characteristics with legal, suffragist, and religious rhetorics, it is the backdrop of science that gives the most insight into their rhetorical strategies and their reconfiguring of sexuality. As nineteenth-century science became more professionalized, scientific discourses permeated the public sphere. Scientific discoveries became a part of everyday life and speech. The science of evolution was, of course, the most prominent influence, yet nineteenth-century science also saw major changes and breakthroughs in other disciplines relating to the body, including physiology, bacteriology, embryology, and heredity. Science grew in cultural prestige and increased as a resource across the century; science could therefore be invoked in social reform claims.

The professionalization and specialization of science throughout the nineteenth century yielded many breakthroughs, discoveries, and new disciplines, from

thermodynamics, to chemistry, to botany. This dissertation, however, is concerned with the sciences that produced greater understanding of the human body and its sexual functions. Though it was not until the twentieth century that major breakthroughs came by way of endocrinology and genetics, nineteenth-century sciences helped to change the discourse about women's bodies. While some of that knowledge has since been refuted, the new theories often provided the germ for later understandings of the body. There was much that nineteenth-century scientists did not yet know in relation to sexuality, but there was also much that they did know. In the beginning of their history of sexuality, D'Emilio and Freeman caution against viewing the history of sexuality as one of "progress from repression to liberation, ignorance to wisdom, or enslavement to freedom" (xii). Likewise, the history of scientific breakthroughs cannot be viewed as the story of ignorance yielding to illumination. At times, nineteenth-century science was radically wrong in its conception of the body. At times, discoveries produced the wrong conclusions. Yet, the making of scientific knowledge can be found even in theories that have since been refuted. Like the history of attitudes towards sexuality, the history of science in relation to sexuality is more cyclical than linear.

Darwin's Warrants as the Core of Free Love Feminism

The most obvious scientific influence on sexual reform discourse was Charles Darwin. Darwin's influence on nineteenth-century social ideologies was certainly far-reaching and evolutionary theory presents the most obvious connection with free love discourse. Similar to Charlotte Perkins Gilman's famous claim in *Women and Economics* (1898) that limitations on women's economic and social status were hindering the progress of the human race, free love feminists asserted the claim that women's status in

marriage as the sexual slaves of men was restraining progress. A key argument of the free lovers was elimination of a marriage system that subjugated the wife to the husband; these claims used Darwinian discourse as their warrant, positioning the marriage system as an unnatural and culturally imposed process. Darwin's theories of natural selection and sexual selection elaborated in *The Origin of Species* (1859) and *The Descent of Man* (1871) provide grounding for free love arguments.

The traditional interpretation of Darwinian discourse and feminism is that Darwinism lent support to efforts to restrain the progress of women. Cynthia Eagle Russett (1989) endorses this view when she analyzes how Darwin's views on the differences between the sexes reinforced female inferiority and set the stage for later psychologists who would take these views even further (40). Fiona Erskine's article, "*The Origin of Species* and the Science of Female Inferiority" (1995), also analyzes the negative connection between Darwin's theories and feminism. She argues that Darwin's *Descent* shows how he was influenced by the rhetoric of female inferiority employed by other scientists (99). Even though the *Origin* does not explicitly address gender, Erskine finds in it an implicit view of female subordination (101).¹⁹ Like most texts, however, Darwin's are open to multiple interpretations. The women in the free love movement were able to use Darwinian discourse for feminist ends, and not all of it was radical interpretation—Darwin's texts could be interpreted as endorsing some of these viewpoints.

¹⁹ She argues, "The *Descent* gives voice to Darwin's deeply-rooted beliefs. If his *Origin* statements appear neutral, it is only because patriarchy and the subordination of women were for him unchallenged assumptions" (100).

The emphasis on progress in Darwin's texts and popular theories based on Darwin's ideas also gave free love advocates an important argument: free love will lead to progress. Darwin's emphasis on natural occurrences also provides implications that they exploited: what aspects of women's lives could be attributed to nature and what to socially impositions? Furthermore, the popular tactic used by reformers of looking at nature to show how human laws violate nature's laws was given salience in free love feminist rhetoric. The theory of natural selection, then, gave feminists a perspective and a language to critique sexual behaviors in the marriage system.

The more popularized versions of Darwin's theories also illustrate how free love discourse applied the warrants established in *The Origin of Species*. Herbert Spencer's theories of social evolution insisted: "Progress, therefore, is not an accident, but a necessity. Instead of civilization being artificial, it is a part of nature; all of a piece with the development of the embryo or the unfolding of a flower" (13). Erskine notes the importance of Spencer's work to arguments calling for social progress (103). Spencer's application shared similarities with theories of free love as natural progressive evolution. While Spencer's discourse sometimes had clear anti-feminist implications,²⁰ it was nevertheless similar at points to the feminist discourse that defined the key role of women in society's progression.

Darwin's theory of sexual selection, mentioned in *The Origin of Species* and elaborated in *The Descent of Man*, also heavily influenced free love feminism because of its emphasis on female choice. Although this theory was often challenged by other scientists, especially in the late nineteenth century,²¹ many male and female reformers

²⁰ See Russett's (1989) criticism of Spencer, for example.

²¹ See Frankel (1994), "The Eclipse of Sexual Selection Theory."

found support for their arguments in this theory. Darwin's theory of sexual selection posits that males compete for the females and the females then choose from among the most superior males. Female choice is then the rule in the animal kingdom. Sexual selection refers to the process that occurs when male secondary sex characteristics, that is characteristics that do not deal with reproduction, evolve to make males more desirable to females. Darwin's example of sexual selection centered on the plumage of the bird; the bird's plumage changed to attract the female, who would choose amongst the males. While female choice is the rule in this theory, the onus of change and competition is on the male: "the result [of sexual selection] is not death to the unsuccessful competitor, but few or no offspring. Sexual selection is, therefore, less rigorous than natural selection. Generally, the most vigorous males, those which are best fitted for their places in nature, will leave the most progeny" (*Origin* 73). While feminist scholars have often critiqued the gender biases inherent in sexual selection theory, this theory, like natural selection, could be used for either anti-feminist or feminist ends. To the free lovers, the interpretation that males must make themselves worthy of females gave a rationale for female choice in sexual relationships.

Darwin himself did note that this process of sexual selection seems to be reversed in human beings, with the males given the agency of choice. Free love feminists would agree with this interpretation of choice: "As far as sexual selection is concerned, all that is required is that choice should be exerted before the parents unite, and it signifies little whether the unions last for life or only for a season" (Darwin, *Descent* 360). Darwin's claims, then, presented an impetus for arguments concerning the practices of human sexuality and its regulation in the marriage system.

One key argument of the free lovers was that the current marriage system was at odds with the natural progression of humanity. They differentiated between natural instincts and socially-imposed regulations of society. Woodhull argues that marriage has “outlived its day of usefulness” (*Tried as by Fire* 5) and that marriage “stands directly in the way of any improvement in the race” (*Tried as by Fire* 7). The warrant that nature is hindered by social customs is clear in her definition of marriage as “an assumption by the community that it can regulate the sexual instincts of individuals” (*Tried as by Fire* 7). Thus, the limits set by society on individuals’ choice in sexual relations stand in the way of natural evolutionary progression.

Similarly, in *Social Freedom: The Most Important Factor in Human Evolution* (c1890), which was originally a speech she was asked to give by the Social Science League of Chicago, later published in the radical periodical *Lucifer, the Light Bearer* and in pamphlet form, Hulda Potter-Loomis²² argues that human beings have advanced past the stifling institution of marriage and that choosing partners and sexual conditions in freedom, without the standards set by human society, will help them advance further, both morally and intellectually. She says, “No one can be happy while chafing under the restrictions which society now enforces upon the strongest and, without doubt, the best instincts of our nature, namely, that which manifests itself through the affections” (7). Her positioning of sexuality as the “strongest instinct in our nature” echoes the Darwinian discourse of the survival of the fittest instinct. Thus, embracing natural sexuality will conform to natural laws. Potter-Loomis then argues that man has controlled nature and hindered progress when she says, “Thus, unconsciously does man overreach himself

²² Nothing is known of the background of Hulda Potter-Loomis, whose works are part of Moses Harman’s collection.

when he presumes to set up limitations to nature, for nature knows no limitation and will not be restrained without causing much havoc and destruction” (8). Her argument is illustrated through a comparison with a tree growing free on its own, but restrained and fighting for light while in the forest: She writes, “There the tree is forced to conform to its environment and the limitations placed upon it by its surrounding companions” (13). The tree is “forced to modify its natural habit” because of its surroundings. She concludes, “The tree, however, has less power to choose or reject its own environment than we have” (13). This metaphor linking freedom of choice in mates with freedom in growth then illustrates how the natural instincts of humans are restricted by community standards, like marriage.

Thus, as Potter-Loomis notes, human beings have the power to change their environment and become agents to aid evolution. Her extended metaphor of sexuality as the tree, which carries throughout her work, exemplifies her claim that social freedom is the most important factor in human evolution; women are restrained unless they can express their sexuality in a healthy way. Those who survive will be the ones who express their natural sexual instincts. This rhetoric was intended to counter the notions that women who expressed their sexuality were “vulgar” and that marriage was the only place where such sexuality could be expressed.

In free love discourse, agency is divided between nature and those who can steer nature in the right direction. Echoing Social Darwinism, Woodhull argues that it is humanity’s job to aid evolution (*Rapid Multiplication* 19), and she decrees that the law of nature is higher than the law of government (*And the Truth* 19). Similarly, Waisbrooker argues that nature must be aided by the external conditions of freedom (*Eugenics* 8-9).

Woodhull says, “When a limit is placed upon anything that by nature is free, its actions become perverted” (*Tried as by Fire* 23). In addition, Dora Forster²³ notes that “Sex problems begin in false custom” (46). Thus, this discourse resolves the problematic agent in Darwin’s theory: only when humanity shrugs off its false customs and limits will natural evolutionary progress occur.

The role of nature as the agent then gives free love advocates backing for their claims that women are restricted from their natural progression. In free love discourse, naming men as “Legal owners of their wives’ sexual organs”²⁴ emphasized the unnaturalness of such a marriage system. The natural world then gave them a basis for comparison. In fact, Potter-Loomis calls Mother Nature “a better source” for her arguments than man-made law. Woodhull also presents marriage as “at variance with everything in nature”; everywhere but among humans “the female has supreme authority in domain of sex” (*Tried as by Fire* 39). Thus, Darwin’s writings were used in idealizations of the “natural world” as the place where progress can be seen unhindered. In using evolutionary theories as the basis for their arguments for women’s sexual freedom, these women place humans as the agent; this emphasis is not present in Darwin’s works, but is present in some of the adaptations of Darwin, such as Herbert Spencer’s. In Darwin, the activity of natural selection is privileged over the agent, but in these women’s arguments, the agent is privileged over the act (Burke). Woodhull’s claim also uses the evolutionary hierarchy as its warrant: if other species give women this right of “supreme authority,” then why don’t humans?

²³ I have also been unable to find much biography of Forster, who is part of the anarchist free love movement.

²⁴ A phrase used by many free love advocates, including Woodhull and Potter-Loomis.

Looking to the animal kingdom, many free love feminists found justifications for equality since humans are higher in the evolutionary scale than these animals. Woodhull argues that there are no analogies in nature to the marriage system; therefore, marriage is not a natural condition (*And the Truth Shall Make You Free* 14). Lois Waisbrooker's arguments also use the evolutionary scale as their warrant in her claims that the subjugation of the wife to the husband violates the laws of nature. For example, she proclaims, "The evils under which we suffer are rooted in the unbalanced conditions of creative life as manifested in the relative position of man and woman—in the subjection of woman to man..." and adds, "Does Nature—does evolutionary law so change its methods on its upward course?" (*Eugenics* 4). Thus, her warrant shows that since the females in the animal kingdom are not subjected to the same suppression as human females, the condition of wives is unnatural, especially since men are considered higher than animals both intellectually and spiritually (Waisbrooker, *Fountain of Life* 83).

Darwin's discussions of sexual selection in *Origin* and *Descent* also gave free love theory backing for the role of female choice. Woodhull notes, "Sexual selection has very little scope in our conventional system" since women often marry for the wrong reasons, such as economic necessity or social pressure (*Rapid Multiplication* 20). Waisbrooker also uses the warrant of "female choice" to argue, "Nature has given to every woman the inherent right to decide when she will bear a child and who shall be its father" (*Eugenics* 5). Using this line of argument, the free love theories relied on the authority of sexual selection: if females in the animal kingdom can choose amongst the most appealing males, women should certainly be given a similar choice, rather than pressured into relationships based on social class, the need for a provider, or the desire to

be married, regardless of love. Sexual selection theory, then, proves the “right of woman to rule in the domain of affections” (Woodhull, *Elixir* 22).

Darwin left his mark on the nineteenth-century rhetoric of science and its link to social reform, and his discourse was accommodated and applied in different ways by free love feminists. However, Darwin’s was not the only scientific theory that lent weight to claims for women’s sexual rights. Reading their claims through the lenses of physiology, bacteriology, embryology, and heredity sheds more light on the free lovers’ rhetorical strategies, which will be elaborated in the chapters of this dissertation. Reading sexual reform discourse in a new context, alongside the growing cultural authority of science in the nineteenth century, reveals new dimensions and brings out different features in women’s rights arguments.

Physiology

The first lens with which to view nineteenth-century feminist discourse is physiology, the study of the body and its functions and processes. Chapter 2 shows how the discourses associated with physiology helped free love advocates argue for the importance of sexual freedom and sexual pleasure to women’s health. Physiology seemed to be an architectonic discipline in nineteenth-century science, especially in the medical schools. Yet, “physiology” came to mean more than just the scientific study of the body. It also became associated with hygiene and with sexual knowledge.

Nineteenth-century physiology did not yield new knowledge of sexuality but applied Enlightenment philosophies of the body to lifestyle decisions. Nineteenth-century discourses on sexual physiology were affected by debates between mechanists and vitalists, those who viewed the body as a machine versus those who viewed the body as

affected by a “vital” force. Ideas on the nervous system, the relationship between the mind and the body, and the law of conservation of energy also affected the nineteenth-century discourse of sexual physiology. Physiology was the discipline used most clearly by physicians attempting to limit women’s rights because of their bodies. However, Chapter 2 explores how physicians attempted both to limit and to liberate women’s bodies. It also shows how free love feminists could rely on both feminist and anti-feminist (such as the ideas of women being controlled by their sexual organs) medical discourses to argue for free love as a valuable tool in securing women’s health. The warrant that medical science had established--that the health of women was tied to their sexual organs--actually became the means for free love feminists to argue that women should be given “control” of their sexual organs and should experience sexual pleasure in order to maintain health.

Bacteriology

Chapter 3 examines the far-reaching impact of the central medical breakthroughs in nineteenth-century bacteriology. Though many of the more practical applications of this new science in the form of vaccines and cures would not come until later, the discovery itself reconfigured attitudes towards disease and its transmission. Now there was an external agent of disease to fight, rather than an uncontrollable dysfunction of the body.

In addition to the discovery of bacteria as causal agents in disease, bacteriology produced other important shifts. Even before bacteria were recognized, the 1837 differentiation between gonorrhea and syphilis, previously conceived as the same disease, enabled more accurate diagnoses and more specific research in the late nineteenth

century. In addition, scientists began to understand the stages of these diseases, producing important new knowledge about the latency period of gonorrhea. The explanation of the latency period showed the public that women and men could be carriers of these diseases without outright symptoms, thus perpetuating their spread. Finally, understanding the later stages and the effects of venereal diseases on the reproductive organs, which often led to sterility, magnified the urgency to speak about women's sexuality and understand sexual practices, creating a crisis for reforms in marriage laws and sex education.

Prior to the discovery of bacteria as a cause of disease, ideas circulated positing the inherent nature of venereal disease in women. Bacteriology, then, provided an outside cause to a "social problem," one that could be fought with reforms. Furthermore, the presence of venereal disease explained the illnesses and weaknesses many women suffered, previously attributed to their weaker physiology. The absence of sexual desire was also attributed to venereal disease. Thus, bacteriology provided explanations that physiology could not. It changed the discourse surrounding venereal disease from one of morality to a discourse of public health.

Science established the warrant that venereal disease was caused by bacteria transferred during sexual intercourse and showed that such diseases were also frequent in marriages. Thus, free love and social purity advocates could argue for reforms in the marriage system on the basis that marriage was not a safe haven from venereal disease. Reading their arguments for reform through the lens of bacteriology shows how the discoveries of science literalized the metaphors of marriage as a diseased institution. The scientific study of disease also helped to promote urgency for sexual reforms.

Embryology

While physiology and bacteriology illuminated the causes of disease, different problems of causation vexed scientists in the discipline of embryology. The focus on evolutionary theory marked a new beginning for embryology, as Darwin attempted to use embryology as evidence for natural selection (Mayr, *Growth of Biological Thought* 469). Studying the similarities and differences between embryos in different species helped scientists to plot the stages of evolution and human development. It is also from this discipline that knowledge of fertilization and embryonic development was gained.

Nineteenth-century embryology saw the end of the preformation versus epigenesis debates, debates over whether generations had been preformed centuries before they were born or whether they went through a series of developmental stages after fertilization. Thus, once the belief that the characteristics of a person were not preformed generations before birth had been defeated, the possibility for influence on the embryo was refreshed. These new beliefs in embryonic development were recruited to cover women's rights because of women's influence as the housing of the embryo. Embryology, aided by cell theory, was also able to confirm that both males and females equally contributed characteristics to the new being. The knowledge of this elite science, conveyed in both textual and visual arguments, became integral to free love arguments.

Chapter 4 traces how embryology produced warrants based on development, which free lovers could then use in their arguments placing women as agents of evolution. This chapter also explains how scientific discoveries in this field "refreshed" older ideas on the influence of women on the growing embryo, which free love and racial uplift advocates used to argue for why women should have rights.

Heredity

Scientific discussions of heredity also saw major changes in the nineteenth century due to the theories of Lamarck, Darwin, Weismann, and Mendel. The idea that “like begets like” proliferated throughout the century, explaining all manner of human behavior, from propensity toward crime, to intelligence. While nineteenth-century scientists did not have a science of genetics to draw from, they did produce important findings in the field of heredity.

For much of the century, Lamarckian views that characteristics an organism acquired during life could then be passed on to future generations persisted, even after Weismann refuted these ideas in 1883. Lamarckian theories of inheritance were attractive to reformers, since they could argue for changes, such as education in the name of “race improvement.” Weismann’s and Mendel’s work, which created the “germ plasm” theory of inheritance and refuted the inheritance of acquired characteristics, helped to instigate the shift towards advocacy of eugenics in the early twentieth century. Yet, nineteenth-century feminists promoted the ideas behind eugenics even before it was given a name. The eugenic ideals that free love, social purity, and racial uplift advocates supported, though, were based more in Lamarckian science, giving a different spin to the theory of eugenics than the modern Mendelian view.

The final chapter traces the ideas of nineteenth-century hereditarian science through the theories of these scientists and the social sciences of Thomas Malthus, Herbert Spencer, and Frances Galton, through medical popularizations, and finally to the more eugenic arguments of late nineteenth-century feminists. The warrant that a new being received the characteristics of both the mother and father led to a “mothers of the

race” discourse in feminist texts. They could argue for rights on the basis that women’s betterment would be passed on to their children. The discourses of heredity often provided the strongest argument for sexual freedom through a new emphasis on women’s status as “mothers of the race.”

Scientific Discourse in the Popular Sphere

The many new ideas in these sciences needed a mode of transmission to wider publics. Scientific and medical societies flourished in the nineteenth century, and journals discussing these issues became more widespread. However, a key development was the availability of scientific information in the public sphere. Medical advice books written by physicians to audiences of women fostered the spread of scientific theories and discourses. The dissemination of theories of evolution and the germ theory of disease illustrate the tremendous role of popularization in the success of these theories. Lay people used scientific discourse and implemented reforms based on scientific theories in various areas. Thanks to popularization, science permeated so many areas of social life that it became almost a common language. It became popular to evoke science in general periodicals and other public discourses (Cantor and Shuttleworth 2). Historian Nancy Tomes (1998) reconceptualizes popularization when she says,

I prefer to think of popularization not as a hierarchical, top-down process where the focus is on what the public gets “right” or “wrong,” but as a dynamic where ideas and images are traded among different audiences, including laboratory scientists, practicing physicians, hygiene reformers, and interested lay people. Instead of treating popular views as merely pale, distorted images of the “real” knowledge generated by “real” scientists,

such a model allows for ideas to travel in more than one direction, to accommodate, for example, the influence of sanitarian thought on early formulations of the germ theory. This approach also helps to describe what interests me most, that is, how scientific precepts become a part...of everyday life. (*Gospel* 13-14)

Thus, medical popularizers and feminist reformers could mold and shape science to meet their ends.

Clearly, the debate over sexuality occurring in the free love and social purity discourse communities could not have thrived without the knowledge they drew from the scientific community. Just as the line is blurry between the public and private spheres, the line is blurry between what I am deeming the professional and popular spheres. Scientists were affected by popular values in return, particularly in nineteenth-century discourses surrounding race, gender, and sexuality, just as much as rhetors in the popular sphere were affected by scientific values and theories. Thus, a more inclusive definition of the rhetoric of science, one that acknowledges how women participated in scientific discourses in reform movements, is needed.

Women's Involvement in Science

However, the division between the scientific and reformist spheres is not along gender lines. The nineteenth century saw more women entering scientific and medical fields than previous centuries. Some of these fields were "feminized," thus making them more acceptable for women. Regina Morantz-Sanchez's work (1985; 1992; 1999) shows how women won the battle to be trained as physicians in the nineteenth century by appealing to the idea that women had more "sympathy" for female patients.

Anthropology also became an acceptable field for women since they could study women and children better than men could (Rossiter 61), which even prompted a backlash against female anthropologists in the 1880s because there were too many of them (Rossiter 63). The fields of “home economics” and hygiene also encouraged the participation of women (64). Medical schools opened to women and women also became involved in sanitary reform work. Critic Perry Williams (1991) broadens the definition of medical practice to include women sanitary reformers, midwives, and nurses, especially since sanitary reformers often incorporated the principles of preventative medicine (61-63). “Sanitary science,” the medical reform movement advocating social reforms as the means to checking the spread of disease, even became a discipline including both male and female physicians who focused on how scientific knowledge could yield social changes (Morantz-Sanchez, “Feminist Theory” 58). Thus, women were practicing science in new and different ways, from the formalized disciplines to practical and socially-applicable fields.

The growth of scientific discourses in lay fields also incorporated women as both writers and audiences. Elizabeth Fee (1978) notes that popular science journals often espoused more feminist ideologies because of women writers and subscribers (iii). In addition, Susan Wells’s work (2001) has documented the participation of women in physiological societies interested in “seeing what was hidden” (202). Women, then, found more access to scientific principles, practices, and discourse throughout the century, whether they were employed in more professional or popular activities. Thus free love reformers were not unique among nineteenth-century women in their new focus

on studying the body. The impact of science in the popular realm made these discourses accessible to laywomen.

Explanation of Methodology

The subsequent chapters of this dissertation, divided by scientific discipline, are arranged by first reviewing the discoveries in a distinct scientific field, then analyzing their explanations in medical popularizations, and finally analyzing the reformist discourse informed by the science. To discuss medical popularizations, I chose the texts that seemed to have the clearest influence on the reformist discourse. These texts were in some cases read and quoted by reformers. Other popular science texts were chosen because they explicitly align themselves with social reform goals.

This dissertation focuses on the questions: how do new scientific understandings change the rhetorical situation of speaking about sex, and what is science's role in defining such a situation? Lloyd Bitzer's concept of rhetorical situation concentrates on the three components of exigence, audience, and constraints.²⁵ As the discourse on sexuality traveled from scientific communities to popularizations to free love reformers, these components altered. All three of these discourse communities used the exigence of "new knowledge" and "new discoveries," but did so in different ways. For the scientific community, the constraints depended on which theories of the body their audiences subscribed to, and what these audiences defined as an "imperfection," or component of the situation requiring modification. Rhetors working in science had to contend not only with the audience's position on scientific developments, but also with their social values

²⁵ For Bitzer, situations are rhetorical if they have these three components. He uses the term "exigence" to refer to the reason for the text or the importance of the text. One way rhetors exploit exigence is by finding an "imperfection" that requires "positive modification."

about sexuality. For the accommodators in the medical community who wrote to lay audiences, science provided its own authority, yet the constraints in dealing with preconceived ideas on sexuality were the same. In addition, they not only contended with the exigence of new scientific knowledge, but also with the exigence of conversations about sexuality circulating in the public sphere. Finally, the reform communities, especially the free love movement, saw multiple “imperfections” to address, and the presence of women as rhetors was an additional constraint. Thus, science allowed nineteenth-century women to construct the exigence and authority to speak on the “taboo” topic of sex, and their rhetorical strategies engaged in multi-layered exigencies.

Beyond Bitzer’s interpretation of the situation, though, the rhetorical situation was also affected by the constraints of the genre. While each discourse community recounted scientific advancements and applied them to social problems, they privileged different aspects of these theories. Burke’s pentad is useful in analyzing the additional components of the situation, as we look at the ways science and reform communities differently conceive of act, scene, agent, agency, and purpose. What did each discourse community give presence to and why? Does the privileging of one component of the pentad change as the discourse travels among different communities?

Finally, analysis of these traveling discourses includes an interrogation of how warrants are established and then applied to reform goals. The scientific community gave reform communities warrants, or major premises and assumptions, for their arguments for change. For example, in the reform community the theory of evolution became a warrant for arguments that marriage was restraining progress. Similarly, reformers claiming that women should have the right “to rule in the domain of affections”

(Woodhull, *Elixir* 22) were warranted by Darwin’s theory of female choice in sexual selection. I also introduce the idea that scientific warrants can “refresh” older arguments; that is, a claim that a reformer had previously asserted becomes revitalized by a warrant based in a recent scientific finding. For example, the free lovers claim that marriage is a “diseased” institution was given new life by the finding that venereal diseases were prevalent in marriages (see Chapter 3).

Thus, each chapter of this dissertation is arranged by first explaining the scientific theories and discourses of the professional field, then looking at how this information was conveyed to the public in popular works by scientists and medical practitioners, and finally by showing how these popularized theories inform the discourses on sexuality in the social movements. Each chapter looks at the changes that can occur when science is accommodated to feminist ends.

Each chapter of this dissertation contains a timeline in an appendix that tracks the scientific discoveries in that particular discipline. The following chart integrates that information with the timeline of free love feminist texts:

Comparative Timeline

Year	Scientific Milestone	Year	Free Love Publication
1801	Marie-Francois-Xavier Bichat, vitalist theory of tissue systems		
1809	Jean Baptiste Lamarck, <i>Philosophie Zoologique</i>		
1821	Johann Friedrich Meckel, recapitulation theory		
1827	Carl Ernst von Baer, <i>On the Origin of the Mammalian and Human Ovum</i>		
1828	Von Baer, <i>The Developmental History of Animals</i>		
1837	Phillipe Ricord, difference between gonorrhea and syphilis, previously conceived as the same disease		

1843	Embryologists, observation of sperm within the egg		
1844	Robert Chambers, <i>Vestiges of the Natural History of Creation</i>		
		1846	Mary Gove, <i>Lectures to Women on Anatomy and Physiology</i>
		1853	Mary Gove Nichols and Thomas L. Nichols, <i>Nichols' Journal of Health, Water-Cure, and Human Progress</i>
		1854	Mary Gove Nichols and Thomas L. Nichols, <i>Marriage: Its History, Character, and Results; its Sanctities, and its Profanities; its Science and its Facts. Demonstrating its Influence, as a Civilized Institution, of the Happiness of the Individual and the Progress of the Race</i>
1855	Robert Remak, cells form by division	1855	Mary Gove Nichols, <i>Mary Lyndon</i>
1859	Charles Darwin, <i>On the Origin of Species</i>		
1859	Louis Pasteur, "germ theory" of disease		
1860s	Wilhelm His, three-dimensional models of embryos		
1864	Herbert Spencer, "survival of the fittest"		
1865	Gregor Mendel, theory of hybridization		
1866	Ernst Haeckel, theory of recapitulation		
1869	Francis Galton, <i>Hereditary Genius: An Inquiry into its Laws and Consequences</i>		
		1870	Victoria Woodhull and Tennessee Claflin, <i>Woodhull and Claflin's Weekly</i>
1871	Charles Darwin, <i>The Descent of Man and Selection in Relation to Sex</i>	1871	Woodhull, "And the Truth Shall Make You Free:" <i>A Speech on the Principles of Social Freedom</i>
1872	Emil Noeggerath, "latency period" of gonorrhea	1872	Ezra Heywood and Angela Heywood, <i>The Word</i>
		1873	Victoria Woodhull, <i>The Elixir of Life, or, Why Do We Die?</i>
		1874	Victoria Woodhull, <i>Tried as by Fire; Or, The True and the False Socially</i>
1876	Robert Koch, anthrax bacillus	1876	Juliet Severance, <i>A Lecture on the Philosophy of Disease, and How to Cure the Sick Without Drugs, with an Explanation of Magnetic Laws</i>
1876-	Oscar Hertwig and Hermann		

1877	Fol, examination of how sperm penetrates the egg and how the cell to form a new organism comes out of two nuclei		
1879	Albert Neisser, gonococcus	1879	Lois Waisbrooker, <i>From Generation to Regeneration, or The Plain Guide to Naturalism</i>
		1880	Lois Waisbrooker, <i>Foundation Principles</i>
		1881	Juliet Severance, <i>A Lecture on Life and Health, or How to Live a Century</i>
			Juliet Severance, <i>A Lecture on Religious, Political, and Social Freedom</i>
1882	Robert Koch, microbe for tuberculosis		
1883	August Weismann, refutation of inheritance of acquired characteristics	1883	Moses Harman, <i>Lucifer, the Light Bearer</i>
1885	Louis Pasteur, rabies vaccine		
1886	Francis Galton, term "eugenics"		
		1888	Victoria Woodhull, <i>Stirpiculture; or, The Scientific Propagation of the Human Race</i>
1889	August Weismann, <i>Essays Upon Heredity</i>		
		c1890	Hulda Potter-Loomis, <i>Social Freedom: The Most Important Factor in Human Evolution</i>
		1890	Victoria Woodhull, <i>Humanitarian Government</i>
		1891	Juliet Severance, <i>A Discussion of the Social Question between Juliet H. Severance, M.D. and David Jones, Editor of the "Olive Branch."</i>
		1891	Victoria Woodhull, <i>The Rapid Multiplication of the Unfit</i>
		1893	Lois Waisbrooker, <i>The Fountain of Life, or the Threefold Power of Sex</i>
1900	Gregor Mendel, work rediscovered	1900	Lois Waisbrooker, <i>Clothed With the Sun</i>
		1901	Juliet Severance, <i>Marriage</i>
1904	Prince Albert Morrow, <i>Social Diseases and Marriage</i>		
		1905	Dora Forster, <i>Sex Radicalism as seen by an Emancipated Woman of the New Time</i>
		1907	Moses Harman, <i>The American Journal of Eugenics</i> (changed from <i>Lucifer, The Light Bearer</i>)
		1907	Lois Waisbrooker, <i>Eugenics; or, Race Culture Lessons</i>

Looking at the dates side by side reveals how free love discourse became more prolific after important scientific discoveries. We also see the importance of reading free love discourse against the background of contemporary science. We would not read the discourse of the suffrage movement without looking at the larger issues occurring in the social sphere. Likewise, we should not read the discourse of sexuality in the free love movement without being aware of the scientific discoveries impacting their rhetorical strategies.

Conclusion

In examining “the way in which sex is ‘put into discourse’” (*History of Sexuality* 1.11), Michel Foucault argues that a society “speaks verbosely of its own silence” (1.8) and that discourse itself helps to shape our experiences of sexuality. In contrast to a “Victorian” view of discussions of sexuality, we see that sexuality was discussed, and discussed at length, drawing on the discourses of science, in many different discourse communities in the nineteenth century, though in different ways than we do today. The debates in nineteenth-century scientific communities gave women an exigence and a language for critiquing sexual practices. Free love rhetors capitalized on the opportunity to enter such discourses.

When Darwin said, “The season of love is that of battle” (Darwin, *The Descent of Man* 48), he referred to the battle among males to compete for females, a key component of his sexual selection theory. Reform discourses concerning sexuality in the nineteenth century turned this battle into an ideological and rhetorical battle. They showed that the realm of the private sphere contained a battle between the sexes for the right of women to “own and control” her sexual organs. They revealed the battle between social values and

the actual lived experiences of women. They positioned marriage as a battleground where the scientific and the personal met. Their speech created a battle over what was sexual knowledge and what was obscenity. Reformers battled for changes that would protect, honor, and free women from the constraints and repression of the marriage system and the discoveries of science were weapons in that battle.

Chapter 2: Physiology

To sum up the best conditions for health and long life which all can now attain: First: prospective fathers and mothers should be in perfect health from right living, not only as regards diet, exercise, rest, personal cleanliness, cheerfulness and all hygienic conditions, but also in regard to their relations with the other. The mother should maintain the control of her own person under an intelligent comprehension of sexual science.
(Severance, *A Lecture on Life and Health* 29-30)

When early twenty-first century women need their “embarrassing questions” answered, they go to *The Oprah Winfrey Show* to hear Dr. Oz explain the inner workings of the body using computer-generated visual aids, give advice on personal hygiene and diet, and answer questions such as how much sun-tanning is harmful, what constitutes a healthy bowel movement, and how often women should douche. When the latter topic is raised, Oprah sympathizes with the male guests in the audience who feel uncomfortable in the presence of discussion of such topics. When early nineteenth-century women wanted to know more about the body, they went to lectures hosted by ladies’ physiological societies to hear Dr. Mary Gove explain the inner workings of the body using her own unique visual aids, such as mannequins and a corset placed over her clothes to demonstrate the harms of tight lacing (Passet 22), give advice on personal hygiene and diet, and address issues of how much exercise women should get, whether masturbation is harmful, and how to maintain the health of the sexual and reproductive organs. When topics particular to women were raised, there was no uncomfortable male presence; these lectures were led by women and for women only. Ladies’ physiological

societies did not need a male Dr. Oz to answer their questions; they had Mary Gove with her medical knowledge, credentials as a physician, and appropriate gender. Physician Sylvester Graham and reformer William Alcott were deemed inappropriate to lecture about anatomy and physiology to female audiences, so they invited Gove to lecture instead, beginning a prolific lecturing career for this female physician and reformer in the 1830s that stretched into the 1850s (Passet 22). Her lectures sponsored by the Ladies' Physiological Society of Boston and the Ladies' Physiological Society of New York (Silver-Isenstadt 35-40), among others, drew large crowds from 400-500 listeners per lecture (Silver-Isenstadt 38). The numbers of women gathering to hear Mary Gove's lectures on anatomy, physiology, and hygiene speak to the intense public interest in these topics. Throughout the nineteenth century, lectures on physiology drew crowds, and popular health manuals by physicians explaining the body became bestsellers. Physiology became the central discipline of the medical schools, as well as a prominent discipline in many women's colleges.

In popular discourses, however, physiology became integral to arguments for women's rights. Explanations of physiology often became opportunities to argue for women's rights as a natural extension of the topic. For Mary Gove, explaining the parts of the body was not enough; she also had to explain how these body parts could be harmed, not only by restrictions on women, such as sedentary lifestyles and tight lacing, but also by the inequalities in the marriage system. Similar to Gove's message with its reformist agenda, Lillian Welch's physiology lectures at Goucher College urged the need for women's vote "as a tool for securing conditions in the community favorable to health" (qtd. in Appel 312). The marriage reforms advocated by free lovers, then, became

connected with women's health through these discourses on physiology. As the quotation above by physician and free love advocate Juliet Severance illustrates, diet, exercise, and "control of her own person"--all became interconnected with and central to securing and maintaining women's health. Discourses on the inner workings of the body provided warrants for women's rights. This chapter shows how reading the claims of the free love advocates in light of the larger conversations on physiology in the scientific and medical communities reveals the basis of these arguments grounding sexual freedom in women's health.

Twentieth-century critics have often focused on the darker side of these nineteenth-century conversations over women's physiology. Historians such as Carol Smith-Rosenberg (1985) and Cynthia Eagle Russett (1989) have revealed how literature from the medical community resulted in defining women as "diseased," "hysterical," and controlled by their physiology, particularly their reproductive organs. Historian Nancy Cott (1979) has examined the "passionless" ideology, one endorsed by many physicians throughout the century, that denied that women's physiology provided any sexual feelings. In addition, Cott, Smith-Rosenberg and Rosenberg (1973), and others have analyzed how medical discourse was shaped by positions on women's social roles. Defining women as "diseased" served to limit their civic participation and keep them dependent on men. Furthermore, as Elizabeth Fee (1978) points out, the treatment of female disorders formed a large and lucrative component of many physicians' practices (197).

This traditional view of women, health, and sexuality has also been challenged, notably by Carl Degler, whose article "What Ought to be and What Was: Women's

Sexuality in the Nineteenth Century” (1974), surveys the medical literature on women’s sexuality written for both professional and popular audiences and written by many different factions of the medical community. He finds arguments on both sides of the spectrum within the different factions, concluding that there was not a unified consensus concerning women’s sexuality in the medical community. Similarly, Helen Lefkowitz Horowitz’s (2002) study of sexual mores in the nineteenth century reveals a more complicated debate than do past studies asserting a “Victorian” mindset on sexuality. In fact, critics reading the same texts have often found differing views within the same text, depending on what ideology of “Victorian sexuality” their research is supporting. For example, Ronald Walters’ text *Primers for Prudery: Sexual Advice to Victorian America* (1974; 2000) uses some of the same physiology texts that I examine in this dissertation, such as Russell Trall’s and John Cowan’s texts. While he finds evidence supporting a view of Victorian prudery, my analysis shows that liberating views of women’s sexuality that were later used by reformers to support women’s rights originated in these medical “primers.” Readings of Elizabeth Blackwell’s views on women’s physiology and sexuality, examined in this chapter, also demonstrate contradictions between the views of women as sexual or “passionless.” Thus, we can see that nineteenth-century discourse on women’s physiology and sexuality in both medical and reform circles was more complicated than the traditional view of Victorian sexual ideology would have us believe. Rhetorical analysis of these texts confirms that the debate over women’s sexual physiology in the nineteenth century was multi-voiced and multi-faceted.

This chapter analyzes how the nineteenth-century discourse of physiology provided a basis for feminist arguments for free love as a means to secure women’s

health. This chapter first reviews the foundation of nineteenth-century physiology in classical and Enlightenment philosophies of the body in order to explain nineteenth-century discourses on physiology. It then shows how the discipline of physiology in medicine turned to the importance of hygiene based on these understandings of the body and its processes. Next, analyzing the arguments in popular medical textbooks and lectures, it examines how medical writers moved from explaining physiology into a discourse of women's rights, which free love reformers then exploited. Finally, this chapter reads the claims of the free love movement on the importance of women's sexuality to women's health against the background of the nineteenth-century discourse on physiology.

The Science of Nineteenth-Century Physiology

What was known as physiology in the nineteenth century is often unrecognizable from the perspective of contemporary twentieth-century physiology since it often combined different studies of the body. However, the modern discipline of physiology, which views the body as a series of chemical processes, developed in the late nineteenth century as a result of the turn towards the mechanist view of the body and the new experimental methods focused on findings in a laboratory. The relevance of physiology to women's rights, though, did not come out of a laboratory, but out of a rethinking of the body that began to occur in the eighteenth century. Philosophies of the body as a machine, of the centrality of the nervous system, and of the conservation of energy emerged in eighteenth-century science and played a large role in how sexuality was conceived during the nineteenth century. What was new about nineteenth-century physiology, though, was not the knowledge itself, but the new ways these conceptions of

the body were applied to ideas about hygiene and lifestyle choices. This section surveys these philosophies of the body and explains how they came to affect nineteenth-century ideas on sexuality in the separation of sexuality from reproduction and the construction of a gendered, female sexuality.

Enlightenment Philosophies of the Body

One prominent debate during the Enlightenment that spilled over into nineteenth-century physiology was the debate between mechanism, also known as materialism, and vitalism. Mechanists viewed the body as a machine, with each part working to aid the body's processes. For vitalists, the body's inner workings were affected by a "life" force (Mayr, *The Growth of Biological Thought* 114). Proponents of both mechanism and vitalism focused on classifying the body's organs and their functions (Bowler and Morus 170). However, they differed in their conceptions of the "laws" that produced bodily processes. For vitalists, such as Albrecht von Haller writing in 1747 and Juliet Severance writing in 1876, disease was defined as an absence of "vital action" or "abnormal vital action" (Severance, *A Lecture on the Philosophy of Disease* 4). By the end of the nineteenth century, these beliefs would, of course, be refuted, with the discovery of outside agents of disease, like bacteria. Even before this discovery, however, vitalism was becoming less popular, as many physicians and scientists turned towards mechanist views and to physics and chemistry to explain the body's processes (Bowler and Morus 181). However, as we will see through analysis of the texts discussed in this chapter, both mechanist and vitalist philosophies played a role in nineteenth-century medical and popular debates over the physiology of women's sexuality.

Another important influence on nineteenth-century physiology came from competing conceptions of the relationship of mind and body. Under Enlightenment materialist views, there was little distinction between the psychological and the physiological: the body “became the seat of sensation and so the source of consciousness....touch was the prime sense” (Porter and Hall 20). This idea of “sensibility” would play a large role in discussions of sexuality. Others discussing the body sought to distinguish between the sensations of the body. In 1747, Swiss biologist Albrecht von Haller published *First Lines in Physiology*, which promoted a new view of the distinction between the “parts of the body that are irritable (contract when touched) and those that are sensible (transmit sensations through the nerves to the brain)” (Bowler and Morus 174-175). Combined with Marie-Francois-Xavier Bichat’s views of the systems of tissues, wherein different tissues had specific “vital functions,” published in *Anatomie Generale* in 1801 (Bowler and Morus 175), sexuality became associated primarily with the nervous system. The nervous system, associated with sensibility, produced sexuality. That is, Enlightenment views of sexuality connected sexuality with an organism’s sensibility that was a product of its nervous system, ruled in turn by the mind. Therefore, eighteenth and nineteenth-century thinkers emphasized the mind’s power in producing sexual feelings in the body (Porter and Hall 108). This idea of the power of the mind over sexuality became integral to nineteenth-century arguments that refuted the “passionless” ideology, such as Elizabeth Blackwell’s. The idea of sexuality as a function of the nervous system led to anti-feminist ideas, such as the “diseased,” “nervous,” and “hysterical” notions of female sexuality in the nineteenth century. But, by situating sexuality within the nervous system, it was also associated with the system that

enabled the body to perform as an organized whole (Jordanova 171). Later free love ideas accentuated the role of sexuality to the individual, exploiting this association of sexuality with the nervous system coming out of the Enlightenment.

Connected to both the mechanist/vitalist debate and the association of sexuality with the nervous system was the law of conservation of energy, which emerged in the late eighteenth century. It was then applied to sexuality during the nineteenth century: fears of men losing energy through ejaculation and fears of excessive sexual activity causing “nervous disorders” resulted from a combination of the law of conservation of energy, vitalist views, and the association of sexuality with the nervous system. These fears were famously extended to cover women’s menstrual cycles, notably by physician Edward Clarke. Under his logic, women’s menstruation was a loss of energy. Clarke used this notion as support for limiting the education of females in his bestselling 1873 book, *Sex in Education: A Fair Chance for Girls*. He argued that educating females in the same manner as males would harm their reproductive organs, since energy would be drawn from the activity of menstruation to intellectual activity in the brain. These ideas persisted throughout the late nineteenth century, but they were also contested.

While these three philosophies of the body originated prior to the nineteenth century, their influence is clear in what became the field of physiology and the nineteenth-century discourse of sexuality. Although nineteenth-century physiology became a more experimental science towards the end of the century, Enlightenment philosophies of the body persisted in ideas on the relationship between the different functions of the body and on the sexual organs. The following section reviews how

women's organs and women's sexuality were conceived prior to the nineteenth century to show the basis of nineteenth-century discussions of physiology and hygiene.

“One Sex” or “Two Sex”?

In addition to philosophies of the body, Enlightenment thinkers also contributed integral ideas on the anatomy and physiology of the female body to later ideologies. The eighteenth and nineteenth centuries saw the shift from what historian Thomas Laqueur (1992) has called the “one-sex model” to the “two sex model.” Based on classical ideas, the “one-sex model” posited one sex, with the female as a less perfect version of the male. In fact, female organs were seen as the exact inverse of the male anatomy, an idea going back to Aristotle and Galen that was particularly endorsed by Renaissance thinkers. This model is illustrated by Galen's explanation of the female organs as the inverse of the male's:

Think first, please, of the man's [external genitalia] turned in and extending inward between the rectum and the bladder. If this should happen, the scrotum would necessarily take the place of the uterus with the testes lying outside, next to it on either side....Think too, please, of...the uterus turned outward and projecting. Would not the testes [ovaries] then necessarily be inside it? Would it not contain them like a scrotum? Would not the neck [the cervix and vagina], hitherto concealed inside the perineum but now pendant, be made into the male member? (qtd in Laqueur 25-26; Laqueur's notes explaining what organ Galen is referring to appear in brackets).

Laqueur points out that prior to the demise of the “one-sex model,” female organs shared names with males. The advent of the two-sex model gave names to female organs that had shared names with male organs, such as ovaries and testicles, and provided new names to organs that previously had none, such as the vagina. Consequently, the body became gendered, as even skeletons and nervous systems were distinguished as male or female (Laqueur 149-150). What had been one sex, with the female organs viewed as the inverse of the male’s, became distinguished as two different sexes, not by findings in science, Laqueur argues, but by cultural and political causes (152).

The Renaissance had produced more knowledge of female anatomy, with Renaldus Columbus and Gabriel Fallopius (whose name was given to the fallopian tubes) arguing over who “discovered” the clitoris, but these findings had still been used to support the “one-sex model” (Laqueur 64-65). The sixteenth and seventeenth centuries saw the rise of knowledge about the womb, fallopian tubes, and testicles, brought on in part by investigation into venereal diseases (Porter and Hall 67). Embryological debates prompted by arguments between “ovists” and “spermists” (see Chapter 4), and Harvey’s theory of the egg as the origin of life also produced new knowledge of anatomy (Porter and Hall 67). As Laqueur notes, it took some time for these findings to cause the downfall of the “one-sex model.”²⁶

Enlightenment thinkers had differing views of female sexuality. Eighteenth-century French writer Roussel, who disavowed the “one-sex model,” maintained, “The

²⁶ Laqueur believes the fall of the “one-sex model” to be primarily political rather than scientific, but I think we can see the emergence of the “two-sex model” as a production of both scientific and political circumstances, rather than mainly political, as Laqueur insists. The knowledge of the previous centuries’ investigations into anatomy was refreshed by the new political circumstances of the Enlightenment, which, combined, produced the “two-sex model.” The downfall of the “one-sex model” can be seen as a result of rhetorical situation. The politics of the time period provided the exigence for rethinking the previous centuries’ knowledge of anatomy and physiology and producing the “two-sex model,” much as I am arguing that the science of the nineteenth century refreshed the arguments for free love.

exterior parts of men carry a character of sensible utility; those of women seem to be nothing other than simple organs of pleasure” (qtd in Wellman 269). Rousseau differed, viewing female sex organs as designed specifically to attract men (Wellman 270). These thinkers illustrate the conflicting perceptions of female sexuality: were women slaves to pleasure because of the structure of their organs, as classical views had maintained, or were they merely passively attracting men? By the nineteenth century, scientific and medical thinkers continued to debate the nature of female sexuality (Connell and Hunt 26), producing similarly contrasting ideas of women’s sexuality.

One question vexing medical science was the nature of female pleasure and orgasm. Earlier thinkers maintained that female orgasm was required for conception, an idea that dates back to classical sources and persisted in sex manuals such as *Aristotle’s Master-piece* (1684) and Nicolas Venette’s *Tableau de L’amour Conjugal* (1686). It was towards the end of the Enlightenment that medical science converted to the view that female orgasm was not required for conception (Laqueur 3). In the 1820s, one physician noted females who conceived from rape as clear evidence that orgasm was not required, a finding that required revision of the laws concerning rape (Laqueur 162).²⁷ Many in medical communities accepted that female orgasm was not required for conception by this time.

However, because earlier theorists had defined female orgasm as, like men’s, a discharge, questions over whether women could even achieve orgasm became central in nineteenth-century discussions of sexuality. The rise of the “passionless” ideology was of course tied to social and economic factors in the nineteenth century, as has been well-

²⁷ Laqueur includes several examples of narratives that illustrate these changing ideas, as well as how rape laws often incorporated these views of orgasm and conception: it was not rape if the female conceived. See pages 1-4, and 161-162, for example.

documented. Many historians deny that nineteenth-century physicians believed that women could achieve orgasm or have sexual feelings. As we will see in the next section, however, this debate was more complex, with proponents on both sides of the question. Women in the medical and reform fields also weighed in--they even argued that while orgasm was not necessary to conception, it was necessary to women's overall health, and, as we will see in later chapters, a requirement not for conceiving any offspring, but for conceiving "superior" offspring. It would be the Enlightenment philosophies of the body surveyed here and the new divisions of the body that would serve as their support for these claims.

Into the Nineteenth Century

By the nineteenth century, much was known about female anatomy, though this knowledge could not be detached from cultural ideologies about female sexuality. Nineteenth-century medical scientists did not have clear knowledge of the exact processes of ovulation and generation--these would come later from the findings of disciplines like embryology and endocrinology. But they did understand the structure of the organs of the reproductive system and how these organs were affected by disease. Nineteenth-century physiology, while moving towards experimental methods towards the end of the century, did not produce new discoveries pertaining to sexuality,²⁸ but rather relied on older ideas. What was new about nineteenth-century sexual physiology was its application to lifestyle decisions and its presentation to the public through lectures and advice books.

²⁸ The study of physiology in the nineteenth century did produce much new knowledge on processes like respiration and other biochemical processes of the body. See Bowler and Morus (2005) and Coleman (1977).

A Public Knowledge: The Scientific and the Social in Medical Discourse on Women's Bodies

Discourses on physiology entered several different arenas in the nineteenth century as physiology became the primary discipline in medical schools, the subject of popular courses in women's colleges, and a key area of popular interest. Many reformers were especially interested in this discipline because understanding the female body gave them backing for arguments for women's rights. A wealth of resources responding to this interest arose, including lectures to popular audiences and to women's societies, textbooks and marriage manuals, and pamphlets advocating what was then called "reform physiology." These texts, written by physicians, both informed their audiences about the body and exhorted audiences to advocate women's rights. These discourses influenced many reformers, particularly free love and social purity reformers, who believed that knowledge of sexual physiology would help to free women from constricting ideologies about women's roles and also create specific reforms for the marriage system and sexual behavior.

The nineteenth-century discourses on physiology confirm that scientific values impacted social ideologies just as much as social values impacted scientific ideologies. Physicians, aware of new audiences for their texts, accommodated physiological information for lay persons, often adding specific reform purposes in these texts, and thus creating hybrid texts. While the discipline of physiology itself did not revolutionize scientific understandings of the body, the rhetoric employed in this discipline led to new ways of applying this knowledge for specific reform purposes and helped to alter the

ways the public conceptualized sexuality. This section will first examine how the term “physiology” was used in the nineteenth century in order to provide a basis for the subsequent analysis of medical discourse about women’s bodies in advice books and lectures by physicians.

“Physiology” and its Uses

The term “physiology” itself came to have multiple meanings throughout the nineteenth century, most of them associated with discussions of gender and sexuality. The term “physiology” had both scientific and cultural currency, and it often carried associations of reform ideology. Placed side by side with “anatomy,” particularly in medical texts, the term denoted the study of the body and how it works. But writers and lecturers also used “physiology” synonymously with “hygiene” and sometimes with the “natural.” It was even employed in some contexts as sexual knowledge itself. Finally, more spurious uses of the term are revealed within justifications for obscenity.

In both popular use and in many women’s colleges, “physiology” was synonymous with “hygiene.” Toby Appel (1994) has documented how a “women’s subculture” in physiology arose in women’s colleges, such as Mount Holyoke, Vassar, Smith, Wellesley, and Goucher, in the 1860s, continuing into the early 1900s. The courses offered in these colleges gradually blended the meanings of physiology as “hygiene” with physiology as a biomedical science. Physiology entered women’s colleges as hygiene and health reform that encompassed both knowledge of the human body’s organs and functions and how these functions produced health (Appel 307). Significantly, the most popular topics in these physiology and hygiene classes were sex and reproduction (Appel 307), showing how the study of physiology and hygiene seemed

primarily concerned with sexual matters. The use of “physiology” as hygiene is also evident in many medical reformers’ texts, such as physician Russell Trall’s (1866)²⁹ admonition that there will be no need for abortions or “unnatural”³⁰ birth control methods “when people will live physiologically” (213), connoting a specific way of living. The conflation of these two terms, “physiology” and “hygiene,” shows that many believed that the discipline of physiology went hand-in-hand with prescriptive rules for living, and there was little distinction between the study of the body and the study of “rules” for hygienic living (Appel 307). Thus, evoking “physiology” often meant offering advice on specific behaviors, as evidenced in the title of reformer Robert Dale Owen’s 1859 book *Moral Physiology*, which deals with both sexual behavior and birth control.

Often, “physiology” seems to be used as a synonym for “natural” in nineteenth-century texts, in order to reveal the social constructions that affect ideologies of sex and the body. For example, when Mary Gove (1846) railed against the fashion of tight lacing, she urged that fashions needed to change “in accordance with the physiological laws of our nature” (*Lectures to Women* 70), emphasizing the unnaturalness of these fashions. In addition, Dr. John M. Scudder’s *On the Reproductive Organs, and the Venereal* (1873) asserts that physiology is a “better guide than religion” on sexual matters (20). These uses of the term echo those of the social reformers who juxtaposed “natural” with “unnatural” effects on sexuality imposed by laws and the church. To live “physiologically” in this context was to acknowledge the body’s needs without interference from church guidelines that limited the body’s needs or from constricting popular practices, such as

²⁹ Russell Trall was a water-cure physician who also advocated women’s rights. See below for biography.

³⁰ He advocated what is now known as the rhythm method as a “natural” method of birth control, though his advice is wrong about the timing, since more knowledge of ovarian cycles was not available until the early twentieth century.

fashion. Emphasizing “physiology” as the guide to a natural way of living then supported specific lifestyle choices with science.

Not all writers on physiology, however, necessarily had the same meaning when they advocated “physiological” behavior. Edward Clarke’s famous argument in 1873 that educating women in the same manner as men would cause debilitating effects on their reproductive system and overall health employs the term “physiology” in several ways, using it as a noun, adjective, and adverb. When he introduces the problem of sex in education, he advocates consulting “physiology” rather than ethics (12), evoking the meanings of “physiology” as the science of the body, and as a way of living. His uses of the term also suggest the “natural,” as when he protests against “un-physiological work” (103). “Physiology” is almost personified in his text, as when he insists that “physiology protests against” co-education (127) and in his conclusion when he writes, “Physiology condemns the identical and pleads for the appropriate education of the sexes” (181). Clarke’s uses of the term show that “physiology” could be employed to justify a specific way to live, which in his case meant conforming to specific gender roles. He evokes several meanings of “physiology”: that of “physiology” as a science when he explains how the body works, “physiology” as hygiene when he advocates “a strict physiological regimen during a girl’s student life” (133), and “physiology” as a natural way of living, which would prevent actions that are deemed “unfit” for women or actions that would harm the body. To Clarke, to live “physiologically” would also mean “natural behavior”-- conforming to what the body needs--which he defines much differently than Gove and Trall. Thus, the different factions in the debate over physiology employed the term in similar ways, but with different purposes.

The term “physiology” was also associated with a specific genre of writing popular at mid-century, that of “reform physiology.” Here the term seemed to mean knowledge of sexual matters itself (Lefkowitz Horowitz 86). Trall’s 1866 advice to live “physiologically” evokes this meaning, because he is advising his readers to acquaint themselves with knowledge of physiology for purposes of birth control and family planning. After describing several methods of birth control, he then defends his dissemination of this information:

Let it be distinctly understood that I do not approve any method for preventing pregnancy except that of abstinence, nor any means for producing abortion, on the ground that is or can be in any sense [*sic*] physiological. It is only the least of two evils. When people will live physiologically, as will be seen in the succeeding chapter, there will be no need of preventative measures, nor will there then be any need for works of this kind.³¹ (Trall 213)

Trall’s first use of the term seems to connote the “natural” meaning; he is calling certain methods of birth control “unnatural.” In the second, adverbial use, he could be saying that sexual knowledge will lead to a reduction of these practices, a statement that would associate his work with “reform physiology.” The “reform physiology” genre offered specific lifestyle guidelines, such as advice on family planning and timing of sexual activity, as well as advice on diet and dress. Thus, using the term “physiology” pointed to specific reforms. When physician Mary Gove urges that teachers of young children should be “physiologists” (*Lectures to Women* 46), she is also evoking the meaning of “physiology” as sexual knowledge so that teachers can guide their students on the best

³¹ Trall often qualifies his advice on birth control.

way to live. The conflation of “physiology” with sexual knowledge then made it possible for many writers to disseminate information about birth control in the guise of “reform physiology.”

However, as the debate over dissemination of sexual knowledge became more heated, “physiology” often became linked with “obscenity.” Helen Lefkowitz Horowitz (2002) points out that some writers even marketed erotic literature by claiming that their work was “physiology,” not obscenity (272). Some medical writers were also marketing advice on birth control as scientific discussions of physiology, which drew the attention of lawmakers concerned about obscenity (Lefkowitz Horowitz 272). Texts by reform physiologists often critiqued the traditional marriage system and sometimes even endorsed free love; they consequently became threats to the status quo and challenged “obscenity” laws. Physician Frederick Hollick even went on trial in 1846 for obscenity because of his frank discussion of sexuality in his books and lectures. Since Hollick also advocated women’s right to express their sexuality, his trial illustrates how the conversation over sexuality escalated. The key focus of his trial was distinguishing illicit sexual speech from scientific medical information about the body (Haynes 557). In some cases, it seems to be the political rights they were advocating, such as rights to birth control, rather than the physiologic information they were conveying, that landed the “reform physiologists” in hot water. Since some of these “reform physiologists,” such as Thomas and Mary Gove Nichols, also advocated free love ideologies, “physiology” could then suggest a different meaning, one associated with radical ideals and persons.

The changing meanings of “physiology” in different contexts illustrate the rhetorical intersections between science and social reform. While it may seem that the

popular context for physiology differs from the scientific one found in the medical schools, they are actually similar. The writers and lecturers evoking “physiology” as a way of living, or hygiene, were taking the knowledge of medical science and anatomy and applying it to social questions of women’s rights. While the knowledge of physiology they disseminated was not particularly new to the nineteenth century, the rhetorical uses of this knowledge spurred an alliance between the scientific and the social discourse communities that began in the discourses of physiology in popular lectures and advice books.

Physiology in Medical Advice Books and Lectures

During the nineteenth century, physicians conveyed physiological information and reform ideologies through both lectures and advice books. The advice book was not a new genre, but it did undergo a new incarnation during the nineteenth century. Older advice books dating back to the seventeenth century, such as *Aristotle’s Master-piece* first published in 1684, and Nicolas Venette’s *Tableau de L’amour Conjugal*, first published in 1686 and later translated as *Conjugal Love, or the Pleasures of the Marriage Bed* in the 1780s, were still widely circulated in the first half of the nineteenth century, though they were edited to reflect the values of the time.³² *Aristotle’s Master-piece*, not written by Aristotle of course, but by an anonymous compiler, was a sex manual, but it did not contain the kind of advice popular in nineteenth-century sexual advice books since it had no advice about “proper” sexual behavior, but treated sex as the means to generation (Porter and Hall 39 and 49). Venette’s text, like *Aristotle’s Master-piece*, was less concerned with the moral dimensions of sexuality than the structure and functions of

³² Note, for example, how Venette’s text acquires the distinction of the “marriage bed” in its later translations.

the sexual organs (Porter and Hall 69), including new knowledge of reproductive organs, such as the fallopian tubes identified by Gabriele Falloppio in the 1500s. Venette, however, looked at the connection between sex and love, which foreshadows the kind of text produced by nineteenth-century physicians that both explained the reproductive organs and stressed the mental and emotional components of sex. Venette's text also reflected the attitudes of his time period, such as a belief in the similarity in the sexual appetites of males and females (Porter and Hall 76), and it even advised women on how to fake virginity (80-81). These two texts were still circulated in the nineteenth century, and for the first few decades of the century, *Aristotle's Master-piece* was widely held as the authoritative text on sexual matters (Porter and Hall 126). These two texts also preview the genre produced by physicians, but the nineteenth-century versions added a new component: advice on sexual behavior, hygiene, and lifestyle choices, as well as birth control in some texts.

Nineteenth-century medical discourse directed at public audiences often combined genres. Reform arguments seem to be a part of all of these texts, and the distinction between scientific and social ideologies often seems less clear, though it becomes more distinct in the more specialized sciences explored in future chapters. Nineteenth-century medical textbooks and advice books, such as those by physicians Russell Trall (1866), John M. Scudder (1873), and John Cowan (1889), often included sections on women's rights in their discussions of female physiology. While most of these physiology texts are primarily centered in the fact and definition stases,³³ claiming their "sole purpose is to instruct the masses of the people on those subjects which have

³³ Stasis theory comes from classical rhetorical theory, enabling a rhetor to analyze what is at issue in a given situation. The stases of fact and definition ask what the problem is and how it should be characterized, while the stasis of action asks what should be done.

hitherto been to them as a sealed book” (Trall iv), the action stasis also plays a prominent role in the purpose of these texts; physicians writing on physiology for lay audiences expected not only to change perceptions of sexuality, but also to change sexual behaviors.

The sexual physiology texts also participated in the growing debate over the existence and nature of women’s sexuality. While many in the dominant medical culture denied the sexuality of women--such as physician William Acton, whose statement that women do not have sexual feelings is often reprinted in contemporary criticism--the debate was complicated by many in the more reformist medical sects, such as those advocating water cure³⁴ and eclecticism.³⁵ These homeopathic movements³⁶ worked to distinguish themselves from the “allopaths,”³⁷ who promoted harsher drugs and surgeries; the homeopaths offered more natural remedies and advice on prevention. These homeopathic physicians also tended to “naturalize” women’s bodies and functions in contrast to the images of women as “diseased” and “defective.” Changing attitudes towards sexuality also differentiate these texts from the pre-Enlightenment sex manuals.

The following section analyzes the strategies used in nineteenth-century popular health lectures and advice books by physicians who can be identified as reform physiologists. It first interrogates the exigencies and constraints upon these texts in order to provide an analysis of the basis of their rhetoric, which affects the rhetoric of reform

³⁴ Water cure was named for this particular sect’s emphasis on drinking water and bathing as a means to maintain health. Trall, Gove Nichols, and Severance were all water cure physicians. The water cure philosophy defined women’s bodies as healthy, in contrast to some of the definitions of women’s bodies as diseased and hysteric. See Weiss and Kemble (1967), and Cayleff (1987) for more on this medical movement.

³⁵ Eclecticism combined the philosophies of allopathic and homeopathic medicines, though they seem to be associated more with homeopathic theories because of the use of small portions of drugs to relieve illness. See Nichols, “The Eclectic Medical System” (1895), and Haller, *A Profile in Alternative Medicine: The Eclectic Medical College of Cincinnati, 1845-1942* (1999).

³⁶ Homeopathic movements such as water cure and eclecticism had their own medical schools.

³⁷ The term used by homeopathic physicians to describe the dominant medical culture, or the non-homeopathic medical sects, though the “allopathic” physicians did not seem to use this name for themselves.

examined later in this chapter. It then looks at the texts of four physicians: Mary Gove Nichols, Russell Trall, Elizabeth Blackwell, and Clelia Mosher. Examining how each text conceives the body in its discussions of physiology, how each text defines women's health, and how each text positions women's sexuality shows the progression of nineteenth-century medical rhetorics of sexuality and reform.

The Rhetorical Situation of Nineteenth-Century Popular Health Texts

Popular medical texts in the nineteenth-century faced the constraints of a growing divisiveness in the medical profession caused by the increasing professionalization of the discipline as well as pressures exerted by the government on the dissemination of sexual knowledge. As medicine became more professionalized, requiring licenses by the end of the century, many physicians in the homeopathic sects and many female physicians were viewed with wariness by the new dominant medical profession. In particular, the "allopaths" criticized the increasing popularity of medical texts available to the public that not only provided information on physiology, but also empowered patients by giving them medical knowledge and encouraging them to treat themselves. In his address to the Annual Meeting of the Association of Medical Editors, on May 1, 1871, Dr. Horatio Storer, a pioneer in the field of gynecology, reacted against the increasing trends towards popularization, noting that "We would not advise every man to be his own physician" (357), as many water cure practitioners did, and that "the present extreme tendency to popularize, upon the part of our more prominent professional writers, may bring dignity and permanence of standing into jeopardy" (356). Storer's backlash shows that popularized medical theories were gaining cultural prominence, and were seen as a threat. Water cure physicians reacted to such criticism with a rhetoric of public rights, such as

Dr. Juliet Severance's argument in "The Medical Monopoly" (1901), where she advocates the right of the public to choose their own physicians and methods of healing, in the face of new laws restricting certain medical practices (*Marriage* 36). Governments also put pressure on medical popularizers, as in the 1846 trial of physician Frederick Hollick and in the laws instituted by Anthony Comstock in 1873 that prohibited "obscene" materials from being sent through the mail. Physicians then defended their right to disseminate such knowledge in their texts.

For example, John Scudder's³⁸ preface to his medical textbook *On the Reproductive Organs, and the Venereal* (1873) defends making information available to the public. A proponent of the eclectic school of medicine that combined the methods of allopathic and homeopathic medicine (or the use of surgery and drugs with the use of natural remedies) Scudder believed, like the homeopaths, in the power of physicians as teachers of the public and disseminators of physiological information. He advised his audience of medical students to promote these aims. He addresses the constraints against his purpose in the first few lines of this work:

The author begs leave to introduce this work to the reader as a plain statement of facts which deserve careful consideration. It may shock the modesty of some, but it is to be hoped that the majority may see the necessity and the great good which may grow out of this study. Physicians have manifested a degree of *mock* modesty with reference to diseases of the reproductive function, which has prevented their investigation, and turned the many sufferers over to the hands of advertising quacks and

³⁸ A physician promoting and practicing eclectic medicine, whose medical textbook, *On the Reproductive Organs, and the Venereal*, is quoted by Victoria Woodhull. See Chapter 3 for biography.

charlatans. There may be some excuse for this in the “innate” modesty of man, but the time has now come when an intelligent knowledge is demanded. (v; emphasis in original)

The call for the reader to shrug off his or her modesty seems to be a trope in many of these texts, one that seems more based in the writers’ interpretation of the reader than the actual readers; texts on “reform physiology” were often bestsellers. Scudder also asserts a kind of Bitzerian “imperfection” exigence by claiming that many physicians are not equipped to deal with problems of the sexual function and, thus, he stresses the timeliness of his work, especially in the face of increasing numbers of persons suffering from sexually-transmitted diseases. This appeal evokes a kind of “public good” exigence. In addition, recognizing some of the controversy over publishing works about sex in his insistence that his book is a “plain statement of facts,” he constructs his audience as the intelligent factions of the medical community who would not call his book “obscene” because of false modesty, a charge leveled at many books, especially in the 1870s under the watchful eye of Anthony Comstock³⁹ and his obscenity laws. Scudder would be aware of physicians who put forth the kind of information contained in his text and went on trial for obscenity, such as Frederick Hollick, who asserted more liberating views of sexuality in his popular marriage guides and lectures.⁴⁰ Scudder, whose vivid descriptions and pictures of the sexual organs may have raised the ire of the obscenity watchdogs, and whom one historian notes as the “author of two of the most sexually explicit books ever

³⁹ Comstock was a United States Postal Inspector who had the power to arrest those who broke the 1873 obscenity law he instituted.

⁴⁰ In her study of the Hollick trial, April Haynes (2003) points out, “Hollick argued that frequent sexual pleasure constituted a *physiological necessity* for all post pubescent human beings, regardless of gender or marital status, a stance that he insisted was medical but that his enemies deemed obscene” (543; emphasis in original).

to go to press in the nineteenth century” (Leach 62), constructs his audience as intelligent in contrast to those like Anthony Comstock who would call such work obscene.

Comstock, however, seemed to most frequently attack works that were too specific in their descriptions of birth control methods, so it may not be the sexual material itself that led him to label a book “obscene.”

Thus, these advice books and lectures held constraints even for men who authored them. With women physicians as authors, these constraints increased.⁴¹ However, the genre of the physiology lecture or advice book provided an opportunity these physicians could not pass up--the opportunity to recruit the public in their campaign for health. Many of these texts also promoted differing views of women’s sexuality to combat dominant ideologies, using physiology and Enlightenment conceptions of the body as support.

Mary Gove (Nichols)

Mary Gove, later Mary Gove Nichols, practiced medicine and lectured on health throughout the mid-nineteenth century. After frequent bouts of illness during her first marriage, she discovered the “water cure”⁴² philosophy advocated by Sylvester Graham, and after recovering her health, she became one of its most ardent proponents. Trained as a water cure physician, she promoted natural healing and prevention (see Chapter 1 for biography). Thus, in her lectures to audiences of women, where she often used her own life as an example, many of her explanations of how to maintain health included arguments for specific lifestyle decisions, such as how to dress and eat. She promoted a

⁴¹ Carolyn Skinner’s work has analyzed the ethos of female physicians writing in this genre, who used methods similar to Scudder’s in order to make their work acceptable.

⁴² For more on “water cure” and its connections with women’s rights, see Cayleff (1987).

women's rights agenda and urged women to take control of their own health and well-being. Her *Lectures to Women on Anatomy and Physiology*, published in 1846 and based on lectures she delivered to women's physiological societies in the 1830s and 1840s, argued for causes such as dress reform, healthy diet, education for girls, (particularly physical education) and the importance of exercise. Her advice on how to live a healthy lifestyle was intertwined with a women's rights agenda.

Each lecture is divided by parts of the body: she lectures on the formation of the bones, on muscles, and on the nervous system, where she places her discussion of sexuality. Her first lecture begins with the importance of the study of anatomy and physiology, which she later elaborates to show how mothers in particular need to be abreast of this science. She begins her first lecture with, "Whoever shall convince mankind of the necessity and importance of the study of Anatomy and Physiology, and those laws which govern life and health, will do more toward promoting the general good and happiness of our species than he would if he gave us priceless gems and gold without measure" (13). The exigence she constructs in the lectures concerns the lack of knowledge that many women have about their bodies. Gove begins her first lecture by explaining that children are falling ill due to their mothers' lack of understanding of physiology and hygiene, and that their poor diet and ill health can be passed on to their children through breastfeeding. Gove then presents herself as one who can give them the knowledge they lack in order to improve both their children's health and their own health. She says, "The end at which physiologists aim is prevention. We should live in such a manner as not to need medicine of any kind" (22), reflecting her homeopathic ideals.

Within each section of the lectures, Gove explains parts of the body and how they work, but each section also has a reform purpose buried within it. Thus, her arguments may seem less explicit than later physiology texts that argue for women's rights. For example, in the section on bones, she tells stories of quacks who can injure broken bones even more. However, she notes that women who are educated on the bones of the arm, for example, would be able to tell when a person was setting them wrong. She then moves from an argument that women should know how the bones work to an argument for women's rights: "Let woman use her energies, let her attain that moral and intellectual elevation which is her right. Let her attain that height where men cannot look down upon her, if they would... Let her nobly resolve that she will have science, that she will be no longer a plaything... When woman thus arises in the greatness of her intellectual strength, then there will be a new era in the history of our world." (49-50). In this manner, Gove's arguments for women's rights are often thrown into sections dealing with medical explanations of the body. She thus accommodates the genre of the physiology lecture or advice book to her women's rights agenda.

Gove often downplays her ethos as an expert and invites audience participation in her argument, which conforms to her agenda to have women take responsibility for their own health. Several times, she strategically underplays her role in order to let the evidence speak for itself, suggesting, "I need not attempt to demonstrate to you the truth of this assertion; your own good sense will lead you to assent to its truth at once" (15). When she provides drawings of the natural female chest to compare with a compressed one to support an argument for dress reform, she says that she will allow the drawings to speak for themselves (88). These gaps in the argument that she leaves the audience to fill

show that she empowers her audience, and thus strengthens her ethos in positioning herself as a collaborator with her audience.

In her lectures, Gove counters the idea that women are naturally weak, showing that women's physiology does not have to restrict them if they make the right choices. Instead of attributing diseases and weakness to differences in physiology, she attributes female illnesses to habits and atmosphere, arguing that women should have fresh air, exercise, and stimulation. This connection between environment and physiology was particularly emphasized during the Enlightenment, when the environment's impact on the body was intensely studied (Jordanova 162). Gove, like other nineteenth-century physicians, saw poor habits and environment as factors in ill health. She writes, "Females are more particularly victims [of disease] than males, as the customs of society deny them out-door exercise and make them, in many instances, mere dolls and pretty things" (26). Here, Gove is countering notions of women as naturally weaker, attributing illness to "customs of society" rather than to nature. Thus, for Gove ill health is something women do have control over. Her rhetoric stresses the role of the audience in making the right choices.

Using the same logic employed by physicians writing more anti-feminist arguments about physiology, Gove attempts to define the "natural" condition as a "healthy" one to make women view their bodies' functions as natural rather than "sick" or "weak." She asserts:

The science of health is based upon a sound physiology--a study of nature and the laws of life...but the conditions of health and the causes of disease are simple and easily understood: health is a natural condition; disease

unnatural. Health is simple; disease complex and difficult. Health is the result of the regular and orderly performance of the functions of life, and gives vigor and enjoyment; disease is disorder, exhaustion, and the effort of nature to overcome evil (*A Woman's Work in Water Cure* 14).

Gove Nichols's argument here relies on scientific warrants and refutes arguments that women are inherently "diseased." Her use of figures here reverses the idea that women's bodies are naturally unhealthy. Defining health as the natural state and juxtaposing it with disease as the unnatural state, she counters arguments that women's weaknesses and sicknesses are natural conditions because of their physiology. Her rhetoric here also recalls and refutes arguments that women should be restricted from certain activities because of their physiology. She defines the state of health as incorporating "vigor," so women who believe that they should be naturally weak and exhausted have an alternative definition. Disease here is positioned as an outside force rather than an innate state, joining together a more "vitalist" philosophy with the increasing focus on environment in medical texts. In contrasting the terms "disease" and "health," Gove reverses the dichotomy attempted by some physicians.

Gove also attempts to reverse misconceptions about women's sexuality in *Lectures to Women on Anatomy and Physiology*. Her discussions of sexuality within explanations of the nervous system reflect the time: she is concerned about masturbation leading to ill health and other nervous conditions.⁴³ Her later texts, though, are more explicit in their discussions of sexuality. In her novels, articles in medical journals, and treatises on marriage, Gove enumerates the harms inflicted on women within the

⁴³ Helen Lefkowitz Horowitz (2000) has examined the "anti-masturbation" genre of texts more closely. Gove often published texts in this genre aimed at both men and women. It is not until the time of Dora Forster, discussed below, that some of the stigma is removed from masturbation.

marriage system, a result of having to submit to husbands' demands and being unable to control the conceiving of children. She also notes the effects of ill health on sexuality, stating that a "healthy woman" will have strong sexual passion (*Marriage* 202). Her discussions of sexuality, and later discussions of free love, are less radical than some of the reformers examined later in this chapter, but Gove Nichols' ideas were very radical for her time and status as a physician. In fact, later arguments by radicals like Victoria Woodhull clearly owe much to Gove's rhetorical strategies in rethinking the health and sexuality of women.

Russell Trall

Russell Trall (1812-1877) was also a water cure physician, and is often identified as an adversary of Gove Nichols,⁴⁴ probably because they operated competing water cure medical schools. Born in Vernon, Connecticut, Trall earned his medical degree at Albany Medical College and practiced medicine in New York City (Garraty and Carnes 21.800). He promoted temperance, vegetarianism, dress reform, and education of women as physicians, similar to Gove and to Sylvester Graham. Trall opened the second water cure establishment in the United States in 1844, and he also founded several water cure medical schools that gave degrees to women (21.801). Trall's water cure philosophy emphasized the naturalness of women's bodies, and he became a mentor of free love reformer Juliet Severance in her water cure medical practice (Passet 126), though not in her free love ideologies—Trall condemned free love and used Mary Gove Nichols' advocacy of it against her. However, Trall's ideas on women's physiology are similar to Gove Nichols'.

⁴⁴ See Passet (2003) and Silver-Isenstadt (2002).

In his bestselling advice book, *Sexual Physiology: A Scientific and Popular Exposition of the Fundamental Problems in Sociology*, first published in 1866, Trall endorses a view of women's physiology as natural rather than "diseased" or "hysterical." Trall positions himself as a mediator between the scientific medical community and the public, seeing his work as filling a gap in the public's knowledge of sexual physiology. He claims that his book is, to his knowledge, the "first attempt to popularize, in a scientific work, the subject of Sexual Physiology" (iv). His early chapters explain anatomy and physiology, with drawings of the sex organs, while his later chapters offer more practical advice on sexual behavior and birth control, also critiquing sexual behavior as it is practiced within institutional marriage, as well as within Mormonism, Shakerism, and free love. Furthermore, a rhetoric of women's rights and of female empowerment can be found in his text.

As many historians have noted, the nineteenth century saw a rise in diagnoses of "hysteria," which was often associated with sexuality.⁴⁵ Some physicians saw women as naturally weak and prone to diseases, and defined them by their physiology, particularly their reproductive organs. Trall rejects such a definition, repeatedly emphasizing the naturalness of women's health, such as when he clarifies that pregnancy is not a "pathological condition" (133). He also espouses more liberating views in his discussion of women's orgasm. He recognizes that orgasm is not necessary for conception since women can conceive from rape (69), but adds that orgasm, while not necessary, is a benefit to women's health. If women cannot achieve orgasm or do not have sexual

⁴⁵ In Rachel Maines's (1999) study of the use of electricity and the vibrator to treat "hysteria," she asserts, "When marital sex was unsatisfying and masturbation discouraged or forbidden, female sexuality, I suggest, asserted itself through one of the few acceptable outlets: the symptoms of hysteroneurasthenic disorders" (5). Her conclusions link the rise in diagnoses of "hysteria" with prescriptive ideologies of women's sexuality.

desires, there must be something wrong with them. His views are in contrast to those who positioned sexual desires and orgasms in women as abnormal. He specifies, “The *normal* condition and exercise of the sexual organs, so far from diminishing sexual pleasure or gratification, would actually augment it” (Trall xiii; emphasis mine). He also says, “It is true that sexual orgasm on the part of the female is just as *normal* as on the part of the male” (69; emphasis mine). In both quotations, the normality of women’s sexual feelings and orgasm is stressed, in contrast to views of the “passionless” woman. Trall also notes that women can achieve multiple orgasms. For example, when critiquing Mormonism and polygamy in later chapters, he notes that women are “constitutionally better adapted” for polygamy than men because of repetition of orgasm (239-240). Thus, Trall’s premise is the naturalization of women’s bodies, which extends to their sexual organs and sexual feelings.

Trall’s manual also illustrates how these physiology textbooks advocated specific reforms as they informed the public about sexual functions. Trall’s insistence that the female should have “supreme control of her own person” aligns him with the arguments of the free love movement (xi), which used the same phrasing to show that women hold the power of deciding when and how sexual acts should occur. He also provides advice on birth control, though he specifies that he is against “unnatural” or “unphysiological” methods of birth control. However, his women’s rights agenda once again is apparent, since he, like free love advocates Victoria Woodhull and Tennessee Claflin, views birth control as an unfortunate necessity for a woman who does not have “supreme control of her own person.”

Trall's text is limited by the physiological knowledge of the time. He does not know the exact timing of the menstrual cycle, resulting in misleading advice on birth control, and he does not know about hormones--this knowledge would not come until the twentieth century. It is also not clear how sex and reproduction are differentiated by him, other than his comment that sex is not only for procreation but also a "love act" (206). The advice on sexual behavior he gives also reflects his era: sex should be a temperate indulgence, since like other behaviors, overindulgence can lead to poor health. In his social views, he acknowledges that women suffer under institutional marriage, but he does not think radical philosophies like free love will ease their suffering. His text responds, then, to several situations: the public's need to know more about the sexual organs and their functions, the mistaken view of women's bodies as "diseased" and "hysterical," the prevalence of "nervous disorders," and the public awareness of more radical philosophies, like free love. While he does not endorse their views on the solution, Trall does acknowledge that the free love advocates are right in their identification of a problem within institutional marriage--the inequality of women. To Trall, true equality for women will enable them to live more "physiologically."

Interestingly enough, Trall's *Sexual Physiology* is one of the books often mentioned in Ronald Walters' *Primers for Prudery: Sexual Advice to Victorian America* (1974; 2000). Walters picks out the quotations from Trall that would seem to support the traditional view of "Victorian repression." However, while Trall does advocate "temperate sexual indulgence" (232), not much else in his book supports such a reading. For example, while advocating "temperate sexual indulgence," Trall also says that abstinence is not always the best option for birth control since sex is also a "love act"

(206). Furthermore, his advice that women should achieve orgasm as a natural result of the sex act also counters the “prudish” reading. That the same book can be read in two very different ways (mine and Walters) shows the complexity in “Victorian” ideas about sexuality, as well as how we can find what we are looking for in many of these texts, whether we want to support a reading of “Victorian prudery” or a reading that emphasizes the more liberating views of women’s sexuality. Elizabeth Blackwell’s discussions of female sexuality have also produced contradictory readings.

Elizabeth Blackwell

Elizabeth Blackwell has always interested modern critics as the first woman to achieve prominence as a physician (see Chapter 1),⁴⁶ but her rhetoric of sexuality has also produced contradictory readings. As a member of the social purity movement, she is often read as anti-sexuality.⁴⁷ In “Sexual Ideology and Sexual Physiology in the Discourses of Sex Advice Literature,” Connell and Hunt (2006) group Blackwell’s ideas on female sexuality together with physician William Acton’s, who believed that women had no sexual feelings (Connell and Hunt 27). However, not all critics have taken this view of Blackwell’s feelings on women’s sexuality. Margaret Jackson’s 1994 study, *The Real Facts of Life: Feminism and the Politics of Sexuality c 1850-1940*, confirms my own reading of Blackwell’s rhetoric: Jackson credits Blackwell with creating a feminist model of sexuality (61). Blackwell’s discourse of female sexuality is most apparent in her 1894 book *The Human Element in Sex: Being a Medical Inquiry into the Relation of Sexual Physiology to Christian Morality by Dr. Elizabeth Blackwell*.

⁴⁶ I would not, however, call her the first woman physician--many women were practicing water cure before she entered medical school.

⁴⁷ See Engs (2000) and Connell and Hunt (2006), for example.

Countering ideas that the sexual woman is unnatural, or in some cases even pathological, Blackwell argues for the presence of female sexuality, using an evolutionary perspective to define what constitutes “natural” female sexuality. Written from “the standpoint of the Christian physiologist” (3), her essay argues that women are sexual beings. The reason that they do not outwardly appear as sexual as men, she argues, is a result of their more evolved morality concerning sexuality, a key feature of the arguments of social purity reformers who argued for the moralizing power of women’s sexuality. Like Gove Nichols and Trall, Blackwell attempted to invert the popular associations of what was natural and unnatural in terms of women’s sexuality (Jackson 64).

Far from deeming women non-sexual beings, she refutes the idea that women have less sexual feeling than men by connecting the body with the mind. First establishing the evolutionary chain, she distinguishes the sexuality of humans from animals because of humans’ more highly-evolved mental powers. Blackwell also incorporates the new physiological focus on the relationship between the mental and physical aspects of sex, a result of the Enlightenment association of sexuality with the nervous system. She asserts that women’s mentalities about sex are affected by the sentimental along with the physiological and that ideas of romance often develop stronger sexual instincts in the human female (49). She claims, however, that it is difficult to ascertain the similarity or difference in the physical responses of women and men: “Any attempt at a comparison of absolute sexual power between men and women will be found to be equally futile. The varying manifestations of the sexual faculties, as exhibited in their male and female phases, make the relative measurement of this vital force in men

and women quite impossible” (48). Consequently, she includes an analysis of the impact of the mental on the physical as her proof for the existence of sexuality in the human female.

Blackwell establishes that “the eagerness for romance” develops earlier and remains longer in the female than in the male (49). Furthermore, she points out that because of social factors, “Physical sex is a larger factor in the life of the woman, unmarried or married, than in the man” (49-50). The underlying logic here supposes that since men have more options open to them in terms of what occupies their daily lives, women think about sex more and their experiences of sex shape their experiences of life more fully. Her argument relies on both the theory of evolution and on the theory that connected feelings of sexuality to the mind. Though her purpose in defining sexuality as part of the evolutionary chain differs from the free lovers’ intentions, in positioning women’s sexuality as a moral force, she does not discount the presence of that sexuality entirely. She further highlights the causes of women who do not feel the same force of sexual instincts as men.

Blackwell and others enumerate possible causes for why women may feel diminished sexual desire or pleasure, and, in doing so, reiterate that sexual feeling in women is not unnatural. Excessive childbearing and demanding husbands were two such causes asserted by Blackwell, Trall, and Gove Nichols, a refutation argument picked up by the free love reformers to validate their critiques of sexual relations within marriage. Blackwell also points out the role of the mental condition in the experience of sexual pleasure: “Pleasure in sexual congress is an incident depending largely on mental constitution” (*The Human Element* 18). Thus, if women do not feel sexual pleasure, it

must be because the environment of the marriage system has made them mentally unable to achieve sexual pleasure. Finally, Blackwell highlights venereal disease as a factor potentially reducing the sexual desires of women (Blackwell, *Essays* 90-91).

Blackwell's refutation of the idea of the "passionless" woman does not rely on knowledge of anatomy because she does not need to--the functions of the sexual organs are understood by her audience. It does, however, rely on other ideas incorporated under the rubric of physiology: the relationship of mind and body, the positioning of sexuality within the nervous system, and the role of the mind in feelings of sexual desire and pleasure. Her refutation comes in three parts: first, that women are as sexual as men, but just more evolved to control their sexual feelings; second, that women can actually be perceived as more sexual than men since social conditions have forced them to place more weight on romantic feelings; and third, that if women do not have sexual feelings, it is a result of excessive childbearing, the oppression of the double-standard, and venereal diseases. Blackwell's text differs from Gove's and Trall's since the idea that disease comes from bad habits and "nervous conditions" is not present--Blackwell writes after the discovery of the role of bacteria in disease. Consequently, she pays less attention to the argument that humans should observe "temperance" in sexual indulgence because of diseased nerves; instead, she argues, temperance is a natural condition as a result of the higher evolution of humanity. Her text then combines ideas on sexual physiology with evolution and other concerns of her later era.

Clelia Mosher

Another reformer, writing eighty years after Gove, was physician Clelia Mosher. Her texts, while later than previous texts, are important in understanding the changing

discourse of physiology and the changing methods of medicine towards the end of the nineteenth century. Mosher's texts are also focused on refuting constricting ideologies on women, but her texts differ from the earlier ones in incorporating a new scientific focus on laboratory results as evidence. In comparing her texts to those of Gove and Blackwell, we can see how Mosher was a product of the more scientific medical training of the late nineteenth century. Mosher received medical degrees from Stanford and Johns Hopkins University. Physicians trained at Johns Hopkins during this time period were particularly committed to doing research that would aid in social reforms (Taylor 1). Mosher conducted several studies on respiration, as well as a never-published study on the sexual attitudes and behaviors of forty-five women, conducted during the late nineteenth century, a study that used the type of questionnaires that Kinsey would later become famous for (see Chapter 1). While she never published her findings, she did use them as a basis for her theories of women's health. Her texts combine the "physiology as hygiene" discipline that Toby Appel (1999) has identified with a new physiology as a biomedical science discipline. Her discourse on women's bodies and abilities also runs counter to the kind of ideas offered by physicians like Edward Clarke, who sought to restrict women due to their physiology. Within her medical arguments and hygienic arguments on the importance of diet, exercise, and dress reform, her texts had a more explicit women's rights agenda, as well as richer scientific evidence.

Mosher's 1923 text, *Woman's Physical Freedom*, shares similarities with Gove's earlier 1840s text with its emphasis on prevention and health, but Mosher's arguments go even further into the realm of women's rights than Gove's, even advocating equal pay. Reflecting the concerns of her later era, Mosher begins her advice book by noting the

contributions to the work force that women made during World War I and how physiologic knowledge has freed women by stressing the importance of diet and exercise. Her chief purpose, though, is to show that women are physically capable of equality in the workforce. Countering the idea that women's physiology justifies their inequality with men, she points out that what is holding women back from achieving true equality is the monthly pain they endure from menstruation:

The time has passed when a woman may rest on her traditional periodic incapacity and be an invalid one week out of four. The present stirring times demand women at maximum capacity for work every day in the month--fit for any work at any time; and as increased knowledge demonstrates that her periodic incapacity may be laid aside, the world recognizes that the woman may be rationally fit and at the same time economically efficient. (2)

Mosher details how many women complain of painful menstruation and explains that what they need is more knowledge about how to prevent these painful periods. She argues that menstruation and menopause, long employed as justifications to keep women from actively engaging in the workforce and other areas, are not naturally painful, and that lifestyle choices cause these natural bodily functions to become painful. Like many "reform physiologists" of the nineteenth century, she establishes that knowledge of physiology will help to free women, but her arguments rely on the evidence she has collected through her studies.

Instead of burying her reform purpose within sections that explain the parts of the body, as earlier texts had done, Mosher includes chapters on the "Changing Status of

Women” before presenting the scientific crux of her argument, the sections on menstruation. The deferential tone of earlier physiology texts by women is also gone. Unlike Gove, who had the medical expertise but modestly presented her role as bringing “the opinions of the best recent physiologists before my sisters” (*Lectures to Women* 164), Mosher accommodates her audience by relying on her own authority as a physician and the research she has conducted:

What I am about to say in regard to the function of menstruation is based on the study of more than 2,000 women during 12,000 menstrual periods. The observations and work in physiologic and hygiene laboratories have extended over a period of 30 years. May I ask you, therefore, to discard all your preconceived ideas, your sex traditions, and your individual experience, and consider judicially the statements I am about to present?
(19)

Mosher’s emphasis on numbers here reflects the status of medical research at the time and the increasing professionalization of medicine in the late nineteenth century. Thus, her arguments that blame women’s lifestyle choices rather than innate weaknesses for health problems would be especially effective for her early twentieth-century audience, since she both asserts her ethos as a medical researcher and explains her research methods. She needs to counter notions that women’s physiology justifies their inequality. Consequently, she needs to produce figures to show that women can lead productive lives and take control of their bodies’ functions.

Like Gove, Trall, and Blackwell, Mosher refutes the ideas of inherent feminine weakness, saying “Is it not possible that at least some of women’s physical

disqualifications as well, have been owing to surrounding conditions rather than inherent in her sex?" (16). Like Gove eighty years earlier, she attributes illness to "constrictive dress and inactivity" (29). Using a chart to demonstrate her ideas, she compares fashion trends to instances of women's illness: "An extraordinarily close correlation was found between the fashion of dress and the menstrual disability of women. As the skirt grew shorter and narrower and the waist grew larger, the functional health of women improved....We should rejoice in the freedom of the modern girl with her large normal waist" (30-31). Mosher, like Gove and Trall, urges women to take responsibility for their own health and well-being, since her research shows that "many of the disabilities of menstruation and the change of life are due to removable and preventable causes, viz., bad hygiene" (50). Mosher argues that women cannot achieve equal pay with men until they are shown capable of equal work. Consequently, she says, "Equal pay for women means equal work; unnecessary menstrual absences mean less than full work" (39). Thus, she reinforces the idea that women are capable and that their physiology does not have to restrict them. Her text serves as a representation of how the rhetoric of women's physiology evolved.

Some of Mosher's arguments can be seen as a direct response to the ideas of past physicians who attempted to limit women's activities, and some of her arguments even recall those of Edward Clarke:

Only yesterday women went to college at great personal sacrifice. And dire were the predictions of the evil results to her health and to the race. Characterized as "hermaphrodite in mind," and "divested of her sex," the college woman failed to develop the anticipated evils. She was found to be

rather healthier than her sisters who did not go to college, to marry as other women of her class, and to bear a rather larger number of healthy children. (14)

She also quotes several students from Vassar College, where Clarke had reportedly drawn the subjects of his study. Mosher had published several articles in the decades after Clarke's 1873 book that dealt with similar subjects. By quoting women from Vassar College who say that they do not experience pain during menstruation unless they do not exercise enough, Mosher recalls Clarke's conclusions from his study. Though she does not refute him and his ideas explicitly, some of her rhetorical strategies--such as emphasizing the role of educated women and quoting college graduates who did not experience ill health from their education, mentioning Vassar, and mentioning the number of women in her study--are a direct response to Clarke, whose study, by the way, included a very small number of participants.⁴⁸ Consequently, Mosher's arguments for women's physical capabilities and rights sum up the lengthy debates about women's physiology and their social roles throughout the nineteenth century.

In addition to refuting the idea that women were controlled and therefore restricted by their physiology, and proposing that women's natural state was health, Mosher's work is important to understanding the growing study of women's sexuality. Her survey of women on their beliefs about sex and their sexual practices, begun in the nineteenth century, is used as evidence by Carl Degler (1974) to show that "Victorian" ideas of sexuality were much more complicated than the standard "prudery" reading. In this study, Mosher asked about the knowledge these women had about sexual physiology

⁴⁸ British physician Elizabeth Garrett Anderson also challenged the depth of Clarke's research in *The Fortnightly Review's* ongoing discussion of Clarke's work in 1874.

before marriage and where they had learned it: many replied with names of sexual physiology texts, like Trall's. She also asked what they felt the chief purpose of sex was and whether/how often they achieved "venereal orgasm" (*The Mosher Study*). While she did not publish any conclusions from her study, the questions themselves reveal the status of ideas on women's sexuality: she assumed that women had knowledge of sexual physiology at this point; she acknowledged that there was a difference of opinion on the primary purpose of sex, whether it was procreation, an expression of love, or a means to pleasure--which shows that sexual ideologies had gone beyond merely viewing sex as a means to generation; and she distinguishes between "venereal orgasm" and simple "orgasm." Thus Mosher's text shows a more complex understanding of women's physiology and her research proves that physicians were beginning to view sex as a subject worthy of study for its own sake.⁴⁹

Physicians' Advice on Sex

The physiology texts examined here show how women's health and women's sexuality were often intertwined. They also offer differing advice on sexuality: most urge temperate indulgence in sex, but they also validate the role of women's pleasure in the sexual act. Physicians were becoming the authority on sexual matters, replacing the moral authority of the church (Gordon 171). As physician John Scudder notes in the section of his sex textbook entitled "Physiology a Better Guide than Religion,"

Physiology is the best guide to a correct understanding of this subject. If we can understand clearly the demand made by the reproductive instincts, how they may be exercised for the good of the individual and the species,

⁴⁹ See Vern Bullough's (1994) work on the development of "sexology" in the early twentieth century.

how they may be controlled by calling into action other functions of the body and mind, we will be in a better position to guide and control them.

(20)

When they read the physiological works of Gove, Trall, Scudder, and Blackwell, nineteenth-century free love reformers saw their experiences as valid to the scientific study of sex. Reformers also relied less on moral guidelines for sexual activity and instead used the language of this physiology discourse. However, it is important to note that their participation in discourses of physiology is not uni-directional. For example, many physicians also responded to the ideas raised by the free love reformers, such as Trall who sees free love as a theory “agitating the public mind” (x), and who then uses these new theories as an exigence to provide a more medical discussion of physiology in his text. Furthermore, historians have noted that more liberating ideas of female sexuality emerged at mid-century (Kern 95), the same time that free love ideology gained prominence. Thus, reading popularizations of physiology and free love arguments alongside each other shows the multi-faceted nature of the conversations over sexuality and offers insight into the specific rhetorical strategies based in science used in free love arguments for sexual choice and pleasure as vital to women’s health.

Free Love as the Answer: The Argument for Women’s Sexuality and Women’s Health

Reading the rhetoric of the free love movement in light of the discussions of sexual physiology occurring in the medical community, we can see how science provided the basis for their arguments that free love can help to secure women’s health. Writers and lecturers on free love often capitalized on the cultural currency of medical science to

support their arguments for women's sexual freedom and increased sex education. Recognizing that the medical community was the authority on sexual matters, they often aligned themselves with such discourse, either implicitly or explicitly. Implicitly, the warrants for some of their arguments about women's sexuality were based on the scientific discussions of the body occurring in the medical community. Explicitly, they often filled the gaps left in the arguments of the medical community and positioned themselves in a reciprocal relationship with this other discourse community; they not only refuted some of the more constricting ideas about women's physiology, but also based some of their arguments on evidence and warrants produced by physiology texts. Free love rhetors thus have a unique role in the transfer of medical information to the public because they also used popularized scientific arguments for their radical reforms.

While some historians have been baffled by what seems to be the unique rhetoric of the free love movement, we can see that they situated themselves within the discourses on sexual physiology occurring at the time. Mary Gove Nichols' treatise on marriage, Victoria Woodhull's 1873 and 1874 speeches on free love, Hulda Potter-Loomis's 1890s pamphlet on social freedom, and Dora Forster's 1905 treatise on sex radicalism converse with the medical community's arguments on women's sexuality as they argue for women's rights. In arguments for sex education and for the role of women's sexual pleasure to women's health and women's rights, these texts rely on the discourses created by "reform physiology."

Mary Gove Nichols

As both a physician lecturing and writing on women's physiology and a free love advocate, Mary Gove Nichols asserted a strong ethos to speak about sexual matters,

which she did in several genres: medical lectures, articles in water cure journals, novels, and free love treatises. While my previous analysis focused on her arguments in the medical genre, this section will focus on her writings on marriage and free love. As a novelist, Gove Nichols critiqued the institution of marriage and its effects on the health of women in a fictionalized, yet highly autobiographical novel, *Mary Lyndon* (1855).⁵⁰ This novel traces the life of a heroine who suffers under the constraints of the marriage system, and whose ill health is a result not of her “weaker” physiology, but of a system that keeps her confined to the home in a sedentary lifestyle and that views her body as her husband’s property. Gove Nichols espouses similar ideas in her 1854 treatise on *Marriage: Its History, Character, and Results; its Sanctities, and its Profanities; its Science and its Facts. Demonstrating its Influence, as a Civilized Institution, of the Happiness of the Individual and the Progress of the Race*, written in collaboration with her second husband Thomas L. Nichols, though her contributions are clearly distinguished from his. In her sections she often uses narratives from her own life and from her patients’ lives to illustrate the harms done to women under the marriage system. The solution, she argues, is a more active lifestyle, sex education, and woman’s “ownership” of her own body through free love rather than marriage.

Gove Nichols blames the marital institution for the “obliteration of the maternal and sexual instincts in woman” (“Murders” 304). In her argument, she invokes the image of “diseased nerves” in a woman, brought on by the “enslaved and unhealthy condition in which she lives” (304). For Gove Nichols, the “slavery” of the marriage system leads to depravities, one of which is masturbation, a connection that aligns her with many in the

⁵⁰ For a more in-depth reading of Gove Nichols’ novel, see Keetley (2000), who connects the themes in the novel to Gove Nichols’ medical and free love writing.

medical profession who posit masturbation as a cause of “diseased nerves,” coming out of the link between the nervous system and sexuality. However, she argues that healthy nerves will lead to a healthy sexual life and overall healthy body: “The truth is that healthy nerves give pleasure in the ultimates of love with no respect to sex; and the same exhausted and diseased nerves, that deny to woman the pleasures of love, give her the dreadful pangs of childbirth” (304). She is careful to emphasize here that “diseased nerves” can affect either sex and that both sexes have the capacity to experience pleasure if they have “healthy nerves.” Thus, she participates in the growing dialogue on the capacity for pleasure in women, showing that healthy women can achieve such pleasure.

In addition, Gove Nichols attacks the standard of “purity” that would have women believe that sexual desires and pleasures are abnormal. She attributes such falsity to clergy and physicians who perpetuate such a stereotype, relating the story of a woman with a “nervous” condition caused by “solitary vice,” or masturbation: “Her standard of purity was that unconsciously adopted by the Church and the world, that a woman should be ‘chaste as ice’; that there should be no attraction felt by her, or, at least, manifested for the masculine principle; that all such attraction derogates from feminine purity and propriety. This lady, as hundreds of others have done, brought her disease and false virtue to me” (“Murders” 305). This argument previews later free love arguments, such as Victoria Woodhull’s, which redefine “purity” and “virtue” and posit the lack of sexual feelings and pleasure as “disease.”

Finally, Gove Nichols also counters some of the ideas of the dominant medical culture, such as William Acton’s, that women’s desire for sex springs out of maternal

desire, rather than a desire for pleasure. She differentiates between sexuality and reproduction:

There is an idea prevalent, that the ultimation [*sic*] of love in the sexual union, is intended solely for the production of offspring. There is no physiological foundation for this belief. The desire for the sexual union, is not adapted to, or governed by, this result in man or in woman.... In woman the maternal function ceases at the age of forty-five or fifty, but the desire to love, and the faculty of enjoying the sexual embrace continues to a much later period. (*Marriage* 365).

Gove Nichols' logic here, though not using women's anatomy for support, is based on physiologic ideas dating from the Enlightenment and reinforced in nineteenth-century discussions of physiology. She uses simple logic, showing that women who can no longer have children still desire sex. Her argument on the importance of love to sexuality in women, a result of the nineteenth-century focus on the companionate marriage, previews Elizabeth Blackwell's later logic. By placing love at the center of sexuality and as the basis for sexual union between men and women, Gove Nichols supports an argument for free love. Without this love between partners, in addition to knowledge of sex and ownership of her own body, marriage will continue to have ill effects on women's health. This argument for free love as the "physiological" or natural state continues in Victoria Woodhull's later, and much more radical, rhetoric.

Victoria Woodhull

Victoria Woodhull is more specific both in enumerating the values of increased sex education and in using the benefits to women's health as an argument for free love.

Her 1873 speech *The Elixir of Life; Or, Why Do We Die*, given to an audience of spiritualists, and her 1874 speech *Tried as by Fire: or, The True and the False Socially*, given on a lecture tour to various audiences, elaborate her free love philosophy. Her arguments for sex education and for free love owe much to the debates over women's physiology--even the anti-feminist views in that discourse. Woodhull takes the logic of women's "diseased" and "nervous" conditions perpetuated by anti-feminist medical practitioners to support an argument for the importance of sexual pleasure and free love to women's health.

Woodhull's sex education arguments are indebted to the rhetoric the "reform physiologists" used in defending their texts. She advocates sexual education starting in childhood, ensuring that children will be knowledgeable about sex before their sexuality awakens (*Tried as by Fire* 16). She would have this education extend into adulthood, as she blames ignorance of their bodies for many of the trials women suffer in the institution of marriage. Listing the tragedies that result from women's ignorance of their bodies, her argument focuses on the consequences of this lack of knowledge to child-bearing, and she recounts the increasing number of deaths of infants and infertility caused by sexual diseases (*Tried as by Fire* 32-33). In the 1870s, her argument that increased sex education is needed had timely and urgent exigence (see Chapter 3). Woodhull also links sexual knowledge to sexual pleasure, explaining that women who know more about their bodies will achieve increased sexual pleasure (*Tried as by Fire* 15 and 43). Both Woodhull and Mary Gove Nichols use similar strategies in positioning lack of sexual knowledge as dangerous, not the knowledge itself. Their arguments not only reflect the exigence for their discussion of sexual matters, but also pick up on a recurring trope in

many “reform physiology” texts. Both the “reform physiology” texts and free love texts envisioned a public unaware of sexual physiology, an ignorance that resulted in propensity for disease. Both communities aimed to present sexual knowledge to the public, a subject that has “hitherto been to them as a sealed book” (Trall iv). Imagining their purpose as a civic duty, both medical and lay authors constructed a public ignorant of scientific sexuality in their rhetoric, an ignorance resulting from “false modesty,” a phrase used by both physician John M. Scudder and Victoria Woodhull.

Woodhull shames the “newspapers,” “preachers, teachers, and doctors” for the ignorance of sexuality that many women have (*Elixir* and *Tried*), but she does not repudiate all doctors. She singles out Scudder, whose works she clearly read, as a “large-hearted man and widely-experienced physician” (*Tried* 43). Her strategy is similar to other sex radicals who attempt to chastise physicians for certain ignorant practices but also try to build a bridge to them. For Woodhull, sex education should be under the provenance of doctors, but doctors’ inability to move beyond “false modesty” necessitates reformers’ discourses on the topic. Indeed, speeches on free love often overlapped in phrasing and strategies with “reform physiology” texts.

Woodhull’s use of medical discourse is apparent in her *Tried as by Fire* speech, as she quotes Scudder directly and even endorses his book as one that every woman should read. The influence of medical discourses in general can be seen in some of the phrases she uses, such as “mock modesty,” but also in her argument that marriage restricts the sexual instincts of individuals. Whether or not Scudder himself explicitly engaged in conversation with her and other sex radicals is not known, but his book does invoke rhetoric often used by sex radicals even before the time of its publication. In *Tried*

as by Fire, Woodhull uses a quotation from Scudder's medical text to tie together her three main arguments towards the end of the speech: that relationships between men and women should be based on mutual love and desire rather than economic security, should involve women who are knowledgeable about their own bodies and sexuality, and should allow women ownership and control of their sexual organs. Woodhull argues that the problems women experience under the control of their husbands will be remedied by this "free love" system. Woodhull quotes Scudder saying, "The wife should not lose control of her person in marriage. It is hers to rule supreme in this regard. This is a law of life, and is violated in no species except in man" (Scudder 62; qtd in Woodhull, *Tried*, 43). Her quotation gives medio-scientific authority to her argument that the woman should have "ownership and control of her sexual organs."

The feminist theories of sexuality as related to overall health also draw on some of the debates in the medical community over women's sexuality. In *The Elixir of Life; Or, Why Do We Die* (1873), Woodhull employs a similar rhetorical tactic to the medical community in positioning sexuality as a natural sign of health: "It is an axiom in the medical profession that the patient who experiences sexual desire is not dangerously ill; and also that the patient who has been dangerously ill is convalescent when sexual desire returns. Thus it is held that the presence of the sexual appetite is a symptom of health" (5-6). Here, she emphasizes that sexual desire is normal and natural in women, and echoes the logic of Trall, Blackwell, and Gove Nichols in showing that those without sexual desires must be suffering from ill health.

Woodhull also appropriates some of the logic of the physicians who find a correlation between sexuality and "hysteria" or other nervous conditions when she says

that “If health depends upon proper sexuality, it follows that disease follows from improper sexuality” (*Elixir of Life* 6). She, however, takes this logic even further, attributing all disease to sexual conditions (6). Such logic takes its start in the medical profession, but then changes to support more radical feminist arguments. For example, the arguments from the medical community that women’s health was based in their sexual and reproductive organs were then used in free love texts as the warrant for why women should have pleasurable sex. If their sexual and reproductive organs rule their physiology, free love feminists like Woodhull contend that more attention should be paid to exercising and stimulating those organs to prevent negative consequences to health.

Furthermore, the type of argument employed by physician John M. Scudder is extended in these free love arguments, such as when he argues that

If the act is complete, so that both body and mind are satisfied, no disease arises, though there be frequent repetitions; but if the act be incomplete, the organs being irritated merely, and the mind not satisfied, then disease will surely follow. There is no doubt that the proper gratification of the function is conducive to health and longevity; or that its abuse leads to disease and shortens life. (42-43)

This passage is quoted by Woodhull as support for free love in her *Tried as by Fire* (1874) speech. Thus, while Woodhull’s arguments that unsatisfying sex leads to disease may seem unusual, they actually repeat arguments made in medical writing of the time. Therefore, the argument that women are controlled by their physiology could be used for feminist ends, as well as the anti-feminist end usually noted.

Woodhull claims a firm scientific basis for her argument that women are entitled to sexual pleasure because the lack of such pleasure will lead to ill health. For example, she reprimands husbands who ignore their wives' pleasure and connects their indifference with the poor health of women:

I need not explain to any woman the effects of unconsummated intercourse though she may attempt to deceive herself about it; but every man needs to have it thundered in his ears until he wakes to the fact that he is not the only party to the act, and that the other party demands a return for all that he receives; demands that shall not be enriched at her expense; demands that he shall not, either from ignorance or selfish desire, carry her impulse forward on its mission only to cast it backward with the mission unfulfilled, to prostrate the impelling power to breed nervous disorder or irritability and sexual demoralization, and to sow the seeds of disease broadcast among humanity. (*Elixir 7*)

While Woodhull begins this diatribe with a kind of legal language, she ends by evoking arguments that unsatisfied sexuality breeds nervous disabilities. She seems to be entering the gap found in the contradictions that ran rampant in the medical community over women and "nervous" disorders to fulfill her own agenda. In the same speech, she later speaks of her conversation with a member of the New York College of Physicians, who agrees on the harmful effects for women who do not experience pleasure during sex. While in this particular speech and some others, she merely reports that she has consulted physicians who agree with her propositions, she also quotes directly from physicians' theories as backing in her other arguments.

Woodhull's often flamboyant rhetoric has clear connections with the discourses on "reform physiology": she exploits the focus on informing the public of sexual physiology to argue for her own brand of sex education; she relies on the connection between sexuality and the nervous system in positioning sex as integral to women's health; she quotes specific doctors who see women's health as a women's rights issue; and she turns sexual pleasure into a right of women. Thus, she offers free love, where women are free to choose partners and sexual conditions, as the answer to many of the problems befalling women in the marriage system and to much of the ill health of women.

Hulda Potter-Loomis

Like Woodhull, Hulda Potter-Loomis uses her 1890s pamphlet on *Social Freedom: The Most Important Factor in Human Evolution* to argue for free love as the answer to the problem of the higher evolution of the species, and within this treatise, she advocates more open discussion of sex, taking a physiological point of view in her repudiation of the "false teaching" of the church on sexuality (3). Originally a speech she was asked to give by the Social Science League of Chicago and then revised for publication in the free love periodical *Lucifer, The Light-Bearer* and in pamphlet form, this treatise aims for a more scientific study of the question of sexuality to refute the "custom of institutional marriage with all of the false ideas connected with it" (4). Like physician John Scudder, she views medical science as the antidote to the "false" morality perpetuated by church and state.

One impediment to correcting "false" ideas of sex, Potter-Loomis contends, is the lack of knowledge many have about sex. Since sex is not discussed openly and

“scientifically,” this lack of knowledge will continue. She argues, instead, open discussion of sexuality from an early age would help society advance “because each individual would be taught from childhood that the sex organs were not vile and unclean and that they were worthy of all respect and considerations” (17). She urges people to talk as freely about the sex organs as they do about the heart and the liver (17). This comparison between sexual organs and other, less “secret” parts of the body was popular within free love discourse, leading into arguments connecting sexual appetite with an appetite for food. For example, Potter-Loomis states that human desire should govern choices in sex, just as appetite determines choices of food (14). Thus, both appetites are positioned as “natural” ones requiring gratification.

Potter-Loomis is also indebted to the “reform physiologists” for promoting open discussion of sexuality and enabling an understanding of the body and its processes. Like Woodhull, Potter-Loomis exploits the connection between sexuality and overall health that were most often put to anti-feminist uses. She points out that physicians and scientists find a correlation between insanity and “restrained or restricted” sexual desire (6). These arguments are based on the connection of sexuality with the nervous system and also on the knowledge that healthy women do have strong sexual desires. She also makes seemingly self-evident statements, --i.e., “the sex organs are wisely intended for use other than merely to propagate the species” (3) that assume the understanding the sex organs achieved by nineteenth-century physiologists and by physicians who noted that reproduction is an end, but not necessarily the sole purpose of sexual unions (Scudder 35). The proliferation of texts explaining how the body works then gave support to arguments for free love. Knowledge of how women achieved sexual pleasure and how

these functions remained after the ability to reproduce ends gave free love arguments a firm scientific warrant, and free love reformers like Potter-Loomis then took these arguments even further into the realm of reform than the medical writers on physiology had. Potter-Loomis, like Dora Forster, found a gap in the medical discourse--the question of women's lived experiences--and entered it with the solution of free love.

Dora Forster

Dora Forster's⁵¹ call for free love reform in her 1905 treatise, *Sex Radicalism as seen by an Emancipated Woman of the New Time* has a stronger scientific bias. Forster calls for an alliance between physicians and free love thinkers. She begins by critiquing some physicians in her chapter entitled "Who Are Our Teachers," but also tries not to blame physicians for their focus on disease rather than health: "Sex radicals must study their subject for themselves. On the physiological side of the sex problem, I believe medical men can and will be our friends as soon as we encourage them to do so. The public will have health-doctors, instead of, or as well as, disease doctors, just as soon as it genuinely desires them; and those who want sex-science will get it" (Forster 9). This statement is a call for more explicit collaboration with physicians. Forster, like Gove Nichols and others before her, sees the radical free lovers as "students of the facts of sex" (Forster 13), with physiologists and other medical scientists as their teachers. Forster points out that many questions have gone unanswered about sex and sexual feelings, and she hopes that women and medical scientists can work together to discover the "truth" about sexuality.

⁵¹ I was unable to find any biographical information on Forster, whose work appears in files with other texts published by Moses Harman, the editor of the free love periodical *Lucifer, The Light Bearer*.

Forster calls for such an alliance between science and women because women have the everyday experiences that can then be analyzed with “the highest reasoning and the most careful deductions of science” (6). Like the free love advocates before her, she urges training in science for lay people rather than training in religion in order to fully understand sexuality (8). Thus, she advocates the approach popular with physicians like John M. Scudder that “physiology [is] a better guide than religion” on sexual practices. She confirms Linda Gordon’s (1977) theory that science was replacing the church as the authority on sexual matters (171) in her statement that “thoughtful people are earnestly desiring a science of sex as a guide to conduct” (Forster 38). In terms of “What Must We Learn in Health Science,” the heading of her next chapter after “Who Are Our Teachers,” she critiques the “Puritan sex system” that has distorted the natural forms of sexual expression and influenced physicians writing on the topic (10-11). She mentions Thomas Nichols’ and Alice Stockham’s⁵² sexual physiology texts, saying that information has been made available to the public, but that much of the information is too influenced by social mores (10). Instead, she says, students of physiology need to inquire more about the facts of sex, such as at what age sexual feelings are developed, and cease calling the “natural” habit of masturbation the “solitary vice,” which she deems an “unscientific” term employed by many in the medical profession (11-12). These views were also endorsed by physician Havelock Ellis, writing at the same time as Forster.

Finally, Forster argues that science will show the public the “evils of celibacy” (23) and teach that both men and women should have freedom, choice, and pleasure in sexual relations. In making this argument, she must address the question of women’s

⁵² A physician who advocated continence, or refrain from orgasm, for both males and females in her treatise on sex.

sexual feelings. She picks up on the type of argument made by Mary Gove Nichols when she refutes a “maternal instinct,” saying, “This feeling is never experienced at the same moment as sex passion, though exceptionally strong manifestations of passion may indicate to the reasoning woman a favorable period for propagation” (41). She attempts to refute the notion that sexual desires are connected with maternal feelings, using the same logic as Gove Nichols: that the sex drive lasts longer than “procreative power” (Forster 41). While it would be some time before sexuality and reproduction were divorced in many medical discourses, reformers employed simple logic to accomplish this task, a necessity to arguing for sexual freedom for women.

Free Love and Physiology

The medical community contained adherents of feminist and anti-feminist views of women’s physiology, but the discourse of free love reformers shows that both the anti-feminist and the feminist discourse of medical writers could be put to feminist ends. The focus on what women were capable of, and how their reproductive and sexual organs controlled their physiology, then became a reason why women should practice free love--for better health. The recommendations for sex education and sexual pleasure in physiology texts also became a primary tenet of free love ideology. Finally, their ideas on the relationship of sexuality to the individual, the effects of sex on the mind and on the body, and the causes of disease as an outside energy or force wreaking havoc on the nerves show the influence of Enlightenment ideas on sexuality that were also influential to the medical discourses on sex at the time. These medical discourses provided the exigence and the warrants enabling women to participate in the debate over their sexuality and asserting sexual rights for women. As Juliet Severance, whose quotation

opens this chapter, shows, a healthy, sexual, and equal relationship between partners was seen as one of the qualifications for good hygiene that will maintain the body's physiology.

Conclusion

The conversations and debates over physiology throughout the nineteenth century represent the first step in the quest for the “truth” about sexuality in various discourse communities. In his *History of Sexuality*, Michel Foucault (1978) notes that in the nineteenth-century discourses on sex, “sex was constituted as a problem of truth” (1.56). The way that some physicians and reformers discussed physiology as a problem of “nature” or of “truth” supports this view. Trall, for instance, contends that the various factions discussing sex prove that “the problem of the true sexual relations is not yet fully understood” (x). Similarly, physician and free love advocate Juliet Severance (1891) urges that discussions of sex should take a scientific approach in both method and viewpoint: “Then let this and all other subjects receive careful, thorough, and impartial discussion and analysis. In this way we will show ourselves scientific investigators instead of bigoted ignoramuses” (*A Discussion* 11). By situating sex as a problem of scientific investigation, both the medical and activist discourse communities aimed to bridge experience, or lifestyles, with science. The discussions in the discourse of physiology illustrate this tendency, as they applied knowledge about the body to lifestyle decisions as the first step in creating a science of sexuality.

Foucault identifies the “confession” (or “case study” as we would now call it) as a scientific method in medicine of the nineteenth century. Mosher attempted to let the female subjects of her sex study speak for themselves, and used the nineteenth-century

female physicians' popular practice of collecting the "heart history" of patients (Wells 28-34). Feminist reformers thought that they had something to offer to the discussion over physiology, and the medical profession's practice of patient observations and histories validated these tendencies. In the discourse of physiology, knowledge of the body was the first step to understanding women's sexuality in arguing for specific lifestyles; likewise, the discussion over lifestyles also added to the conversation over physiology. The relationship between the medical and lay writers on physiology was then reciprocal, but this relationship changed as scientific understandings of the body changed in other disciplines. While physiology was the site for the questions about sexuality throughout the early and mid-nineteenth century, scientific discoveries would make these questions more specialized in the late-nineteenth and early twentieth centuries. Thus, the "sex-science" called for by free love advocates was eventually achieved, but was it the science they wanted?

Chapter 3: Bacteriology

I have been 'the thing called a wife,' having no individuality, no spontaneity. I have suffered a degradation that the Church and the world call purity and virtue. I have borne children in torture that the rack could no more than equal. I have had abortions and miscarriages that were as truly murders as if my infants had been strangled, or had had their brains beaten out, by a brutal father. I have had my life drained away by uterine hemorrhage, and worse than all, I have had the canker of utter loathing and abhorrence forever eating in my heart, and for one who was, like the frogs of Egypt, sharing my bedroom and spoiling my food. And yet he too was a victim of a system, and a diseased brain and body. He believed that a wife should obey her husband, and his morbid impulses forced him to ask a deathly obedience. (Nichols, Marriage 265)

When free love advocate and physician Mary Gove Nichols critiqued the institution of marriage in 1854, she invoked the metaphor of a diseased institution, and blamed the marriage system for many of the illnesses befalling women. By the late nineteenth century, many in the medical and sexual reform movements would agree with her critique, but their arguments would be refreshed, set in a new rhetorical situation created by new warrants from science, giving new meaning to the characterization of marriage as a source of disease for women. Major breakthroughs in the scientific community in the late nineteenth century reconfigured the rhetoric on marriage and sexuality. One of these breakthroughs was the discovery of bacteria and their relationship to disease causation. This new knowledge produced new discourses and images in the

scientific, medical, and private spheres: soap advertisements with militaristic metaphors to describe the act of washing; “A Course in Scientific Shopping” in the pages of *Good Housekeeping*; advertisements for household products and “home protection”; the rounding up of prostitutes to check for disease; and the crowds of immigrants examined at Ellis Island. From the man of science bending over his microscope in the laboratory, to the housewife making her kitchen germ free, to the reformer promoting sex education, the discourse of bacteriology traveled through many different communities in the late nineteenth and early twentieth centuries.

One of these discourse communities was the sexual reform movement. Once bacteria were determined as the causal agent of venereal diseases, a shift occurred in how women’s sexuality was conceived by the medical and lay reform communities. Old myths were dispelled. No longer were women considered inherently diseased or given the sole blame for the transmission of venereal disease. And no longer was marriage considered a safe haven from venereal disease. The usefulness of the science of bacteriology in social purity and free love discourse illustrates how nineteenth-century scientific discourses were applied to feminist ends and shows how science could produce positive reforms for women.

For social purists, such as Elizabeth Blackwell and Frances Willard, who argued for the elimination of a double standard that repressed female sexuality but encouraged male sexual license, the findings in science provided the warrant that the responsibility for venereal disease was shared. For free love advocates, such as Hulda Potter-Loomis, Victoria Woodhull, and Angela Heywood, who argued against marriage as an institution that degrades women and for the abolition of institutional marriage, the findings in

bacteriology proved that marriage could not protect women and that the institution itself fostered disease. Finally, for birth control advocates, such as Margaret Sanger, the findings in science provided the exigence for sex education reform goals and justified giving information to young women that had previously been kept from them.

While in some of these cases the involvement of science was less explicit, looking at the social movements' rhetorical strategies against the backdrop of science shows how bacteriology helped to create a specific rhetorical situation and warrants for discussions of sexuality. The discourse surrounding venereal disease transformed from a discourse of morality to a discourse of public health, emphasizing human agency in stopping the spread of disease. This "rhetoric of responsibility" that emerged in feminist discourse based in scientific and medical discoveries literalized the metaphors of the clean body and the "diseased" institution of marriage. This chapter elaborates the key role of these new sources of argument in the discourses traveling from scientists, to medical writers, to feminist reformers.

This chapter first examines the new knowledge created by the sciences and how bacteriology helped to eliminate older ideas about venereal disease in particular. It then analyzes the discourse of venereal disease in three medical texts aimed at broader audiences to show the progression from the older ideas to the new discourse. These medical texts helped to generate the reform discourses also found in feminist texts. Next, the chapter reviews the social implications of the germ theory of disease and how public reception of bacteriology implied a new rhetoric of agency and responsibility, leading to reforms in the name of protecting women. It then analyzes the discourses of sexuality deployed by feminist advocates for social purity and free love and how these discourses

were influenced by the new dimensions of the rhetorical situation created by scientific discoveries. Finally, it examines a later text from the birth control movement in order to show the concrete influence of science to the more recent early twentieth-century discourses of disease.

The Warrant Established: Bacterial Agents of Venereal Disease

While most applications of the germ theory, such as vaccinations for multiple diseases and pharmaceutical cures, would not be developed until the twentieth century, the germ theory altered both health practices and the discourse of disease in the late nineteenth century. Older ideas of disease posited no single cause, and many physicians believed that people could catch the same disease from different causes (Waller 3). Everything from humoral theory, to heredity, to physiological weaknesses, to poor habits, to contaminated air and water were blamed for disease. As the previous chapter shows, many nineteenth-century physicians focused on diseases as a fault of the nervous system or a lack of “vital” energy. By the late nineteenth century, however, not all diseases were considered a fault of the body--germ theory provided an external agent to fight. Venereal diseases, in particular, once conceived as punishment for immorality, became linked to the germ theory of disease.

The Making of A New Science

The history of bacteriology begins earlier than the nineteenth century, as far back as the seventeenth century, when Anthony van Leeuwenhoek observed what he called “little animals” in his microscope. His work was followed by Lazzaro Spallanzani’s, who proved that these “little animals” could not survive boiling water (de Kruif 35). Both of

these men laid the groundwork for later findings. Scientists were now aware of these microscopic organisms, but had yet to connect them with diseases. Louis Pasteur's work would be integral to producing a new generation of "microbe hunters."

Pasteur (1822-1895) is one of many scientists whose early life did not forecast the valuable contributions he would make to science. Not a strong student but a good painter and orator, Pasteur had intended a career in the fine arts (Porter and Ogilvie 746). While studying at the Ecole Normale Superieure in Paris, he became interested in chemistry, and received his doctorate in chemistry in 1847. During his tenure at Lille University in 1863, Pasteur was asked by local merchants to research the process of fermentation to solve their problems in wine and beer making. Pasteur then discovered the importance of yeast to the process of fermentation and showed how specific yeasts were needed for specific wines. It was during this time that he also developed the process called "Pasteurization," or the heating process used to kill the yeast organisms (Porter and Ogilvie 746-747). In noting the effects of microorganisms on substances, Pasteur then began to associate these microbes with disease causation. Pasteur's 1859 paper theorizing germs as the cause of disease resonated with many in the scientific community, prompting scientists to try to isolate the germs responsible for certain diseases.

Another request from the merchant community led Pasteur to his next important study. In the 1860s, he was asked by the government to investigate the disease killing silkworms that was wreaking havoc on the silk industry (Porter and Ogilvie 747). In 1868, he announced his discovery of the parasite causing this disease in silkworms, which prompted him to pursue further investigations into disease-causing agents. Meanwhile, Pasteur's work was already beginning to produce reforms in the medical

community. For example, surgeon Joseph Lister took note of Pasteur's findings, and began using an antiseptic to prevent post-operative infections.

Pasteur, though, did not stop his groundbreaking research with his proposal of the germ theory of disease and his identification of the specific microorganism attacking silkworms. In 1882, he began research on rabies, and in 1885, this research led him to use a vaccine on a young boy who had been bitten by a rabid dog--and it worked. He was one of the leading figures attempting to link specific bacteria with specific diseases, and attempting to then create vaccines and cures for these diseases.

Robert Koch (1843-1910) was also a pivotal "microbe hunter." Koch had been an army surgeon for Prussia during the Franco-Prussian War after earning his medical degree in 1866. In 1872, he became a district medical officer in Wollstein and later became a town medical officer in Breslau (Porter and Ogilvie 565). These positions did not offer well-equipped facilities for research, but he was given a microscope by his wife that allowed him to begin his investigations into anthrax (565). His wife would also be influential in his laboratory techniques--it was her fruit jelly recipe that he used to develop the plate culture technique that allowed him to isolate specific types of microorganisms (Otis 3). After developing techniques to stain bacteria to make them easier to observe under the microscope (Porter and Ogilvie 565), he was able to identify the anthrax bacillus microbe in 1876, which was the first success in associating a specific microbe with a specific disease. In 1882, Koch also identified the microbe responsible for tuberculosis.

Koch spent his later career concerned with public health. In 1883, he traveled to the Nile delta to work with cholera victims and traced the bacteria from patients suffering

from cholera to the bacteria in the intestinal walls of dead victims. He also found the same bacteria in the drinking water in Calcutta. This experience led him to propose checks on the water supply when he returned to Berlin (Porter and Ogilvie 565). He became the Director of the Institute for Infectious Diseases in 1891, and continued to advise foreign countries on disease prevention and treatment (565).

By the end of the nineteenth century, scientists had identified the bacteria responsible for typhoid, scarlet fever, and gonorrhea. Koch's techniques and the famous postulates⁵³ he developed allowed scientists to test whether a specific microbe was causing a specific disease. These methods aided Albert Neisser in his important identification of the gonococcus germ.

The Shifting Knowledge of Venereal Diseases

New knowledge of venereal diseases also began to emerge in the early nineteenth century even before bacterial agents were identified. Medical scientists at this time knew that venereal diseases affected the sexual organs and that they were spread through sexual contact. However, physicians tended to conflate these diseases, not recognizing, for example, the differences between gonorrhea and syphilis. French venereologist Phillipe Ricord remedied this misconception in 1837 through his study of syphilitic chancres, which enabled him to differentiate between gonorrhea and syphilis. His study also enabled him to speculate about the stages of the infection (Brandt 9). These findings would be important to later scientists searching for causal agents.

⁵³ Researcher Arnold Levine summarizes these famous postulates: "(1) the organism must be regularly found in the lesions of the disease, (2) the organism must be isolated in a pure culture (hence the need for sterile techniques, (3) inoculation of such a culture of pure organisms into the host should initiate the disease, and (4) the organism must be recovered once again from the lesions of this host" (qtd in Fahnestock, *Rhetorical Figures* 162).

While bacteria's role in infections had many scientists "converting" to the germ theory of disease, older ideas of venereal diseases still persisted. Unaware of the causal agent, physicians had theorized that excessive sexual contact would lead to these diseases (Brandt 10). Other theories posited that all women carried gonorrhea without exhibiting any symptoms of it, and thus all women were inherently diseased (Brandt 10).⁵⁴ It wasn't until 1879, when a German dermatologist named Albert Neisser identified the gonococcus microbe causing gonorrhea, one of the first microbes to linked to a specific disease, that the new science of bacteriology began to impact the study of venereal diseases.

Like Pasteur, Neisser (1855-1916) did not show early aptitude for scientific discovery. In fact, he had to repeat the chemistry test before qualifying for his medical degree in 1877. During his studies, he learned staining techniques to observe bacteria and the smear test to identify them, both developed by Koch. He then came to the field of dermatology by accident; he had wanted to specialize in internal medicine but turned to dermatology because of a job opening (Gillispie 17). At this dermatology clinic, he was able to put into practice what he had learned, and with the aid of a newer-model microscope, he successfully identified the gonococcus microbe in 1879, before his twenty-fifth birthday.

Neisser devoted the rest of his career to bacteriology, though it was not without controversy. He and Norwegian bacteriologist G.H.A. Hansen both found the bacteria responsible for leprosy and they clashed over who would receive the credit. In the end, Hansen was given credit for identifying the specific microbe but Neisser was given credit

⁵⁴ Mary Spongberg's 1997 study of venereal disease and prostitution in medical discourse details many of the myths about women as inherently infected with venereal disease.

for discovering its significance as the cause of leprosy (Gillispie 18). Neisser would face an even greater scandal in his investigations of syphilis. He was accused of infecting innocent people with the disease in his search for an inoculation method for syphilis (18). He spent his later career directing a prominent dermatology clinic, studying the causes of syphilis and lupus, and advocating education on venereal diseases, prostitution regulations, and other public health measures (18). He also became the teacher of many later pioneers in the field.

Meanwhile, scientists were also beginning to further understand the stages of infection in venereal diseases. Before Neisser's discovery, in 1872, American physician Emil Noeggerath proposed a "latency period" for gonorrhea to show that people could still be carriers and transmit the disease during intercourse, even without any visible symptoms. Later discoveries also tracked the progress of venereal diseases, showing how gonorrhea could result in arthritis, meningitis, and infections of the urinary tract, cervix, and fallopian tubes (Brandt 10). In tracking the progression of gonorrhea, physicians also showed how the disease affected men and women differently. Finally, late nineteenth-century physicians noted the key role of venereal diseases in sterility. These scientific findings would be central to arguments for social reforms concerning venereal diseases.

The New Discourse of Disease

While most treatments for diseases caused by bacteria were not developed until later, the discovery of these disease agents changed the way both physicians and social reformers discussed venereal disease. The main findings in the scientific community-- including germs as causal agents of disease, the existence of a latency period, the possibility of an unknowing transmitter, and the stages and later effects of the disease--

led to a new discourse on these diseases that emphasized human agency. Bacteriology lessened the view that venereal diseases were punishment for immorality and eliminated the view that diseases were a failing of the body. Thus, the new discourse emphasized human agency in the body's protection from an outside force, the agent of the "germ,"⁵⁵ causing many to urge treating venereal diseases like other infectious diseases. Consequently, through discourse on venereal diseases, reformers gained a way to discuss sexuality and argue for social changes on the basis of disease prevention.

The Situation Exploited: Medical Writers and the Discourse of Disease

The popularity of the medical advice book was escalating towards the end of the nineteenth century (see Chapter 2) when these new advances in bacteriology were made, and more physicians addressed these new audiences. Like the earlier physiology texts, these new texts both explained the causes of disease and argued for specific lifestyle choices. Whether physicians endorsed or rejected the germ theory of disease, the findings of bacteriology played a part in their discourses. In medical discourses, bacteriology seems to have promoted a shift from emphasizing treatment to emphasizing prevention. Thus, physicians writing such texts noted the importance of lifestyle practices in preventing the spread of venereal disease, replacing older superstitions with practical information, and shifting the discourse of disease from questions of morality to questions of public health. According to Linda Gordon (1977), physicians replaced the church as the authority on sexual practices, and a shift in language occurred that produced a

⁵⁵ *The Oxford English Dictionary* notes one use of "germ" as associated with a "virus" in an 1803 medical journal. "Germ" as synonymous with "bacteria" began in the 1870s (*The Oxford English Dictionary* documents the use of "germ" by Tyndall as synonymous with "bacteria").

“translation of ecclesiastical into medical language. What had been sin became physically injurious” (171).

Physicians John Scudder, Elizabeth Blackwell, and another key popularizer, Prince Albert Morrow, illustrate the shift in the discourse of disease as well as the application of medical discourse to social reform. Each of the medical texts analyzed here shows how physicians used the findings on venereal disease to promote specific reforms. Their rhetoric had a clear influence on the social reformers discussed later. Scudder’s text was cited by free love advocate Victoria Woodhull because of his condemnation of the treatment of women within institutional marriage. Elizabeth Blackwell’s discourse of disease aligned her with social purity goals in her critique of the double-standard as fostering the spread of disease. Finally, Prince Albert Morrow, who worked directly with reform societies in the early twentieth century to institute sex education, influenced both the social purity and the birth control movements’ discussion of venereal disease through his evaluation of the increasing instances of “social diseases” in married couples. These three writers, from 1874 to 1904, illustrate the different stages of scientific knowledge of venereal disease as well as the evolution of the discourse into social reform goals.

John Scudder

Physician John M. Scudder participated in scientific, medical, and social conversations on disease in his 1873 medical textbook. Scudder (1829-1894) born in Harrison, Ohio, had worked as a cabinet maker, like his father who died when he was eight. He turned to the study of medicine after the deaths of his three infant children (Garraty and Carnes 19.541-542). Scudder studied under Milton Thomas at the Eclectic Medical Institute in Cincinnati, where he later became a professor after graduating in

1856 (19.542). Drawn to the eclectic practice of medicine because of the choices it allowed for physicians, Scudder defined the eclectic practice as “the right to choose or select from all other systems of medicine whatever [physicians] may deem true and best adapted to the relief and cure of the sick” (qtd in Garraty and Carnes 19.542). Three of Scudder’s sons later followed in his footsteps, becoming eclectic practitioners (19.543). Scudder wrote many textbooks for his students on the eclectic practice of medicine, as well as on the diseases of women and children.

Scudder’s *On the Reproductive Organs, and the Venereal*, a medical textbook first published in 1873 and in its third edition by 1890,⁵⁶ serves as a bridge text between the old and the new discourses of venereal disease. The older theories focused on physiological causes and hygienic rules for prevention. The new theories also stressed such hygienic rules, but described bacteriological causes. Scudder’s textbook was written in 1874 when this shift was just beginning to occur. Although the association of bacteria with venereal diseases is not a prominent feature of his text, Scudder does take advantage of the other discoveries concerning venereal diseases: the differentiation between these diseases and the discovery of the latency period.

One piece of scientific knowledge that Scudder applies is the differentiation between venereal diseases, established by Ricord in 1837. Scudder also hints at germ theory with his statement that different diseases are produced by different “viruses”⁵⁷: “Each of these has its peculiar virus, is propagated by direct contact, and produces its own specific poison. The gonorrhoeal virus always produces gonorrhoea, and never chancre or chancroid; chancroid produces chancroid and never gonorrhoea or true

⁵⁶ First editions of his textbook are rare. I am referencing its third edition. Even the Library of Congress has lost its copy.

⁵⁷ Scudder uses “virus” to refer to a small particle.

chancre; and true chancre reproduces itself, and never either of these diseases.” (218). Since many people had blamed the spread of venereal disease on everything from heredity to “marked bodies,” and may even have believed that they could catch different diseases from the same germ, Scudder’s clarification here is important in eliminating myths about such diseases. The language here is also significant, naming “viral” causes; the discovery of the microbe causing gonorrhea did not occur until 1879, after Scudder’s text was published. Thus, his text is incorporating the knowledge of the specific moment, when researchers had accepted germ theory, but were still working towards identifying the agents of specific diseases.

Scudder also spends considerable time enumerating the stages of venereal disease, which physicians had just begun to understand more fully. He describes the symptoms of each stage in order to aid physicians in diagnosis and treatment. Scudder’s book also offers unique visual aids, and contains several colored illustrations of syphilis that would help physicians identify the stages of the disease. These illustrations, noted on the title page of the book, were a “selling point” for the text. Scudder, then, incorporates verbal and visual rhetoric in his explanations of disease. Scudder’s explanations also show that people with the same disease could have varying symptoms, depending on its stage. These explanations become increasingly important when discussing the early stages of a venereal disease, since sufferers could unknowingly transmit it.

Scholarship by Allan Brandt (1985) and Vern Bullough (1994) proposes that it was the discovery of the latency period that provoked action on the part of physicians. Latency was a new discovery at the time Scudder wrote his first edition of his book in 1873. His discussion of the latency period foretells the kind of rhetoric that physicians

would later employ: they emphasized the victim status of those who contracted a venereal disease unknowingly from someone in whom the disease was latent. In fact, discussions of the latency period evoke a new image--that of the unknowing transmitter. Scudder depicts this risk:

A man will frequently disease his wife with gonorrhoea before he has felt the first symptom of urethral infection, or feel it first or immediately after such intercourse. He may transmit a soft chancre from a sore not noticed, or that seems little more than an erosion; and true syphilis from the secretion of the diseased membrane before the chancre has formed. In woman, these unconscious sources of disease are far more common, for it may lurk in her genitalia, without producing sensible irritation, the secretion being but little if any changed. She may convey the contagion in this way for months, without being aware that there is anything wrong.
(220-221)

The images of this unknowing transmitter with the disease “lurking” in the genitals correspond with many of the metaphors later produced by germ theory: that of germs as invaders, lurking in “unclean” crevices. The discovery of the latency period provoked urgency on the part of physicians and reformers: they needed to understand the early symptoms to prevent unknowing transmission.

Scudder not only examines the scientific causes of disease, but also the social causes. He devotes time to interrogating the practice of prostitution and critiquing how church and state dictate sexual practices in passages which echo free love discourse.⁵⁸ Some of his theories express feminist principles, as he highlights the double standard

⁵⁸ Mary Gove Nichols (1854) and Victoria Woodhull (1873; 1874) make similar claims.

between men and women as a cause of prostitution. Like feminist reformers, he condemns the practices that lead to the “vice” of prostitution. He also observes that society has not adhered to natural laws, such as Darwin’s theory of sexual selection, which emphasizes the role of female choice in the animal kingdom. Many commentators on sexual selection theory, including Darwin himself, note that the process is reversed in humanity, with males given the agency of choice or with economic or social pressures forcing women into marriages (Woodhull, *Rapid Multiplication* 20). Since human females do not have the choice they should have in a mate, thereby instigating a competition among males, the natural order is not observed, which leads to prostitution, by Scudder’s logic (Scudder 62). Finally, he condemns the marginalization of women as a factor contributing to the spread of disease, such as when he notes that women not working and not being honored for their domestic work also leads to prostitution (67). Thus, in equating the spread of venereal disease with these social problems and with women’s status, Scudder offers a link between scientific insights and social consequences requiring reform.

Scudder also enters the age-old argument about legalization and regulation, insisting that since prostitution is criminalized, it breeds the conditions for disease. He posits that when prostitutes are able to observe hygienic laws, these women are more effective in checking the spread of disease. He clarifies that while diseases are high among prostitutes, it is “illicit intercourse,” and not necessarily prostitution, that is precipitating the spread of disease: “These contagions may be and are found outside of prostitution, but outside of prostitution there is very little danger. It is illicit intercourse with unknown persons that usually transmits the disease, for even the confirmed

prostitute will be careful not to endanger her personal friends, if she is aware of the disease” (219). Thus, Scudder attacks the social causes of disease, but rather than condemning the prostitute, he condemns the inequality between men and women that nurtures prostitution.

Scudder also offers views on whether prostitution is a cause of venereal disease. Refuting the older assumptions about such women, he notes that not all prostitutes are diseased: “Prostitutes who lead regular lives do not suffer in health as many imagine” (65). Yet, he also says, “disease[s] of the reproductive organs are frequent among prostitutes” (66). His comments here counter more traditional views of prostitutes as inherently diseased, since he insists that social conditions, not the women themselves, spread disease, an argument also expressed by free love reformers. The same characterizations and appeals are also apparent in the writing of physician and social purist Elizabeth Blackwell.

Elizabeth Blackwell

Like Scudder, Elizabeth Blackwell wrote to a more professional than lay audience, but her texts were more widely circulated than Scudder’s. In *Essays in Medical Sociology* (1902), Blackwell includes two essays that deal primarily with venereal disease: “Rescue Work in Relation to Prostitution and Disease: An Address Given at the Conference of Rescue Workers held in London, June, 1881,” and “Medical Responsibility in Relation to the Contagious Diseases Act: An Address Given to a Meeting of Medical Women in London, April 27, 1897,” the former of which was probably directed to a popular audience rather than a professional one, most likely an audience of sanitary workers. In both texts, Blackwell uses her ethos as a physician and

the new knowledge about disease transmission to promote hygiene reform. Blackwell's texts are particularly interesting since she was an opponent of the germ theory of disease, but her text still shows its influence. She often opposed germ theory as an explanation for all diseases, believing instead that both social and bacteriological causes should be attacked. However, her call for reform is still based on the new scientific knowledge of venereal disease. Blackwell embraces a more holistic view that hypothesizes the multiple social causes of disease, including human behavior, in addition to bacteriological causes.

Blackwell was actually wary of the changes in medical practices caused by germ theory. Having promoted sanitary education and advocated that physicians build relationships with their patients in essays such as "The Religion of Health" (1871) and "The Influence of Women in the Profession of Medicine" (1889), Blackwell feared that the new science would promote a shift away from these goals (Morantz-Sanchez, "Feminist Theory"). The latency period of gonorrhea, in particular, tended to discourage the belief in germ theory (because no symptoms were present) and fueled Blackwell's skepticism. Blackwell includes in "Medical Responsibility" an appendix from gynecologist T. Gaillard Thomas,⁵⁹ who discusses the latency period. Like other physicians, she expressed fear that men would infect their unwitting wives with venereal disease, such as when she says, "sufferers are often a source of danger to innocent people" ("Medical Responsibility" 88). Thus, the scientific knowledge of the latency period of gonorrhea provides Blackwell the exigence to urge sex education reform.

Like other physicians, Blackwell targets social ideologies that foster the spread of venereal disease. Countering popular myths, she refutes the idea that men need sex in

⁵⁹ This appendix does mention gonococcus as the cause of gonorrhea, indicating the influence of germ theory.

order to protect their health: “We must ourselves recognise the truth, and instruct parents, that it is a physiological untruth to suppose that sexual congress is indispensable to male health” (103). Late nineteenth-century physicians often tried to refute this idea in treatises such as *Instead of Wild Oats* by physician Winfield Scott (Brandt 26). Scott’s argument is similar to Blackwell’s since he endorsed eliminating the double-standard in sexual practices for men and women. Many physicians urged continence and refuted the idea that men who did not have their sexual urges satisfied suffered ill health. Blackwell participates in this conversation in order to strengthen her argument against the double standard. Since she urges changes in education and personal practices as steps toward eliminating the spread of venereal disease, she must also refute the behaviors and theories that the public holds dear, such as a belief in the overpowering sexual appetites of men.

However, Blackwell is not anti-sexuality. She clarifies, “The fact of the powerful sexual attraction necessarily existent and dominating in woman, as mother of the race, seems to be quite overlooked.....although it may exhibit itself in less spasmodic form than in men” (92-93). It is important to note that she does not deny women’s sexuality, nor does she position women as asexual victims, especially in light of readings by scholars of the social purity movement as anti-sexuality, such as Ruth Engs’s (142).

Blackwell’s “Medical Responsibility” also stresses the importance of prevention when she argues that physicians need to look at the links between bacterial and social causes of venereal disease. She uses comparison here to emphasize her point: “We may as well expect to cure typhoid fever whilst allowing sewer gas to permeate the house, or cholera whilst bad drinking-water is being taken, as try to cure venereal disease whilst its chief cause remains unchecked” (91-92). The idea that germs could be spread through

sewer gas and drinking-water seems like a combination of sanitary science with germ theory, and one that would appeal to audiences who would accept this comparison.⁶⁰

Thus, her arguments for reform to check the spread of disease combine the scientific and social causes of disease. The science gave new urgency to older social solutions.

Physicians often looked to governments to aid in their goals to check the spread of disease. The British government's response, however, caused more of an uproar than the spread of disease itself. The Contagious Disease Acts passed in Britain in 1864, 1866, and 1869, which arose in an effort to check the high rates of venereal disease among British soldiers, decreed that prostitutes could be quarantined if found to have venereal disease; women had to register with police and undergo forced medical exams, often without cause--just suspicion of prostitution could land a woman in hospitals undergoing tests and therapies that often resulted in brutal treatment (McElroy, "Contagious Disease Acts"). Blackwell and other social purity advocates, such as Josephine Butler, were angered by these acts since they targeted prostitutes, but did not target the men who frequented them. Thus, Blackwell and other social purity advocates show that the new legislation would not be effective in checking the spread of venereal disease. Blackwell's speeches, instead, emphasize education as a means for combating vice, and she draws attention to the double standard that exists between men and women in "Rescue Work":

Inequality between the sexes in the law of divorce, tolerance of seduction of minors, the attempt to check sexual disease by the inspection of vicious women, whilst equally vicious men are untouched—all these striking examples of the unjust and immoral attitude of legislation will serve to

⁶⁰ Historian Nancy Tomes (1998) notes how many of the reforms in sewage systems and plumbing were prompted by the advent of germ theory.

show how law may become a powerful agent in producing prostitution through its direct attitude towards licentiousness. (121)

Like Scudder, Blackwell uses her position as a physician to point out the inequalities that exist in society's structure, and like the social purity advocates with whom she aligns herself, she focuses on how the attitudes inherent in the laws produce a double standard. Social purity advocates do not argue that women should be granted the sexual license that men have, but that the laws should take away that license granted to men, which would ensure that men and women are treated equally. Their reform efforts often focused on changes in divorce laws, age of consent laws, and prostitution regulations, all noted by Blackwell. While Blackwell judges the prostitutes with the phrase "vicious women," she points out that the men who frequent prostitutes should also be held accountable for their actions.

Blackwell's rhetoric also illustrates the shift toward human agency in preventing the spread of venereal disease. Based on the premise that transmission of a germ can be prevented, she urges, "Whilst on the one hand you legislate, on the other hand you educate" (118). She shows the trend among medical professionals towards urging laws to aid their preventative campaign. She advocates reforms that will educate on sexual practices, particularly education for soldiers spreading venereal disease ("Medical Responsibility"). Her advocacy of these reforms results from the new rhetorical situation created by bacteriology on how to combat and prevent germ transmission.

Prince Albert Morrow

Another physician heavily involved in public health campaigns was Prince Albert Morrow (1846-1913). An American physician, born in Kentucky and educated at

Princeton and in Europe, Morrow worked in dermatology and studied syphilis in New York City beginning in 1874 (Brandt 14). He was a great admirer of the French researcher Alfred Fournier, and in 1880 published his translation of Fournier's important text, *Syphilis and Marriage*, for American audiences (Brandt 11). While practicing as a physician in New York City, Morrow became interested in the rates of venereal diseases among married couples, and after attending a conference in Brussels on the frequency and effects of venereal disease, Morrow returned to America, intent on forming societies to help check the spread of venereal disease and on writing a treatise that would expose the danger of venereal disease to families (Brandt 14). He formed societies such as the National Vigilant Committee in 1906 (which became the American Social Hygiene Association in 1913), which included physicians, academics, and hygiene reformers. These societies were instrumental in initiating sex education programs in the schools (Engs 145-146). But first, Morrow awakened the public to the prevalence of transmission of venereal diseases in marriage with his 1904 textbook *Social Diseases and Marriage*.

Morrow's textbook illustrates the culmination of the findings of nineteenth-century bacteriology. It targets a professional audience to accommodate the new knowledge of venereal disease transmission and treatment, but a reformist audience is also addressed, because one of Morrow's goals is to urge reform in two directions: education and preventative legislation. Morrow exploits the specific moment when more knowledge both of the science of venereal disease and its prevalence in married couples clearly calls for a response. Morrow is especially concerned with the rates of venereal disease in married women because of the dangers posed to women's health and to future offspring.

Morrow specifically references the science and the scientists in his explanations of venereal disease. In the first few pages, he mentions important advances, specifically French physician Alfred Fournier's 1880 book on syphilis and Neisser's 1879 discovery of the gonococcus germ as the cause agent of gonorrhea. Morrow highlights that through knowledge of the causal agent, physicians are able to create more accurate tests, leading to more accurate diagnoses. His heading of a chapter reads, "If Gonococci are Present, there is Danger of Infection; if Absent, there is None" (xi), which shows an awareness of Koch's postulates. This emphasis shows how physicians refuted older ideas of disease causation by highlighting the effects of scientific discoveries. Morrow uses these discoveries to discuss who should and should not get married, based on their "risks of contagion" (38), which can now be more accurately diagnosed.

Moreover, the new knowledge of the stages of venereal diseases and their long-term effects contributes to Morrow's use of scientific knowledge to support reform goals. That gonorrhea and syphilis can lead to sterility and birth defects is also new knowledge from the sciences, which Morrow reports: "A percentage variously estimated at from 40 to 80 per cent. of endometritis, mesometritis, and perimetritis is of gonorrhoeal origin and a cause of sterility in women. Noeggerath found in 81 gonorrhoeal women 49 entirely sterile. In 80 sterile marriages, Kehler found 45 caused by inflammatory and other changes--all of gonorrhoeal origin" (30). Such findings created more urgency for discussion of the effect of sexual diseases on women's health. His figures also helped to refute the charges of "race suicide"⁶¹ aimed at women, because they offered another explanation to the rates of sterility in marriage (Spongberg 165). Morrow not only

⁶¹ This term was often leveled at women who decided to have smaller families. Theodore Roosevelt famously accused such women of "race suicide" in 1907.

capitalizes on the exigence created by scientific discoveries, but he also creates a new exigence based on what was now known at the end of the nineteenth century about the prevalence and effects of venereal disease. Together, these exigencies created a new rhetorical situation of reform.

In addition to the discoveries of the laboratory, Morrow relies on the work of sanitarians who study the frequency of venereal disease in the population. For example, the “Report of the Committee of Seven on the Prophylaxis of Venereal Disease in New York City,” to which Morrow was appointed, found that thirty percent of women infected with venereal disease caught it from their husbands (Morrow 25). Morrow cites other statistics, as well, such as Noeggerath’s finding that “of every thousand men married in New York eight hundred have or have had gonorrhoea, from which the great majority of the wives have been infected” (26). Morrow attributes this prevalence to the many sufferers who have been untreated and undiagnosed (26). He further adds, “My own observations at the New York Hospital extending over a period of several years would indicate that fully 70 per cent. of all women who come there for treatment were respectable married women who had been infected by their husbands” (26-27). As we will see later, Margaret Sanger’s call for reform was based on Morrow’s conclusions. Morrow’s statistics characterize the marriage system as a place that shelters and transmits disease.

Most interesting is how Morrow illustrates the shift in the language used to discuss venereal disease, reflecting how scientific discoveries were impacting the rhetoric of medicine and reform. Morrow notes at the end of his preface, “As regards the title chosen for this work [*Social Diseases and Marriage*], it may be said that the term ‘social

evil' has been generally accepted and sanctioned by common usage, and it would seem appropriate that the diseases which are peculiarly the appanage of this evil should be classed as 'social diseases'" (vi). Morrow prefers the term "disease" to the references to "the social evil" found in many medical and reformist texts. He is proposing a language shift from the discourse of morality in the use of "social evil" to the new discourse of public health--"social disease." This shift removes the older connotations of these conditions as punishment for promiscuity, turning instead to the language of health and disease.

Once he has accomplished the shift in how disease is discussed and related the new knowledge of cause, transmission, and prevalence regarding venereal disease, Morrow has a solid basis for his reform arguments. His last few chapters are titled, respectively, "Educational Measures," "Administrative Measures," and "Sanitary Measures." Like many of the physicians of the early twentieth century, he places high value on education as a means of preventing disease, and his reform societies were eventually successful in instituting sex education curricula (Engs 145-146). In terms of legislation, Morrow points out that the more liberal divorce laws instituted as a result of the high rates of infection between married couples will not solve the problem since the disease has already been transmitted (35). He therefore supported marriage laws that refused marriage licenses to men infected with a venereal disease.⁶² Finally, new sanitary measures would combine the goals of the educational and legislative measures to reduce the rates of infection. In this section, he equates venereal diseases with other infectious diseases and suggests a similar strategy to that "adopted in the warfare against

⁶² Such a law was passed in Michigan in 1899 (Brandt 19-20), and by 1922, thirteen states had laws restricting marriage licenses to men infected with venereal diseases (Engs 146).

tuberculosis” (xxi and 385-387). Like other medical writers, Morrow notes the stigma attached to venereal diseases, but shows how, by equating them with other infectious diseases caused by germs, the war against these germs can be won.

The Situation Transformed: Opportunities for Social Applications and the Alliance of the Scientific, the Medical, and the Domestic

Physicians were not the only ones waging a war against germs. Thanks to the immense popular reception of germ theory, sanitary workers, marketers, and even domestic workers instituted reforms aimed at combating germs. When it came to sexual diseases, these reforms would have even more impact on discussions of sexuality.

Many medical historians have noted that the popular reception for the germ theory of disease was often stronger than the reception it gained in the scientific and medical communities. In an 1885 article in *Popular Science Monthly*, Henry Thompson summed up the American public’s reception of germ theory:

The germ theory appeals to the average mind: it is something tangible; it may be hunted down, captured, colored, and looked at through a microscope, then in all its varieties, it can be held directly responsible for so much damage. There is scarcely a farmer in the country who has not read of the germ theory. A cowboy in Arizona was shot dead in the saddle recently by a comrade for the insult implied by calling him a ‘d---d microbe.’ (qtd in Fellman and Fellman 49-50)

Other physicians likened the public’s interest to “bacteriomania” (qtd in Warner and Tighe 234). In popular circles, the reception of germ theory was almost akin to a religious conversion, as Nancy Tomes has examined in her work on “The Gospel of Germs.” The

germ theory offered the public a promise--not only for a better understanding of disease transmission and prevention, but also for more effective treatments. As an outside force causing disease, germs could be fought.

The scientists promoting germ theory were responsible for causing this immense interest in the public as they wrote of their findings to both professional and lay discourse communities. They communicated their theories in understandable ways and even invited the public to be participants in this new science. Tomes points out, “In a Glasgow address reprinted in *Popular Science Monthly*, [Joseph] Tyndall urged his audience to ‘observe how these discoveries tally with the common practices of life’ and offered examples from his own household, such as his housekeeper’s use of brief applications of heat to keep pheasants and milk ‘sweet’” (*Gospel* 40). He also “asked listeners to think about the molds that grew on wet boots or a piece of fruit left exposed to the air” (40). Consequently, as several scholars have noted, the public accepted the germ theory of disease even before more proof was offered, and they accepted it before many in the scientific and medical communities did.

A rhetorical perspective goes even further in showing that the moment and the audience for these discoveries impacted the reception of germ theory. Carolyn Miller has noted the importance of the concept of “kairos” to scientific discourse. “Kairos,” a term that connotes a specific situation and exigence, shows us that rhetors’ success depends in part upon making the right speech to the right audience at the right time. To audiences used to hearing the causes of disease as only physiological or hereditary, the germ theory offered a new explanation; more importantly, this explanation served to show that diseases could be prevented. Thus, the specific moment of the late nineteenth century, a

time of increase in the prevalence of venereal diseases, produced an exigence that allowed popular audiences to be more receptive to the new science of bacteriology. The popular reception of “germ theory” can also be attributed to the public’s growing interest in medicine. In traveling from the laboratory to the domestic space, the discourse on “germs” promoted a shift in rhetorical situation. Instead of dealing with the questions of the laboratory, where finding the bacteria associated with specific diseases was paramount, the situation outside the laboratory dealt with destroying the conditions that allowed germs to fester.

The metaphors used to describe germs and disease also contributed to the popular understanding of germ theory and its use in social reforms. As Laura Otis (1999) and Tomes have noted, germs were often portrayed as “invaders” that people had to guard their bodies against: “William Marp told his audience that germs ‘hunt in packs,’ and another physician referred to them as ‘atmospheric vultures.’ Microbes were often described in martial terms as attacking, invading, and conquering their human hosts” (Tomes, *Gospel* 43). There were also less harsh metaphors, such as likening germs to seeds, insects, or worms (42). These metaphors used to describe the invisible “attackers” spurred a new rhetoric of responsibility. Tomes observes, “Hygienic infractions once regarded as merely disgusting or ill-bred, such as indiscriminate spitting or coughing, now became defined as serious threats to public health” (Tomes, “Germ Theory” 257). The public now had a new scapegoat for disease, one that emphasized the cleanliness of the person and the home.

Reforms with a basis in germ theory unfolded in the late nineteenth century. Hospitals began to change their methods of disinfecting. Plumbing and sewage treatment

were upgraded. Household products, such as cleansers and disinfectants, were marketed as essential to ridding the home of unwanted invaders. The home became the setting for work in applied science, as Tomes has shown, with magazines advising “scientific shopping” as well as new appliances to be used in the fight against germs (*Gospel* 166). The home was viewed as a place needing protection from outside attackers--germs. Thus the women dominating these domestic spaces became soldiers in the fight against disease, and as Tomes argues, they applied science in the home in significant ways. In addition, feminist reforms, such as dress reforms, took on more urgency, as reformers argued for shorter skirts because of the risk of trailing longer skirts in dirty water or dust (Tomes, *Gospel* 157). Thus, changes in dress could help ward off attacks by germs, and women’s magazines in the 1890s urged “hygienic dress reform” (157). Altogether, germ theory provided the promise that sickness could be prevented through improved personal hygiene.

This emphasis on responsibility also occurs in the rhetoric of venereal disease. With venereal disease, it was the cleanliness of the person that was emphasized: the metaphorical “unclean” body became the literalized “unclean body.” Physicians urged the public to think about their choices and promoted an agenda of sex education as well as legal reforms in the marriage laws that led to more liberal divorce laws and a higher age of consent. These changes came about as a result of alliances between physicians and social reformers. Thus, physicians and reformers worked together to apply scientific knowledge to social issues, to initiate programs to sex education in schools, and to create societies, such the ones formed by Morrow, which included physicians, academics, and hygiene reformers (Engs 145-146). Reformers then had a rich body of knowledge as well

as alliances to support in their reform discourses. Their rhetoric of reform relies on the arguments and new knowledge created in the medical discourses on bacteriology and venereal disease.

For example, once the long term effects of venereal disease, especially sterility, were understood, reformers had a new line of argument: protect women from venereal disease in order to protect future generations. This line of argument was based not only on the findings Morrow related, but also on the increasing medical and popular interest in eugenics. Many other physicians emphasized the dangers of venereal diseases to future children, using a more eugenic line of argument. For example, Morrow named venereal disease as “an actual cause of the degeneration of the race” (qtd in Brandt 14). In a 1906 symposium on the “Duty of the Profession of Womanhood” of the American Medical Association, several physicians weighed in on the issue (Brandt 15). Dr. Abraham Wolbarst referred to women as, “[t]he flower of our land, our young women, the mothers of our future citizenship” (qtd in Brandt 15). Such arguments, which emphasized potential harm to motherhood, prompted reform in divorce laws, allowing divorce when venereal disease had been transmitted. Several states also enacted laws in the late 1800s and early 1900s requiring men to get tested and present certification of health before being granted a marriage license (Brandt 19-20).⁶³ Other reforms included more liberal divorce laws and higher age of consent laws as a result of the perceived threat “to the race” from venereal disease. Venereal disease even began to be considered in more conservative marriage manuals, such as conservative physician Emma Drake’s *What a Young Wife Ought to Know* (1901). Drake emphasizes how syphilis can harm the

⁶³ These laws did not require women to get tested for venereal disease. Thus, the shift from viewing women as inherently diseased and the sole carriers responsible for disease transmission to blaming men had occurred.

children of a union, and urges young women and their parents to use their family physician as an ally in choosing their mate (62). She also applauds the law in Ohio that required testing for venereal disease (62-63). However, as Morrow notes in his text, changes in divorce laws would not solve the problem. It would be feminist reformers who would emphasize the inequality inherent in the marriage system as fostering the spread of disease.

The Situation Exploited and the Warrant in Use: The Rhetoric of Sexuality in Feminist Reform Discourses

Much of the analysis of discourses on women and venereal disease during the nineteenth century has focused either on how women were blamed for the spread of venereal disease and further marginalized or on how the new rhetorics surrounding venereal disease portrayed women as “innocent, weak, and helpless” (Brandt 16), victims of men spreading venereal disease. For example, Mary Spongberg’s (1997) study reviews how physicians increasingly portrayed prostitutes “not merely as agents of transmission, but as inherently diseased, if not the disease itself” (6), and Allan Brandt’s history of venereal disease argues that the new knowledge gained in the nineteenth century only furthered the victim status of women. However, in looking at the discourses of the social purity, free love, and the later birth control movements, we see women themselves incorporating the new scientific knowledge about bacterial infections and venereal disease in order to argue for reform.

The new knowledge of germ theory and venereal disease transmission provided an exigence for discussing sexual practices and revived the debate on the inequalities in the marriage system that social purity and free love reformers had waged throughout the

century. Arguments like Morrow's gave credence to the kind of feminist reforms advocated by social purists and free lovers. If women were being infected by their husbands, this transmission not only affected their own health, but also their ability to bear healthy children, a key argument from expediency, to use Karlyn Kohrs Campbell's term, found in many feminist texts. Morrow's argument also indicated that the institution of marriage did not offer much support for women who could unknowingly catch venereal diseases from their husbands. The physicians' emphasis on prevention was particularly suited to these reformers.

In some of these reform discourses, the connection to germ theory is merely suggested. Other sex reformers explicitly take advantage of the warrants provided by bacteriology in discussing women's sexuality. And some capitalize on the new metaphors created by germ theory to argue for even more radical reforms, such as Angela Heywood's argument for abortion. Thus, in order to urge changes in the marriage laws or changes in how women's sexuality was conceived, the social purity and free love reformers drew on the exigence and warrants of the arguments established in the professional sphere. The reform discourses surrounding venereal disease were also employed in the early twentieth century birth control movement, which is an area that illustrates the results of the alliance between science, medicine, and feminism.

Social Purity

The social purity movement's aim to eliminate the double standard between men and women was strengthened by physicians' discussions of prostitution⁶⁴ and the increasing blame leveled at men as carriers of germs infecting their wives. That venereal

⁶⁴ Many social purists became involved in campaigns to "save" prostitutes.

diseases could be latent produced even more urgency. Social purists also argued that the conditions of inequality between men and women needed to change in order to eliminate the conditions that were breeding venereal disease. Frances Willard, the best-known social purist and a prolific rhetor, shows how this discourse relied on knowledge and warrants circulating in the medical community, as well as the increased emphasis on protecting and cleansing the home and the body in popular discourse. Willard's rhetoric does not explicitly treat germ theory and its connection with disease, but her arguments are made more timely since the discourses of bacteriology were then widely known to the public. Bacteriology had revealed the dangers to women caused by the double standard and by men who led "impure" lives. The new scientific knowledge created new exigencies for women's rights in the home and accentuated the role of preventative measures in fighting disease and ensuring women's rights.

Willard's "A White Life for Two," written in 1890 and presented as both a speech and a pamphlet, argues for various reforms under the mantle of "home protection." Both the ballot and temperance fall under this mantra, as well as reforms concerning women's sexuality. Willard discusses both marital rape and age of consent laws, revealing the problems in the current institution of marriage. Unlike free love reformers, though, Willard seeks to reform the marriage system rather than to abolish it, thus making marriage more conducive to "home protection" and "social purity." The "home protection" motto also implies a connection to the kind of rhetoric that Tomes identifies. The "Gospel of Germs," previously discussed in this chapter, created a new discourse of the home as well, promoting changes in its management, as well as in plumbing, storing food, and cooking--all in the name of protecting the home from the invisible invaders.

Therefore, Willard's rhetoric could evoke some of this discourse. Willard, however, shows that the home is under attack from within, as well: the sexual practices of men and women are also included under the heading of "home protection," and men become the invaders capable of spreading disease in this discourse.

In discussing the double standard, Willard urges, "The personal habits of men and women must reach the same high level. On a low plane and for selfish ends...man wrought out, with fiercest cruelty, virtue as the only tolerated estate of one-half the human race" (326-27). The "personal habits" she refers to and the emphasis on "virtue" here suggest a discussion of sexuality that asks that men and women be held to the same standard, rather than forcing virtue onto women only.

When Willard enumerates the "awful deeds done by white men" (329), her rhetoric aligns her with the kind of arguments made by Elizabeth Blackwell. Like Blackwell, she brings up the behavior of soldiers towards women as proof that men need to be taught purity. She also condemns the Contagious Disease Acts, since they only punished women (330). She emphasizes the need for men to lead "pure" lives to become better husbands. She notes that men are not held to the same standards as women: "For it is an immense temptation to the 'sowing of wild oats,' when the average youth knows that the smiles he covets most will be his all the same, no matter whether he smokes, swears, drinks beer and leads an impure life, or not" (331). The references to the "sowing of wild oats" and "impure life" imply a connection with prostitution and are also informed by the push to debunk the myths of the male need to "sow wild oats" by physicians like Elizabeth Blackwell and Winfield Scott after germ theory. Thus, the

discourse of venereal disease created an emphasis on the behavior of such men, an emphasis that Willard's 1890 text clearly exploits.

Reading Willard's rhetorical strategies in the context of the new science of the time, we see that reforms she had been advocating since 1874 took on a new urgency as a result of the 1880s and 1890s findings of just how much "intemperate lives" had affected marriages. When Willard highlights the role of prevention in the reform goals of the social purity movement, she also evokes connections with the rhetoric of venereal disease created in the medical community:

An organized and systematic work for the promotion of Social Purity was undertaken in 1885 by the Woman's Christian Temperance Union. Under the three subdivisions of Preventative, Reformatory and Legal Work, this society has gone steadily forward until the White Cross Pledge, appealing to the chivalry of men, has grown familiar in thousands of homes, and the White Shield Pledge, appealing to the chivalry of women, is following fast after the first. (326)

The three subdivisions Willard establishes are similar to those the medical community advocated, such as the categories of reform that Morrow elaborates in his later text. The references to "chivalry" here imply a connection with standards of sexuality.

Furthermore, the goal of prevention mentioned shows that the medical reformers provided the exigence for more work in educating the public on temperate lifestyles that Willard's discourse enters. Thus, science provided new exigencies and new warrants to support the long standing goals of social purity.

Free Love

The free love critiques of marriage became more popular in the late-nineteenth century, at the same time that physicians were discovering the true causes of venereal disease and how it was transmitted. Thus, in the public eye, these radical claims had some backing from recent scientific discoveries. The exigence of the new sciences and the discussion of sexual diseases created a public consciousness concerned with sexual practices that the free love reformers could take advantage of. Earlier free love advocates' texts, such as Mary Gove Nichols's *Marriage* (1854) and Victoria Woodhull's *The Elixir of Life* (1873), which claimed that marriage was a "diseased" institution that did women more harm than good, were bolstered by new findings that turned their imagery into fact. However, free love discourse did not position women as the victims of men who spread venereal disease, but instead condemned the societal and institutional structures, such as the marriage system, that fostered the conditions under which women caught venereal diseases. Within their critiques and calls to abolish marriage, the free love radicals employed the rhetoric of disease for different ends.

Hulda Potter-Loomis's 1890s treatise on social freedom, for example, exposes the institution of marriage as a sham that impedes progress and allows men "ownership" of the "wife's sexual organs" (17 and 18). This rhetoric, emphasizing that husbands can control their wives' bodies and distancing women from the sexual organs that men control, was given new urgency by the discourse of disease: husbands who control their wives' sexual organs can infect them. Potter-Loomis does not explicitly engage the discourse of disease, but several of her arguments and statements evoke this discourse, such as when she refers to the "evils which have grown out of restrictions" (7), a phrasing

that suggests disease as the “social evil” being spread by the restrictions inherent in the marriage system. Immediately after calling to mind such evils, Potter-Loomis references new divorce laws, and says that these laws will not cause significant change. The reference to such laws immediately after the reference to “evils” in the marriage system implies a criticism of the newer divorce laws put in place in order to protect women from husbands infected with venereal disease in the 1880s. Like other free lovers, though, Potter-Loomis urges a deeper look into the ways that customs and institutions cause such evils. She also criticizes those who champion abstinence as protection, since “Human desire is the true spur to human progress, and we mark our progress by the fulfillment of our desires” (14). Free love advocates like Potter-Loomis, Victoria Woodhull, Dora Foster, and Juliet Severance attempted to reframe sexual discourses by showing that it was not sex itself that was “impure,” but the way some people practiced it. Thus, the arguments for abstinence and continence that social purity reformers advocated were condemned by the free lovers because of their position on the importance of sex to the individual. Instead, they wanted to look more deeply into the institutions that sheltered men’s actions and left women vulnerable. Since they were doing so after the advent of germ theory, their calls for reform became more relevant.

Potter-Loomis refers to marriage as a “whited sepulcher” sheltering damaging behaviors: “What a ‘whited sepulcher’ our temple of virtue and morality is and what hypocrites we are who bow before its altar” (21). This New Testament image of the “whited sepulcher” was also used to describe the homes that allowed germs to fester. In an 1883 article in *The North American Review*, Charles Wingate exposed “The Unsanitary Homes of the Rich,” showing that germs could attack the homes of the poor

and the rich, with inadequate plumbing as a chief cause. After describing houses “of imposing dimensions, palatial in their adornments, and seeming to lack nothing to promote comfort, enjoyment, and health,” he goes on to proclaim, “A larger number of these houses are mere whited sepulchers, and their luxurious inmates are exposed to constant risk of disease and death” (qtd in Tomes, *Gospel* 48). The use of this same image reveals that both the home and the institution of marriage sheltered germs of disease, whether it was an actual germ, as in Wingate’s discourse, or a metaphorical germ, as in Potter-Loomis’s 1890s treatise. As Juliet Severance asserts in *Marriage* (1901), institutional marriage had not succeeded as “the safeguard of virtue” (4-5).

The most prolific and visible free love advocate, the infamous Victoria Woodhull, not only had a new exigence for her critique of marriage, but also a new warrant for her eugenic ideals. In her pamphlet on *Stirpiculture; or, The Scientific Propagation of the Human Race* (1888),⁶⁵ Woodhull’s line of argument is similar to those behind the marriage laws in several states that prevented men afflicted with venereal disease from getting married. She sets up a series of propositions, one of which is “Thou shalt not marry when malformed or diseased” (9). We see here the beginnings of the eugenic rhetoric of the early twentieth century that attempted to prevent the “unfit” from procreating. Such discourse has its root in the efforts to prevent the spread of venereal disease, but it was shaped for quite different and more sinister ends at the turn of the century. For Woodhull, a women’s rights agenda that affirmed female sexuality was connected to women’s role as “mothers of the race”; therefore, Woodhull’s rhetoric

⁶⁵ The term “stirpiculture,” an early form of eugenics practiced by free love advocate John Humphrey Noyes, is an especially significant choice of term because of the root “stirps,” which can be used to describe the branch of a family and is also used in zoology as a term of classification (*Oxford English Dictionary*).

previews the kind that doctors produced in response to Morrow's later conclusions about venereal disease as a threat to the family unit and to future generations. Woodhull saw her arguments as applying "scientific knowledge for the benefit of humanity" (*Humanitarian Government* 3), but she was really applying the arguments that physicians had constructed based on their interpretations of scientific knowledge.

Free love advocates often condemned society's efforts to reform the harms done in the marriage system: "The laws of the United States are constructed to deal with effects only, and do not take into consideration the causes" (Woodhull Martin, *Stirpiculture* 26-27). This sentiment was shared by many in the movement, including Severance and Waisbrooker. These reformers believed that only a system where women could choose their husbands freely, not under economic duress, and where their actions and sexual practices would not be dictated by law, would cure society of its ills, and in this new context, would cure society of literal diseases. The discourses coming out of the discipline of bacteriology strengthened their claim that the institution of marriage produced the conditions for disease, and also gave them a new argument to apply to their goals.

Even more radical sex reformers took advantage of the new metaphors created by the discourse of bacteriology and venereal disease for much different ends. Angela Heywood seems to be the most radical free love advocate in the movement, since she was one of the few who advocated abortion and also attempted to revolutionize how sex was discussed, preferring the more "vulgar," common language to the terms employed by "polite society."⁶⁶ Thus, Heywood's rhetoric is more confrontational than other

⁶⁶ See Chapter 1 and Battan (1993), "'The Word Made Flesh': Language, Authority, and Sexual Desire in Late Nineteenth-Century America."

reformers'. Her piece on "body housekeeping," published in 1893 in the last issue of *The Word*, the radical periodical she edited with her anarchist husband, takes her signature confrontational rhetoric and applies it to the right of women to have abortions. In this work, her reconfiguring of abortion not only relies on legal rhetoric, but also on the new metaphors created by the popularized germ theory of disease.

Heywood presents abortion as a form of "washing" when she says, "Is it 'proper,' 'polite,' for men, real *he* men, to go to Washington to say, by penal law, fines, and imprisonment, whether woman may continue her natural right to wash, rinse or wipe out her own vaginal body opening,--as well as legislate when she may blow her nose, dray [*sic*] her eyes, or nurse her babe" (131; emphasis in original). In this rhetoric, unwanted pregnancy is likened to a germ in the body that must be washed out. The metaphors that Tomes and JoAnn Brown (1997) identify correlate with this rhetoric. Both scholars find that in popular thinking, germs were the invaders that needed to be cleansed with proper hygiene. In Heywood's argument, the body is infected by a germ, or stranger, a connection perhaps made possible by August Weisman's use of the word "germ" in the "germ plasm theory of heredity" he asserted in 1883 (See Chapter 5). In Heywood's argument, the process of abortion is a means of hygiene; it is compared with the benign act of washing the body. She likens the act of "washing" out the vagina to the common practice of blowing one's nose--both acts done in response when one has been invaded by "germs."

Heywood concludes her argument with another reference to abortion as "body housekeeping": "Sex is not an unheard of or an unfelt fact in any one, and the sooner body housekeeping has rational mention the better. Intelligent acquaintance with, and

clear knowledge of ourselves will replace the song of disease with the song of Health, and make home-thrift the rule, instead of the exception” (133). Her emphasis on the home and her metaphor of the body as something that needs cleaning and housekeeping connect with the language used in those campaigns. Thus, in Heywood’s portrayal, abortion is likened to the kind of “home protection” rhetoric employed by those applying science to everyday practices.

Both social purity and free love reformers were able to use the new discourses of disease to argue for women’s rights. Both sets of reformers were also able to reaffirm women’s sexuality through this discourse. Women were portrayed as potential victims of disease, but not as passive, asexual victims. Instead, these reformers revealed social codes, legal codes, and the marriage system as the culprits for breeding the conditions for disease. While sex was the means of transferring the “germ,” it was the inequality inherent in the sexual relations between men and women that these reformers blamed for the spread of such diseases. Their conclusions matched those of Scudder, Blackwell, and Morrow. In accessing medical reform literature, they were able to use the new rhetorics of bacteriology for feminist reform ends. Later discourses illustrate how these arguments from expediency led to material feminist reforms, such as birth control.

Birth Control: Sanger

Birth control pioneer Margaret Sanger (1879-1966) comes in at the end of this era in the history of sexuality, and through her work we can see how the discourse of disease as related to the rights of women evolved. Born Margaret Higgins in 1879 in Corning, New York, she lost her mother Anne Purcell to the strains of childbearing; her mother had born eleven children (Garraty and Carnes 19.264). Trained as a nurse, Sanger worked

with poor populations and was appalled by the rates of pregnancies and diseases in these populations, which led to her later advocacy of birth control. Working in New York City in 1911, she also became involved with radical socialists (19.264). Sanger was asked to write a column for the New York *Call* in 1913; entitled, “What Every Girl Should Know,” this column frankly discussed venereal disease, leading to its banning under the Comstock law. Sanger jumped bail and fled persecution for obscenity in 1914, settling in England for a year. Her husband, William Sanger, was then targeted and he went to jail in 1914 for sending out one of his estranged wife’s pamphlets. Margaret Sanger returned to face prosecution in 1915, but the government dropped its charges against her as a result of the death of her five year old daughter (19.265). She continued to advocate birth control, which was made easier after the Comstock laws were eliminated in 1936.

In her 1920 book, *What Every Girl Should Know*, a collection of essays from her column, including the one that provoked her arrest, Sanger argues that science has dispelled popular myths about women, men, and venereal disease. Her rhetoric aligns her more with social purity advocates than free lovers, since she urges “continency until marriage and then monogamy” as the best protection against venereal disease (72), and she blames the spread of venereal disease on a double standard of sexual morality. Her discourse presents the most salient use of science and illustrates how science was able to eliminate older myths that positioned women as “unclean” and as breeders of disease.

Like Blackwell, Sanger blames social ideologies, such as the belief that young men need sex as soon as they reach maturity, for the conditions that spread disease. She blames parents who believe that the sexual organs of young men will be harmed if not used at the age of maturity for perpetuating unhealthy sexual practices (63-64). She then

proclaims, “It is now a recognized fact that it is no more necessary for a boy to ‘sow wild oats’ that it is for a girl, and women are today demanding of men the same cleanliness of body and mind which men have heretofore considered necessary only in women” (65). This statement shows that the efforts of physicians in the late nineteenth century to discourage male promiscuity continued, and that “proofs” like Morrow’s, who used men who left the priesthood as evidence, strengthened the claim that young men did not need “to sow wild oats.” Like Woodhull in her 1874 *Tried as by Fire* speech, Sanger places the blame for ignorance on both the medical establishment and parents who do not educate their boys and girls on sexuality, and Sanger even urges that girls should become familiar with male anatomy (67).

Sanger also illustrates how science dissolved old myths about women and venereal disease with her explanation of how gonorrhea is caused by bacteria:

In former days gonorrhea was considered an ordinary catarhal inflammation, “no worse than a bad cold,” the old saying went. It was thought to originate in women with the discharge at the end of the menstrual cycle...in fact any secretions from the uterus, of an irritating character, were thought to be sources of gonorrhea. However, with the discovery of the microbe “gonococcus,” in 1879, by Dr. Albert Neisser, it is now an established fact that the disease comes from a source where there is either latent or chronic gonorrhea, which, of course, means that the gonococcus is present. It is considered a conservative estimate that at least 50 per cent. of the adult population in this country have suffered from

gonococca infection. More men than women have been and are infected.

(69-70)

Sanger here shows how bacteriology refuted the kind of ideologies of women's role in disease that Spongberg studies.⁶⁷ Older myths about women being inherently diseased or their discharge being "unclean," and even a belief that one could tell if a woman had syphilis by the structure of her body, were eliminated by Neisser's discovery.

Sanger also calls upon previous scientific and medical studies, such as Morrow's study of the number of people infected with venereal disease in New York, as well as more recent statistics on the frequency of infection. She uses Morrow to create more urgency to talk about the topic: "When a few years ago Dr. Morrow stated that there is more venereal disease among innocent, virtuous wives, than among prostitutes, this statement should have resounded throughout the walls of every home in the land, instead of which it is kept intact within the covers of large volumes, where only those wearing cap and gown have access to it" (67). Sanger here illustrates how medical practitioners still used the danger posed to "innocent, virtuous wives" as an exigence for greater efforts at sex education. She also emphasizes the importance of communicating information to the public, rather than keeping it within the medical community. Finally, Sanger draws on the eugenic implications of the discourse of disease, calling both gonorrhea and syphilis "social dangers" because of their effects on offspring (80). Her rhetoric demonstrates how the key features of the discourse of disease in the late nineteenth century survived in new reform discourse of the twentieth century.

⁶⁷ See Spongberg, *Feminizing Venereal Disease: The Body of the Prostitute in Nineteenth-Century Medical Discourse* (1997).

Conclusion

Throughout the nineteenth century, free love advocates had critiqued the marriage system, invoking the metaphor of disease. It is no surprise, though, that free love rhetoric had its heyday starting in the 1870s, the same time that the scientific community was finding out how deeply actual disease had infiltrated the marriage system. The arguments of social purity and free love reformers were therefore refreshed by the new discourses coming out of the findings of bacteriology. In these reform discourses, human agency increased. The war against germs waged in medical and popular communities emphasized human agency in promoting cleanliness. In order to have an impact on the rhetoric of sexuality though, venereal diseases needed to be equated with other diseases caused by germs. Once Neisser discovered the germ agent in gonorrhea, such a shift occurred. As Morrow shows, the war against venereal diseases needed to be waged in the same way as the war against diseases such as tuberculosis (xxi and 385-387). The new disease agent provided a general reform warrant, which could then be applied in numerous ways. Scientific and medical findings then led to material social reforms and alliances between scientists, physicians, sanitarians, and reformers.

The findings in bacteriology helped reformers to call into question long-held assumptions. As this chapter demonstrates, social ideologies were often blamed as causes of the spread of venereal disease. Findings in bacteriology had promoted hygienic changes in sewage treatment and housekeeping to ward off infectious diseases. Sexual reformers wanted the logic behind such reforms (logic that showed how germs spread) to extend to the checks against venereal disease. Woodhull (1888) illustrates the comparisons they made:

If there be a cesspool in a street, the neighbours do not hastily cover it up so that it may be hidden from the public view. No; they have the very bottom dredged that their loved ones may not sicken and die from the malaria. But the social and political cesspools may go on gathering in the germs of deadly miasma, while each human soul vies with the other to ignore the fatal effects. (*Stirpiculture* 24)

Medical and social reformers attacked these social and political “cesspools,” hoping to check their spread of venereal disease.

While the discourses concerning bacteriology and venereal disease are clearly gendered, they still could be used for feminist reform purposes. Social purity, free love, and birth control advocates capitalized on scientific findings to renew the exigence for the sex education such reformers had been advocating since the mid-nineteenth century. They also had a new warrant for their argument that marriage was a diseased institution. The applications of germ theory in the home then provided a new way of talking about the home as needing protection, whether it was from outside or inside forces. Most of these reformers made such arguments without negating women’s sexuality itself. Science defeated many of the old myths about the nature of such diseases and refuted the notion that they were a punishment for immorality. The implementation of sex education that came out of these discourses is also an important marker in the history of the rhetoric of sexuality. What bacteriology did most, though, was create a greater sense of urgency, making sex a vital topic in popular discourses.

Chapter 4: Embryology

The first thing to be done is to get rid of the idea that sex in its parts and manifestations is something to be ashamed of. Another has well said: 'No one idea has ever fettered the progress of the race and retarded its development to such an extent as the silly superstition that there is something repulsive in the origin of life, something obscene in the process of human reproduction.' (Waisbrooker, *Fountain of Life* 24)

Lois Waisbrooker's 1893 statement demonstrates one of the roles science would fill in free love arguments: To make sex less "obscene" and "repulsive," free love advocates had to position the sexual act in a scientific perspective as a step in the process of reproduction and a step in the process of evolution. Embryology, a science concerned with these processes, thus provided still more scientific warrants for free love arguments. Arguments in the reform sphere stressing the importance of the mother to prenatal development and the need for her protection were given an important exigence through new discoveries in embryology. In this new perspective, women's rights and free love thus became a matter of evolution.

The science of embryology used the past to explain the future in its study of the development of the embryo and the progression of the species in evolution. Free love rhetors seized on this emphasis by positing free love as the means to a final stage on the evolutionary chain. The link between the discourses of science and free love feminism thus becomes more explicit when one looks at the sciences dealing with questions of human development and reproduction. While knowledge of physiology provided the warrants for arguments asserting women's status as sexual beings and bacteriology

provided warrants for arguments confirming marriage as a “diseased” institution, the discipline of embryology and theories of heredity gave free love rhetoric its more compelling arguments that free love could have beneficial results. Free love feminists theorized that only when men and women united in love, without constraints, and forsook the inequalities embedded in the marriage system, would true progress in human evolution occur. To argue this line of thought, however, they relied on the warrants established by the scientific community concerning how fetal development occurred and how embryos diversified from the moment of conception until birth.

The science of embryology also provided warrants for arguments that highlighted women’s special role in fostering human evolution and development. The developments in embryology could have been read as helping to confirm women’s status as childbearers and to restrict their activities from the public sphere since these developments emphasized the need to protect women during the sensitive times of conception and gestation. But actually, reformers concerned with sexuality used the new knowledge about embryological development to further their specific women’s rights agendas. They found in embryology further exigence for why women should have freedom to choose sexual partners and to demand changes in the sexual conditions of the household. Under their arguments, women should be given more rights rather than restrictions because of the mother’s special relation to the developing embryo. In addition, the knowledge that both men and women equally contributed the material to form the new embryo added weight to these reformers’ claims for the importance of women in human evolution.

The three main questions addressed by nineteenth-century embryology concerned whether the adult organism was preformed or went through a specific process of development--the preformation versus epigenesis debate; whether or not the development of the embryo reflected the stages of development of a species--known as recapitulation theory; and whether males or females were primarily responsible for the characteristics of the growing organism. Findings in embryology then translated into a popularized discourse in the medical field, where physicians stressed women's role in the development of a new life. Finally, racial uplift and free love speakers parlayed these discourses into a rhetoric of reform. Eventually, embryology would also contribute to the means by which reformers could understand birth control.

This chapter analyzes how developments in embryology, a science concerned with such diverse matters as how cells divide and how ova are shaped, could nevertheless provide warrants for women's rights in free love discourse and also in racial uplift arguments. This chapter first reviews the findings in embryology, the most important of which, to free love reformers, was the fall of preformation theory, since it seemed to provide the possibility for influence on the embryo. This chapter also reviews how the scientific discourse of embryology made special use of visuals to convey the stages of development, leading to a dissociation of the human female from the processes occurring inside her. It would be up to reformers to re-embody the woman and to argue for her status as an agent of evolution. Finally, this chapter shows how the findings in embryology often revitalized older beliefs about the influence pregnant women had on the embryo/fetus.

The Part as the Whole Warrant: Embryology in the Nineteenth Century

While embryology, or the study of the development of organisms, existed before the nineteenth century, it was in the nineteenth century that it emerged as a premier discipline, due to the work of the preeminent embryologist Carl Ernst von Baer and to advances in cell theory. Before the nineteenth century, embryology was mired in debates over preformation versus epigenesis, as well as in inaccurate conceptions of embryo formation. Nineteenth-century thinkers would resolve these debates through observations of eggs and cell division. This section will review the varied theories of embryology: the preformation and epigenesis debates; the use of embryology in evolutionary theories of Darwin and the recapitulation theories of Haeckel; and the findings in cell theory that allowed embryologists to locate fertilization and confirm the contributions to the embryo from the male and the female.

Older Views in Embryology

In 1651, William Harvey made the famous statement that “All that is alive comes from the egg” (qtd in Pinto-Correina 2). A new focus on the egg would resonate in later centuries, though older ideas still persisted. For example, Nicolas Venette’s influential investigation into sexual relations in his 1686 sex manual *Tableau de L’amour Conjugal* ignored the debates between ovists and spermists--that is, the debates over whether the egg or the sperm largely created the new being--in favor of the classical views of Hippocrates, which theorized that both male and female produced “seed” through ejaculation, leading to the persistence of the idea that female orgasm was required for conception, and that these seeds combined to form the offspring (Porter and Hall 75-76). Venette’s text also located conception in the fallopian tubes, rather than the more popular

view that conception occurred in the uterus, and he endorsed the belief that conception in the right tube would produce male offspring and in the left tube would produce female offspring (Porter and Hall 78). The highly circulated sex manual *Aristotle's Master-piece* (1684) noted the debate over whether the fetus is nourished through the umbilical cord or the mouth, but endorsed the view that it was nourished through the mouth (Porter and Hall 45). Most of the debates in embryology prior to the nineteenth century then centered around the question of whether the male or the female contributed most to generation.

Another debate in embryology concerned preformation and epigenesis. In the seventeenth century, adherents of preformation theory posited that all living organisms were preformed and that there was a primordial organism in which the forms of all succeeding generations were encased. The logic behind preformationism was that nothing could come from nothing (Pinto Correia xv). Preformationists were not logically wrong; they understood that spontaneous generation could not exist. However, while their general warrant would be accepted, their specific claim would be rejected by nineteenth-century embryologists.

Preformation also led to debates over the centrality of the egg or the sperm in the development of the embryo, which split into two camps: the ovists who believed that the preformed new being was stored in the egg, and the spermists who believed that the preformed new being was located in the sperm (Pinto Correia xvi). The debate over whose influence determined embryonic development vacillated between the male and the female, depending on social ideologies. In classical times, some viewed the influence of the mother as stronger because of the sharing of the blood and blood vessels (Needham 216). Other theories concerned the semen giving “form” to the embryo with the female

providing the “shaping” (Needham 40). Clearly, whether the influence of the male or the female was emphasized often depended upon gender ideologies (Needham 45). These earlier ideas relied on an understanding of the body as a complex machine, but once bodies were broken down into cells, a new ideology of generation could be created.

Nineteenth-Century Developments in Embryology

During the nineteenth century, embryology emerged as a formalized scientific discipline, capitalizing on technological advances in the microscope as well as on theoretical advances in cell theory and evolution. Embryology achieved status as the study of development, contributing to knowledge of sexuality and reproduction. Its questions were considered the source of knowledge for how we got here and where we are going as a species. As Carl Ernst von Baer stated in 1828, “The history of development is the true source of light for the investigation of organized bodies” (qtd in Coleman 36). Similarly, Ernst Haeckel found the study of embryology integral to understanding the present and the future: “Development is now the magic word by means of which we shall solve the riddles by which we are surrounded” (qtd in Oppenheimer 272). Though optimistic and idealistic in their interpretations of the role of embryology, their focus yielded practical applications. Embryology opened the door towards using the part to explain the whole--by unlocking the mystery of the embryo, scientists would reveal the mysteries of human descent and human bodies, and open a door that reformers glided through in their attempts to reconfigure women’s roles in evolutionary ascent.

The centuries-long debate between preformationists and epigenesists came to an end in the mid-nineteenth century, though holdovers to preformation still existed. In contrast to preformation theory, the theory of epigenesis, a belief that the egg was an

unformed entity, illuminated the stages of development. Epigenesists viewed development as a process and each stage in organic development saw the fertilized egg assume increasingly complex structures, with each stage as the basis of the next stage in the process (Coleman 35-36). Scientists who examined the development of different animals found proof of epigenesis, observing these stages, and support for preformation began to wane (Coleman 43). Epigenesis thus provided a new warrant--that embryonic development went in distinct stages, each dependent on the previous stage.

Carl Ernst von Baer (1792-1876), a preeminent embryologist, contributed to the defeat of preformation theory in his study of the mammalian egg in 1828, which showed how organisms develop through a process of differentiation (Bowler and Morus 170-171). Von Baer, who had also led expeditions through Arctic Russia and the Caspian Sea in the 1830s (Porter and Ogilvie 111), studied medicine but found himself drawn more to scientific research in embryology and zoology than to medical practice. He performed his influential work while holding positions as professor of anatomy and zoology in Vienna, Wurtzburg, and Konigsburg (Williams, *Biographical Dictionary* 26). His investigation into the layers of embryos began after his colleague Ignaz Dollinger, Professor of Anatomy, suggested he study chick embryos. However, this work, which included looking at the blastodermic membrane removed from the yolk, proved expensive, because it required a large number of eggs and someone to oversee the incubator (Porter and Ogilvie 111-112). Von Baer instead chose to develop the work of his friend Christian Pander who had been investigating the layers of the vertebrate embryo, in 1817 concluding that there are three layers. Von Baer then theorized that these “germ layers” were central to the development of the embryo (112). He later showed how these distinct

membranes developed into the body's separate systems and tissues, such as the nervous system (112).

Von Baer also turned his attention to finding the mammalian ovum. While Harvey had previously sought the mammalian egg in the uterus of a deer, von Baer sought the egg in the ovary of a dog—and found it. He then was able to state with authority that “every animal that springs from the coition of male and female is developed from an ovum, and none from a simple formative liquid” (qtd in Porter and Ogilvie 112). This finding refuted older views that the embryo formed from “seed” ejaculated from both the male and the female (Porter and Hall 76).

Von Baer also drove the last nail into the coffin of preformation theory with his work on germ layers. His theory that each layer produces specific organs and tissues of an organism helped to show that the embryo went through specific stages of life in its development. He also refuted the belief that all vertebrate embryos have the same development pattern and argued instead that they were merely similar in early stages. He left labels off embryos from different species to show how they were all similar in early stages of development, leading him to conclude that “all arise from the same fundamental form” (Von Baer qtd in Porter and Ogilvie 112). He published his studies of the mammalian egg in his 1827 work *On the Origin of the Mammalian and Human Ovum*, which along with his later work, *The Developmental History of Animals* (1828-1837), proved influential to scientists studying embryology and evolution.

Meanwhile, several important developments in knowledge of cells added to an understanding of the process of fertilization and development of embryos. In 1843, embryologists with improved microscopes viewed the sperm interacting with the egg,

which showed how fertilization occurred, though the significance of this finding was not realized for several years. In 1855, German embryologist Robert Remak proposed his theory on how new cells formed from division of old cells, a refutation of spontaneous generation theory. Remak (1815-1865) had a relatively unremarkable academic career until 1836, when he obtained his first compound microscope (Williams, *Biographical Dictionary* 411-412). In 1851, he showed that two of the layers von Baer had proposed were actually one layer. He then turned to the study of cell proliferation in 1852, leading to his important discovery on the division of cells. While Remak and other scientists were concerned with the generation of current life forms, others made past stages life their chief concern.

Darwin's work on evolutionary theory helped to reconfigure the study of embryology in his arguments on common descent using embryology as evidence (Mayr, *Growth of Biological Thought* 469-476). Indebted to the work of von Baer and Johann Meckel, Darwin posited that the stages of development revealed in embryology demonstrate the progression of species from lower to higher organisms. Darwin found support for the progression to higher stages through embryonic development, though he clarifies, "The embryo in the course of development generally rises in organisation: I use this expression, though I am aware that it is hardly possible to define clearly what is meant by the organisation being higher or lower. But no one probably will dispute that the butterfly is higher than the caterpillar" (*Origin* 356). As with epigenesis and recapitulation, Darwin saw the products of evolution in an ascending series.

But Darwin's most important contribution, in terms of reform, was his question of how changes and variation occurred. His theory of "descent with modification" placed

the occurrence of variations within the embryo, but he was careful to note, “The question is not, at what period of life any variation has been caused, but at what period it is fully displayed” (358). Darwin left the question of agency open, which provided a gap to enter for reformers. His speculation on how variation occurs is of particular significance for later reform rhetoric:

The cause [of variation between parents and offspring] may have acted, and I believe generally has acted, even before the embryo is formed; and the variation may be due to the male and female sexual elements having been affected by the conditions to which either parent, or their ancestors, have been exposed. Nevertheless an effect thus caused at a very early period, even before the formation of the embryo, may appear late in life; as when a hereditary disease, which appears in old age alone, has been communicated to the offspring from the reproductive element of one parent. (*Origin* 358)

Darwin’s theory that the “sexual elements” could be affected, sometimes to the detriment of later offspring, became a central point in reformers’ arguments. This theory gave credence to a view of heredity affected by outside influences. The lack of precise agency in his theory was also a critical point since reformers were then left to nominate agents that served their argument.

Another influential philosophy in the study of embryology was recapitulation theory, which theorized that each organism would go through an evolutionary series in its development, from lower to higher forms (Russett 50). The organism would, that is, recapitulate its ancestry in its development. Proponents of recapitulation theory, such as

Johann Friedrich Meckel and Ernst Haeckel, believed that they could look to the whole history of the animal phyla to explain the individual organism's development. Meckel said in 1821, "The development of the individual organism obeys the same laws as the development of the whole animal series; that is to say, the higher animal, in its gradual evolution, essentially passes through the permanent organic stages which lie below it" (qtd in Coleman 50).

Ernst Haeckel (1834-1919), like von Baer, studied medicine but found himself uninterested in medical practice (Williams, *Biographical Dictionary* 219). He instead became a professor of zoology, and was also responsible for coining the term "ecology" (Porter and Ogilvie 442-443). After meeting Darwin in 1866, Haeckel became one of his most enthusiastic proponents. He found support in evolutionary theory for his intense interest in recapitulation theory. Drawing on the finding that gill pouches existed in both bird and mammal embryos that were not present in the adults of these species (Porter and Ogilvie 442-443), Haeckel revived recapitulation theory, and theorized that "ontogeny (the development of the individual organism) recapitulates phylogeny (the evolutionary history of the species)" (Bowler and Morus 170). A gifted artist, he also produced depictions of species descent to support recapitulation theory.

The theory of recapitulation was thus based on a structure that placed humans at the top of an evolutionary hierarchy, and that viewed humanity as the intended goal of evolution (Bowler and Morus 153). It also offered a key component to reformist arguments: the notion of "the part as the whole," emphasized by Haeckel. Proponents of recapitulation theory saw the embryo as the model for evolution, with the embryo literally going through the process of evolution in its development (Bowler and Morus

151-153). While recapitulation had its adherents and detractors, historian of science Ernst Mayr (1982) points out that the theory, while based on misinterpretation of the laws of parallelism (*Growth of Biological Thought* 471), was responsible for increased interest in embryology and important findings in the field (474). Use of the embryo as a model for evolution in recapitulation theory eventually supplied a line of argument for reformers: the embryo residing within the woman made her an agent of evolution, and she was literally the setting where evolution would take place.

However, it was cell theory that exerted the most influence over the study of embryology, especially concerning the question of whose material, the male's or the female's, contributes most to the formation and characteristics of their offspring. Cell theory allowed scientists to understand the creation of new life as a division of cells and also pointed the way towards understanding how the egg and sperm contributed to the new cell (Bowler and Morus 165). Remak had already shown that new cells were formed by the division of old cells, which paved the way for examining what was occurring in the process of fertilization. Fertilization itself would be illuminated by two different scientists working independently of one another, but coming to the same conclusions.

In the 1870s, Oscar Hertwig (1849-1922) and Herman Fol (1845-1892) both examined the joining of the sperm and the egg and the initial presence of two nuclei, thus showing how the fertilized ovum formed out of material not from one, but from both parents. Hertwig, a zoologist and professor of anatomy, cytology, and embryology, took a trip to the Mediterranean that led him to study the sea urchin, whose large eggs made cell division easy to study (Gillispie 6.338). He saw that only one spermatozoa was needed to fertilize the egg and that two nuclei existed after fertilization, one from the egg and one

from the sperm. Fol, a biologist studying mollusks, came to the same conclusions, which he published in papers in 1877 and 1879. These men's important discoveries in cell theory thus provided strong evidence for the claim that both parents supplied the material for the embryo.

Cell theory, then, pointed the way towards understanding the contributions of both parents, lessening gender biases and forming the basis of later breakthroughs in heredity, such as August Weismann's work on germ plasm (see Chapter 5). Weismann's work would not have been possible without knowledge of how the egg is fertilized and how both parents contribute material to the embryo (Bowler and Morus 171). The focus on the cell served to further break down the process of reproduction--it could be understood not only at the level of physical interaction of bodies, but also at the levels of the cells that compose this material. Thus as Waisbrooker, whose quotation opens this chapter, would claim, what could be obscene about a process that produces cell fusion and division?

The elite but widespread science of embryology dealt with various issues that would find their way into the public consciousness and validate the popular interest in examining sexuality: the theory of epigenesis, or how each embryo develops in a series of interdependent stages; the theory of evolution, which explained variation and species development; and recapitulation theory, which focused on the part, the embryo, as the whole of the evolutionary history of the species. Cell theory also became integral to the discourse of embryology, because it explained the division of old cells to form new cells and helped to illuminate the process of fertilization. Just as important as what these theories said, however, was how these theories were conveyed.

Warrant-Establishing and the Discourse of Embryology

Embryology occupies a central role in the history of how scientists put their findings into discourse since it emphasized the importance of visual and even three-dimensional representations in communicating discoveries of processes invisible to the naked eye. Theories in the field, ranging from epigenesis to recapitulation theory, would not have reached such a vast audience and achieved such influence if scientists like von Baer, Wilhelm His, and Haeckel were not able to use different visual methods for communicating their findings. Their use of visuals also resulted in new audiences for scientific discourses. Nick Hopwood's studies of the history of the science of embryology (1999, 2005, 2006) have demonstrated the importance of visual representations to this science. From von Baer's demonstrations and illustrations of the layers of the embryo in the 1820s, to Wilhelm His's three-dimensional models of embryos in the 1860s, to Haeckel's drawings of vertebrate embryos to compare development and prove evolutionary theory in the 1860s and 1870s, scientists not only provided more concrete evidence for their own discourse communities, but their representations also opened up their discourses to new audiences who found these visualizations compelling. Visually representing models of embryos allowed scientists to both convey and organize their findings as well as to depict the series and stages of development (Hopwood, "Pictures" 265).

For example, scientific arguments for development and evolution often employed images of ladders and branching trees to visualize the multi-layered process of development. Species ascent was then given more presence through these visuals. Reform arguments also picked up on these metaphors of ladders and trees. Critic Nick

Hopwood (2005) has even noted that visuals became the preferred method for demonstrating the process of development because they often provided stronger evidence than textual descriptions (Hopwood, “Visual Standards”). His’s three-dimensional model revealed the depth of the layers in embryos. Developments in the microscope showed how there could be analysis of material at the level of cells, which scientists could then represent visually. Visual models of embryos also enabled scientists to convey the workings of the process of development down to the level of cells, which is a prominent feature in medical popularizations of this branch of science as well. Haeckel’s visual representations are perhaps the most controversial: he used images to show the comparative development of different species of embryos to support theories of evolution and recapitulation, but many of his images were later contested and Haeckel was accused of fabrication to support evolution (Hopwood, “Pictures of Evolution”). However, his work contributed to the growing trend of using visuals to convey the findings of embryology. These visuals aided in the development of warrants because the stages of development could be illustrated for the audience.

Finally, the scientists’ use of the embryo as the model for how evolution occurred in natural selection and recapitulation theories demonstrates the rhetorical strategy of dissociating the part from the whole, yet representing that part as the whole. In the human female, the embryo is part of the whole body, yet it represents the process of evolution, or the whole run of phylogeny, within her body. Representing the embryo as the model for evolution made the evolutionary process tangible, though embryos were often depicted as isolated from the female body. This dissociation of the embryo from the body takes the woman’s body out of the process, yet the key is that the part was meant to represent the

whole in both contexts--that of evolution and that of growth within the body. Depictions of the embryo as the model for evolution and the discovery that the embryo grew within the female body eventually provided warrants for reformist arguments on the status of women. But reformists first needed to re-embody the embryo to highlight the warrant for their arguments stressing women's need for protection and status.

While critic Nick Hopwood (2006) points out that many of the embryologists' procedures and methods of visualization took the embryo out of its context in the female body, and therefore disconnected the embryo from the pregnant woman ("Pictures" 265), he barely skims the surface of the implications of this assertion. Through their rhetoric, both textual and visual, embryologists create a disembodied sense of the embryo, one that separated women from the process of development. Scientific disciplines often create images isolated from context to delve deeper into the essence of the figure they are representing. The embryo was isolated in visuals detached from its context in the pregnant female. This detachment allowed scientists to diagram the different parts of the embryo. Gradually, embryological discourse changed, starting with its popularizations by physicians, who connected the development of embryos to the site of women's bodies. This connection highlighted women's health as central to the proper development of the embryo. Reformers would take this connection even further, accentuating women's role and embodying the disembodied host (the woman) for the embryo. The scientists' isolation of the embryo occurred at the level of warrant-establishing, but once embryology became a warrant in reformers' claims, the embryo was contextualized within the female body. Kenneth Burke's pentad is useful to analyze these changes: for

the scientists, the scene for the embryo was the laboratory, but for reformers, the scene became the woman's body, making her the agent of evolution.

From the Science to the Mainstream: Medical Practitioners and the Popularization of Embryology

How the findings in embryology would be used in the reform movements was determined by their popularization by medical practitioners and physicians in medical advice books. These popularizations often took the argument further than the fact and definition stases of the scientists, who explained the findings in embryology; popularizers applied the new information to value and action arguments to accentuate the importance of the woman's health in development. Physicians both explained the generation and development of embryos and made arguments for why women should have rights. The texts examined in this section by physicians Russell Trall, John Cowan, and Emma Drake are chosen because of their links to reform discourses. These texts popularized the science of embryology in medical advice manuals aimed at female audiences. These types of manuals, and in Trall and Cowan's case, the books themselves, were cited by women in Dr. Clelia Mosher's study of the sexual knowledge and behavior of late nineteenth-century women as influential to their understanding of sexual physiology and sexual practices. Trall's book was also advertised in *Woodhull and Claflin's Weekly*,⁶⁸ and Cowan's received the endorsement of Elizabeth Cady Stanton. Drake, a physician whose advice on sex aligns her with both the social purity and eugenics movements, was

⁶⁸ I found several advertisements for Trall's book when browsing the archives of *Woodhull and Claflin's Weekly* at the Library of Congress.

also an authority for the reformers.⁶⁹ Thus, these intermediary medical texts represent the kind of texts from which reformers derived their knowledge of the elite science of embryology. This section will analyze how embryology was conveyed in medical texts in order to look at the influence of this discourse on reformers in the subsequent section. It shows how the findings in embryology often “refreshed” older ideas and helped to focus the discourse of the body on reform.

Russell Trall

Russell Trall’s 1866 *Sexual Physiology: A Scientific and Popular Exposition of the Fundamental Problems in Sociology* was not only a popular source of information on physiology, but an example of a text that that relied on visuals to convey the stages of development within the human female. Trall’s philosophies on women’s rights clearly influenced his discussions of physiology (see Chapter 2), as he attempted to dismantle ideologies of women’s bodies as constricting and to naturalize their bodies and functions. Similarly, women’s rights ideologies find their way into his discussion of embryology.

Trall’s chapter on embryology falls in the middle of his book, between his explanations of physiology and his application of physiologic knowledge to providing advice on sexual practices. Much of his chapter on embryology consists of diagrams and their explanations, as well as quotations from embryologists explaining the process of fetal development. In fact, much of the chapter is composed of others’ words, with abundant quotations, sometimes lasting for several pages. This practice of quoting at length was common to several popular medical texts I examined that incorporate

⁶⁹ Drake’s published marital advice books throughout the late nineteenth and early twentieth centuries often espouse social purity and eugenic ideals, and some of her writings are included in compilations of these movements.

explanations of embryology. In contrast to his explanations of anatomy and physiology, where he often explains and interprets the anatomy of the body in his own words, Trall seems to be more a conduit for science in this section. The new science of embryology during this time period, then, is one that was new to physicians who did not feel they had the ethos to explain it themselves. They instead relied on more authoritative sources. There is much that Trall admits to ignorance of, including where fertilization occurs (114). The influence of scientific discourse, however, is evident in Trall's choice to visually convey most explanations of human development in the embryo.

Using the bird egg for comparison, Trall's chapter on embryology explains the shape and composition of the egg. He first labels each part of the egg, and then elaborates on the purpose of these parts. Describing the composition of cells in the egg and membrane to set up his explanation of fertilization, his explanation breaks down the parts of the fertilized cell and describes how the different parts of the cell become the embryo: "The blastodermic membrane, though consisting only of cells nearly uniform in size and shape, is nevertheless a truly organized membrane, made up of fully-formed anatomical elements. It is, moreover, the first sign of distinct organization which made its appearance in the egg; and as soon as it is completed, the body of the new foetus is formed. The blastodermic membrane is, in fact the body of the foetus" (106). He also specifies how the cell "converts into an organized structure" (105). He thus combines two important findings in embryology in this first section: epigenesis, or how the embryo develops in stages, and the germ-layer theory that explains how these membranes grow into specific organ systems of the body. The influence of von Baer's work is clear, as well as the current scientific focus on the cell.

The sequence of the diagrams in the chapter also draws on the scientific explanations of embryology, showing how development occurs from the cell to the fetus. The visuals help to break down this growth through the use of color and shading to show depth. The chapter begins with a diagram of a section of a bird's egg, filled in with gray lines to convey the richer elements unexplained in this diagram. This particular diagram breaks down the parts of the egg, representing the yolk, shell, membrane, and albumen. The second page looks deeper at one element of the first diagram, representing the "cleaving of the yelk" showing the division of cells, explaining: "first into two, then into four, then into eight, and so on, and by the metamorphosis which its progeny undergo, that the whole embryonic fabric is gradually evolved" (Carpenter qtd in Trall 102). The diagram represents this division by showing in five stages how the cells divide into two then divide even further. The next page represents the "progressive multiplication of cells": it starts with four pictures depicting the cell going from one to four cells; labeled A through H; these four diagrams elaborate this process further, showing the later stages, until H in the sequence is a picture of an oval enclosing multiple small circles, representing cells. The diagrams in this chapter go even further in analyzing the parts of those cells. Later figures diagram the "germinal membrane" and "embryonic rudiments" of the individual cell (106-107). Thus, the figure is repeatedly broken down by these diagrams until the figures reach the stages of incubation; these figures then enable the reader to understand the egg and the embryo at the most basic level of cells.

Later pictures also explain the process in the human ovum: these contain more white space than shaded areas, breaking down the shape of different parts rather than demonstrating the depth of the materials within. Figures 66 and 67 contain the fetus at

forty-five days and at two months: in both representations, the fetus contains a cord leading off to nowhere: there is no woman in the picture. Figure 68 depicts the “foetus at three months in its membrane,” which appears to be smiling and waving, a further method to make the processes come alive for the reader. Finally, Figure 69 depicts the fetus at the “full period of utero-gestation” (119). In this picture, shaped like a square, the fetus is shown beneath layers of protection, but the full body is left unrepresented. However, there does appear to be a small representation of the vagina beneath the fetus, showing hair, but not much else. The subsequent diagrams in the chapter depict the placenta and the cord attached to the fetus.

Trall’s visual diagrams accompany many of his explanations and they become the primary means to describe embryological development. However, these diagrams do not give the reader a sense of the dimensions of the embryo, unlike His’s demonstrations (Hopwood, “Giving Body”). Therefore, much of Trall’s explanation includes making that diagram come to life for the reader, explaining the weight and dimensions of the embryo. He employs analogy to flesh out his explanation: “The head is very large in proportion to the body; the trunk is elongated and pointed; the limbs resemble the shoots of vegetables; dark points or lines indicate the existence of the eyes, mouth, and nose, and parallel points indicate the situation of the vertebra. The length is nearly one inch or about ten lines” (115). The shortcomings of a diagram to convey size necessitates such comparisons. Readers would be more able to visualize the dimensions of the fetus and how they alter and align.

Trall’s sequence of diagrams represents the trend in the use of visual diagrams to understand embryology: in order to convey the processes occurring at the level of cell

division, the processes are removed from the female body. But the body gradually returns as the process goes further: first showing how the umbilical cord is attached to the fetus, then showing the fetus within the uterus, until it is finally represented in the uterus within the reproductive system. The representations that gradually reveal the parts of the woman's body then make it possible to situate these processes within the woman. Because the female's body is the site of this complex development, it becomes possible to argue that she should receive special rights because of her role.

The findings in embryology enabled Trall to discuss women's rights in refuting misperceptions about the mother's influence on the embryo. He ends the embryology chapter by refuting the notion: "That 'the mother throws off her disease on the child,' ...a common mode of expressing this prevailing fallacy. It ought to be known that although the child may, while in the womb and also while at the breast, be injuriously affected by all the morbid conditions of the mother, its sickness or death does not in any case 'carry off' disease or morbid matter from the mother" (132). Trall seems to be correcting an idea that females get rid of a disease by giving it to their unborn child. He clarifies that the mother can give a disease to a child, but she will still have it. Like his explanations of physiology, Trall uses embryology to dispel popular myths about the female body and its processes.

Later chapters in *Sexual Physiology* elaborate a more feminist interpretation of a woman's influence on the embryo and fetus. Like many free love reformers, Trall stresses the importance of the health of women to bearing healthy children. He argues that women should be subject to conditions that enable them to maintain a healthy lifestyle. Attributing the high numbers of abortions to the fact that women have few

rights, he asserts, “Restore woman to health, and give her what God has ordained as her birthright--the control of her own person--and the trade of the abortionist will soon cease” (204). He does not condemn women for seeking abortions, but rather the unequal conditions that lead to the need for abortions. His later discussions of hereditary transmission go further in espousing rights for women since women are the primary influence of the embryo.

Using the knowledge of embryology, Trall establishes that both parents contribute to the new life. However, he stresses the mother’s influence once the egg has been fertilized and shows why she should then have rights:

At the moment of impregnation both parties must, to some extent, transmit the lesser or the greater degree of their constitutional peculiarities, thus occasioning the greater or less resemblance to one or the other parent. But, from the moment of conception until birth, the influences of the mother are constant. During this period nothing can affect her injuriously that does not, to some extent, damage her child. (257)

Trall’s use of older beliefs here shows how nineteenth-century findings in embryology often revitalized these beliefs. After elaborating physical conditions that would harm the child, Trall also details how conditions that force the mother into unpleasant mental conditions can harm the growing fetus: “...a terrible sight, a grievous misfortune, an unhappy home, an unkind husband, a suffering child to care for, etc. etc., are each and all causes of abnormal conditions on the part of the mother, and consequent deterioration on the part of the child” (258). Thus, an unpleasant husband is something a woman should be protected from with specific rights. He establishes, “The rule, then, for the production

of good children is exceedingly simple. *Keep the mother happy and comfortable*” (258; emphasis in original). Under his logic, since a woman can impress feelings and even thoughts on the embryo, she should not be made to have negative feelings and thoughts. She will only transmit the best qualities if given rights and protection from negativity. Trall does not, however, advocate a sedentary or protective lifestyle for the protected mother: she will still need exercise and mental stimulation. Instead, she should have the conditions given to a person with full rights and full “control of her own person.”

John Cowan

Physician John Cowan goes further in elaborating the importance of rights for the mother in his theories of heredity and pre-natal influences based on embryology. His *The Science of a New Life* (1889) advises potential parents on how to bear healthy and intelligent children using ideas derived from physiology, embryology, and hereditarian science. A medical reformer who advocated continence, Cowan’s ideas of sexuality align him with social purity goals. *The Science of a New Life* focuses on heredity and prenatal influences, topics central to reformers like Frances Willard. Like Trall, Cowan’s text conveys information through visual diagrams and lengthy quotations from other authorities to explain embryology. His chapter on intra-uterine growth uses the findings of embryology to elaborate the period of “gestative influence.” Thus, information on embryology is used to support a larger argument in the text about heredity.

Like Trall, Cowan quotes at length from other authorities, most notably a “Professor Dalton,” to explain the development of the embryo. Writing in 1889, the science of embryology would be less new to him than to Trall, but Cowan’s explanations of the science still rely heavily on other sources. The arguments for reform that come out

of these explanations, however, are given Cowan's own voice. In addition, his explanations of embryology also combine older ideas with the new science to argue how the parents can influence the growing life in the embryo.

Cowan also shares a commonality with Trall in his visual depictions of the growing embryo from the level of cells to the fetus in-utero. While he, too, removes the process from the woman's body in visualizing the microscopic aspects of development, he also depicts the embryo within the uterus, situating it in a context, though the rest of the body is still unrepresented. Thus, the depictions of the embryo signify stages of development: on the cell level, the pictures are isolated from the body or the context. At the level of the development of the fetus, however, the representation does include the uterus as its home. It is at the reform stage that these representations become more fully re-embodied since reformers emphasize the importance of the mother and her body on fetal development.

Cowan also accompanies his diagrams with explanations of the weight and dimensions of the embryo. He quotes from Professor Dalton who breaks down the process into days, using analogy to more fully represent the changes in size:

On the tenth day it has the appearance of a semi-transparent grayish flake.
On the twentieth day it is nearly the size of a pea, filled with fluid, in the middle of which is an opaque spot, presenting the first appearance of an embryo, which may be clearly seen as an oblong or curved body, according as it is viewed, and plainly visible to the naked eye on the fourteenth day. Its weight, at this time, is about one grain....*On the twenty-first day* the embryo resembles an ant or a lettuce-seed....*On the thirtieth*

day the embryo is as large as a horse-fly, and resembles a worm bent together... (182)

These descriptive analogies make the embryo more real to the popular audience. The choice of analogies to a pea, an ant, a lettuce-seed, a horse-fly, and a worm also represent objects the audience would be familiar with, particularly in the domestic sphere. The analogies to lower life forms also help the reader to follow the course of evolution.

Cowan also emphasizes how the embryo represents a growing life, a life that can be determined while in-utero. Immediately following the chapter on development, Cowan stresses the agency of the parents in influencing this growing being: “This minute speck represents an individual who eventually will be temperate, or else a drunkard or glutton; who will be chaste or licentious; whose life will be a success or a failure, depending alone or altogether on what the parents choose to make it” (188). Picking up older ideas on pre-natal influence, he particularly emphasizes the role of the mother: “...it is through the blood of the mother *only* that the body of the child is nourished, its character influenced, and its habits of life formed” (189). Since her blood is nourishing the fetus, it is her blood that will influence its characteristics. The reformers’ ideas on pre-natal influence are clearly derived from this line of thinking. Cowan summarizes, “A man or woman’s daily thoughts and actions affect and impress the secretions of the nutritive system, and through this the blood; and in this way, through its reaction on the nervous system, the character of the man increases for better or worse, as may be. It might with truth be said, that a drop of blood represents in its elements the character of the individual who manufactured it” (189). The emphasis on the thoughts of the mother, older advice that is retold in a scientific register, was exploited by reformer Adella Hunt Logan,

discussed below, as well as free love reformers who argued that women should have rights to prevent negative thoughts from influencing the fetus.

Cowan, aligned with social purity ideals, also emphasizes the importance of giving rights to the mother in order to secure the growth of a healthy and happy child. His emphasis on the blood shared between mother and child relates to larger cultural ideas about how “blood tells,” but also alludes to some of the ideas that Needham documents in his history of embryology on the influence of the mother because of blood and blood vessels (Needham 216). While drawing on such developments as the growth and stages of the embryo given by epigenesists, the evolutionary hierarchy given by Darwin and Haeckel, and the knowledge of both parents contributing characteristics to the new life, Cowan also relies on older ideas in his explanations of how parents can actively influence the type of child they conceive and then foster in fertilization and incubation. His ideas, while compatible with older superstitions, are nevertheless given new “life” by the new scientific developments of the time. For Cowan, a temperate life and temperate attitude before conception and during incubation will create a temperate child, an idea which makes his approach particularly attractive to reformers.

Emma Drake

A conservative physician whose ideas also align her with social purity ideals, Emma Drake’s *What a Young Wife Ought to Know* (1901) provides her audience of young women with advice on maintaining health, choosing a husband, and caring for a child. Drake published throughout the late nineteenth century, often espousing social purity and eugenic goals. In her 1901 text, she uses the scientific developments of the past century to advise young women to pursue a temperate life. Nestled between chapters

on the “Ailments of Pregnancy” and “Baby’s Wardrobe,” Drake’s chapter on “Development of the Foetus” uses embryology to impress upon women the importance of their role in sustaining new life.

Drake begins this chapter on development with,

How does the tiny speck, so tiny that it cannot be seen with the naked eye, only one hundred and twentieth of an inch in diameter, how does this tiny atom of matter, begin in its growth, continue and develop into the full grown child? This little germ or ovum, the part furnished by the mother, in the creation of a human being, contains the germinal vesicle, or embryo cell, and the stored up food for the early days of life after conception takes place. After the ovum leaves the ovary, somewhere in its journey to the uterus or womb, it is met by the spermatozoon, or male element of conception, and by their mysterious union the new life begins. (155-156)

This emphasis on the sperm meeting the egg and on the minuteness of the process and growing embryo is made possible by scientific sources. Drake’s introduction to the chapter emphasizes the question of development: how can something we cannot even see be influenced? Her narrative underscores the mystery in these processes, which embryology had illuminated. This emphasis also leads into her anti-abortion argument in stressing that this “minute speck” is in fact a growing life. Her explanations of the stages of development further her anti-abortion goals.

Like her fellow physicians Cowan and Trall, Drake details the stages of development. However, she also details the alteration of the woman’s body during pregnancy, noting the changes that occur in the uterus once fertilization has taken place.

While she does not use visual depictions to embody these stages, the body of the woman is brought back into this discourse since she highlights the changes occurring in the body and situates the process of development within the body to further her argument against abortion. Also like Trall and Cowan, Drake quotes extensively from other authorities to explain the progressive development of the embryo. She quotes full pages breaking down the development of the embryo and fetus by month, attributing these quotations to a textbook by Leavitt called *The Science and Art of Obstetrics* (158). Finally, she also breaks down the process of development to the level of cells (157).

Where Drake differs from the other physicians is in her more explicit reform agenda within the chapter on embryology. While Cowan and Trall promote reform agendas at the end of their embryology chapters, and then use that knowledge for reform arguments placed later in their texts, Drake intersperses her explanations of development with an anti-abortion argument. At several stages within the chapter, she stresses that she is conveying this information in order to combat the temptation for a woman “to rid herself of the product of conception” (157). She begins the chapter with a testament to the extraordinary process that occurs, brings up the anti-abortion argument throughout the explanations of development, and finally ends with a celebration of the product of this development. She writes,

So the baby grows until it reaches intrauterine maturity, and comes into our arms for cherishing. Pity, pity the little one that comes with no love to receive it, and pity more the mother of such a child. No woman has a right to marry, unless she desires offspring and is willing to fit herself for maternity. No man has a right to take upon himself the sacred vows that

make him husband, unless he comprehends all that it means, and is measurably ready to meet its duties and responsibilities. With such preparation, and such understanding upon entering matrimony, we should see a nobler, stronger race of men and women in the coming generations.

(162)

Thus, in Drake's text, embryology is used to create a rhetoric of responsibility. Unlike Trall and Cowan, she stresses the rights of the child over the right of the parents. In social purity and free love discourse, however, this responsibility is twofold: the woman should have rights so that she can bear a healthy and happy child and the child has the right to have two parents committed to creating a healthy and happy child. Social reformers often gave precedence to the rights of the child in order to argue for the rights of the mother, as illustrated by Drake's advice. Drake also highlights the overall goal of "a stronger race," positing that this goal will ultimately derive from an understanding of embryology and the woman's role in development.

The Discourse of Popularization and Implications for Reformers

The popularization of embryology, as represented by Trall, Cowan, and Drake, relies on several key theories of the scientific community. In describing the stages of development, they base their knowledge of epigenesis on demonstrations like von Baer's, such as Trall's references to the germ layers. The division of cells is also a prominent feature of each text: readers of their texts would be interested in how these processes begin at the microscopic level, and the use of cell theory forms the basis for later arguments about women and men's contribution to the new organism. Furthermore, the ideas of evolutionary theory and recapitulation, which both rely on a sense of hierarchy,

are then given presence in the discourses positing the agency of women to influence the growing life. Linking these ideas together, the physicians popularized the theories of embryology into a rhetoric of responsibility and agency.

The popularizations of embryology also share several rhetorical features. All three of the popularizations surveyed here rely on the words of others to explain embryological development, whereas other areas of their books do not use quotations as extensively. Thus, these works seem to be popularizations of popularizations. Notable is the idea that they could not sum up or change the words of the original source, but can only quote for pages at a time. As a science gaining more of an “elite” status in contrast to the more popular science of physiology, practicing physicians may have felt removed from the different methodologies of the new science of embryology, such as the use of more advanced microscopes. Physicians would have the ethos to explain how the different parts of the body work and how to prevent and cure disease; the science of embryology, however, breaking down processes to the level of cells, seemed more removed from the actual practice of medicine, thus necessitating use of more prominent authorities on the topic in these popular medical texts.

The use of analogies and emphasis on the dimensions of the embryo are also common to these three texts. Each physician either creates or relies on the analogy of a quoted authority to give presence to the growing embryo. Providing the dimensions of the egg and then the embryo and the fetus would enable a stronger sense of just what was occurring in the body, and, in Drake’s case, give presence to the idea of a growing human life. Analogies of size as resembling a pea or an insect seem less idealized, but would create a stronger sense of the dimensions since the diagrams would not impress these

dimensions on the reader. These analogies bring together the textual and the visual rhetoric to promote understanding of these removed and embedded processes.

Finally, in their use of diagrams, physicians reinforced the importance of visual rhetoric to this science. The diagrams would sequentially illuminate the process of development, popularizing the theory of epigenesis. To do so, however, the embryo became disembodied--a necessary preliminary to observing the processes of the embryo at the level of cells. The use of shading and white space in their pictures also served to convey an argument about embryology: they shaded when they wanted to emphasize the depth of the processes occurring, and the un-shaded white space when they wanted to display connections between different parts. Gradually, as the embryo develops, the growing life is situated within the body of the woman. In order to make further arguments about the woman's important role in the process of development, the embryo had to become rhetorically re-embodied. The situation of the growing life within the woman also serves to take a step back from the process and observe it not at the level of cells, but at the level of the processes occurring in the body. Reformers could then stress the importance of the mother in impressing characteristics upon the growing life, and argue for her rights on the basis of the importance of the mother's health.

Birth control

The developments in embryology have one further integral application: the increased knowledge of how and where fertilization occurs increased knowledge of how to prevent conception. For the natural remedies often proposed by reformist physicians, especially water cure physicians, understanding the cycle and movement of the egg then reinforces natural birth control methods, such as the rhythm method advocated by many

physicians. The task of making these methods more efficient would fall to later birth control pioneers, such as Margaret Sanger, but the greater knowledge and practices of birth control would not have been possible were it not for the growing science of embryology.

The Reformers: Embryology as Warrant

Once the science of embryology was popularized, it began to travel into the realm of reform, as demonstrated by the reformist tendencies of Trall, Cowan, and Drake. Social reformers arguing for women's rights on the basis that giving rights to women would aid evolution rather than hinder it needed these scientific developments to support their arguments. The use of embryology as a warrant for women's rights occurred in both racial uplift and free love rhetoric. Though women involved in racial uplift did not explicitly argue for sexual rights, as free love reformers did, they did use similar rhetorical strategies to highlight women's special role in evolution and uplift. The overlap between these reform discourses illustrates how the sciences of embryology and heredity carried authority in the popular realm. Arguments for rights that might usually be based in natural rights or law became based in science and evolution. While some of the uses of embryology as warrant seem like leaps in logic, especially when it comes to the arguments based on prenatal influence, my analysis shows how the logic of these arguments merely extended and applied the developments in embryology and how, to reformers, those developments in embryology seemed like new warrants for old arguments. The scientific warrant positioned the mother as the site of complex development. Complex development requires special treatment. Therefore, reformers argued, mothers should be carefully treated.

The Woman's Role in Racial Uplift with Embryology as Warrant

Adella Hunt Logan (1863-1915) used an argument for the special treatment of women in her racial uplift goals. Logan was raised in Hancock County, Georgia, part of a large “free family of color” (Alexander). Her parents, a white father and African American mother, could not marry since laws in Georgia restricted interracial marriages at the time. Logan, one of nine children, was well-educated and became certified as a teacher in Hancock County when she was only sixteen years old (Alexander 169). She later attended Atlanta University and taught for several years at Tuskegee. Logan challenged racial and gender stereotypes throughout her life, and advocated equality and women's suffrage. But after suffering from depression, a result of her despondence at social equality, she ended her own life in 1915 (Alexander 194). Family friend W.E.B. DuBois remembered Logan as one of the “voices from within the veil” (194).⁷⁰

In 1897, DuBois organized the “Second Conference for the Study of Problems Concerning Negro City Life” in Atlanta, where Adella Hunt Logan spoke on “Prenatal and Hereditary Influences.” Her speech illustrates an explicit use of the findings of embryology, as she refers to the findings that both men and women influence the characteristics of the embryo. A more implicit use of the science occurs in her references to the impressions that can be made on the embryo, references drawing on the possibility of influence resulting from the rejection of preformation theory. While she uses the theories of heredity I will discuss in the next chapter, she also explicitly refers to some of the findings of embryology to support her goal of emphasizing the importance of women's roles in creating the next generation to uplift the race. Logan's speech drew on

⁷⁰ See Adele Logan Alexander's *Ambiguous Lives: Free Women of Color in Rural Georgia, 1789-1879* (1991) for additional biography of Logan and her family.

scientific warrants, as its title indicates, to make the argument that women have a special role in uplifting the race through the creation of better children; therefore, they need rights, including protection from inequalities and negative influences.

Logan highlights women's unique roles in the creation of better children, but she also stresses that the characteristics of the future child will be influenced by both mother and father: "Before the body is ready to begin life as a separate being, as a new personality, it is molded and cast by the combined traits of the father and the mother from whom this new creature must draw its individual existence. And the intellectual and ethical cast will follow as closely the law, 'Like begets like,' as will the physical" (212). This statement, refreshed by the findings of embryology in the late nineteenth century that both parents contribute material to a new life, also contains an implicit argument for women's rights. If the woman influences the future life and molds it before its birth in physical, intellectual, and ethical characteristics, women should thus have rights that nurture and maintain their intellectual pursuits.

Logan's speech resituates the debate on racial uplift to focus on the possibilities of uplift in producing the next generation. Consequently, women as bearers of these possibilities need rights. But in order to argue for those rights, Logan needs to refer to the knowledge of how men and women affect the characteristics of the next generation. To do so, Logan not only must show that both parents contribute material to the forming of the embryo and the characteristics of the future person, but that both parents are responsible for prenatal influences, picking up points made in contemporary medical popularizations, such as Trall's: "To no one source more than the conditions attendant upon pregnant women can the cause of physical or moral evil be traced. The unborn child

draws its physical and in large measure its intellectual and ethical make-up from its father and its mother. Not from the mother alone, *as many suppose*, but from both” (213; emphasis mine). Thus, Logan’s women’s rights rhetoric, while stressing the unique role of the woman, places responsibility on both parents. She continues, “Both parents contribute to the possibilities for health, good or bad, and furnish the germs for character creation and development just as certainly as they together originate physical life” (213). While these statements rely on many of the hereditarian theories discussed in the next chapter, embryology also helps us understand her aims. Since it is an established scientific fact in the nineteenth century that both parents contribute, uplift needs to occur in both genders. And that uplift needs to account for the prenatal influences operating on the mother, which the father affects since he has influence, and as the free love advocates would claim, physical, legal, and emotional control, over the mother.

Since medical popularizations stressed the importance of prenatal influence in molding the characteristics of the unborn, the logic becomes that what affects the mother affects the embryo or fetus. Logan’s use of such logic then translates into women’s rights. She emphasizes, “let it be distinctly understood that the development of germ life depends upon the original germ and equally upon the culture and treatment of that germ⁷¹:--in short, teach that the prenatal development of the child depends largely on whatever affects the mother” (214). Logan re-embodies the woman’s role in embryological development--the woman is the vessel holding the “germ life” that can be influenced for good or for bad. By situating this important development within the woman’s body, she can then argue for women’s rights. Under her logic, a woman should

⁷¹ Her use of the term “germ” also suggests August Weismann’s theories, published in the 1870s (see Chapter 5).

not be subject to conditions that would cause her to think negative thoughts that would make an impression on the embryo: “Few women seem to appreciate the fact that the sensitive embryo receives the impression made upon the mind of the mother” (214). In this discourse, the husband can be the cause of those negative thoughts. Logan describes how the father might resent the unborn as an additional mouth to feed, which can then create negative thoughts in the mother that would make a negative impression on the embryo (213-14). Thus, both parents have a responsibility in prenatal influence.

To drive home her point, Logan employs an image often evoked in free love rhetoric: “If the pregnant woman is constantly wishing that her unborn child were dead or that the man who has given her this burden,--as she has learned in chagrin to regard the child,--were dead,; who can wonder that out of such murderous thought there should come in very truth a murderer!” (214). Free love advocate Mary Gove Nichols had used a similar line of argument almost fifty years earlier. Free love advocates often argued that the inequalities and conditions fostered by the marriage system created murderous thoughts in women, which could then be transferred to unborn children. This rather unusual notion is employed to then argue that women should receive equality and other rights that would prevent them from harboring such thoughts and resentments.

Free love advocates took this causal argument even further, arguing that it was the brutality with which men treated their wives during sexual unions that would cause such murderous thoughts; thus, women would need partnerships based on equality and pleasurable sex in order to prevent such feelings. Logan employs this logic not to argue for sexual rights, but for the importance of women as bearers of the future generation in the goal of uplifting the black race. This logic was given further urgency by

embryological discourse since embryology highlighted the process of embryonic development--the reformers could then show that the development was affected by outside factors. The findings gave new presence to a well-known truth. Darwin's arguments on embryology did not completely discount such influences. Logan's use of similar logic and her application of studies in embryology demonstrate how scientific discourses infiltrated social movements with such diverse goals.

The Woman's Need for Sexual Rights with Embryology as Warrant

Physician and free love advocate Juliet Severance's (1901) rhetoric shares similarities to Logan's in her statement that, "As certainly as like begets like, as surely as temperament, traits of character, complexion, color of eyes and hair are imparted by parents to offspring, so surely is the loathing, the pollution, the hate that filled the mother's mind transmitted to her child" (*Marriage* 29-30). Severance's wording here shows how reformers employed analogy to argue that women should not be subject to conditions where they would have loathsome thoughts that would transfer to the characteristics of the embryo: if the traits of character, complexion, and color of eyes and hair are transmitted through both parents' material during intercourse and form the basis of the embryo, why couldn't thoughts and feelings also be transmitted? If the embryo was affected by physical changes and physical conditions of the mother, why couldn't emotional and intellectual conditions also affect the embryo? At this point, scientists had determined that both parents contributed material; what was debated was what that material contained. Preformationists had for many centuries posited that the person was preformed in the embryo, but epigenesis theory clarified that development went in stages. If the person was not already preformed, then could each stage be affected by outside

influences? The arguments of the medical popularizers and reformers that such influence could occur then show how the popular realm can interpret and reshape scientific findings to suit specific purposes.

Victoria Woodhull's arguments also stem from the presumption that the embryo could be influenced and its future characteristics shaped, and she takes this argument further in her more radical goals for sexual rights for women. Her 1874 speech, *Tried as by Fire*, which epitomizes her rhetorical strategies and techniques, bases many of its conclusions on the presumption that women, as vessels of embryos, require certain conditions to aid the evolution of the race. She uses this presumption to then argue for such goals as sex education and the right of women to pleasurable sex. If women were united in love with the partner of their choice, and provided with sex education, they would be more healthy and able to produce a better race. Thus, Woodhull uses the ultimate goal of superior children as her justification for free love, while also furthering her eugenic ideals.

Woodhull encapsulates her inquiry into the "two questions in this whole matter of reforming the world," which are "vital and inseparable": "The first is, to discover and develop the science of proper generation, so that all the inherited tendencies may be good; and the second is, that the germ life, once properly begun, may not be subjected to any deleterious influences, either during the period of gestation or development on to adult age" (*Tried* 30). She presents her statements as self-evident when she says,

There can be a better race only by having better children. If they are bad, good men and women are impossible. There can be better children only through better understanding by women of the processes of gestation, and

better methods of rearing and education. These propositions are self-evident, and point directly to the sexual relations as the place to begin the work of improving the race. (29)

These statements have a basis in the warrants produced by the embryologists: that the embryo can be harmed by “deleterious influences,” (a claim that would be strong for temperance advocates) such as alcohol, had been established, and it is an example that Woodhull exploits. She extends the logic of the well-known facts of “deleterious influences” to cover more than just substances: Since the mother’s consumption of substances can harm the embryo, can her consumption of inequality also harm the embryo? The health of the mother is also a key point for free love advocates, since they argue that the current conditions of sexual relations harm women’s health. If women are not healthy, then they cannot produce healthy children. Thus, a pleasurable sex life to maintain health, an argument backed by physiology, will produce healthy influences on the embryo. In addition, since the embryo is produced by sexual relations, sexual relations are the place to begin improvement. Woodhull presents her logic in stages, but these stages are reversed from arguments in scientific discourses. While scientific arguments start with the elements of conception and gestation and lead to the evolution of the race, Woodhull takes the evolution of the race for the better as a premise, which then requires optimal conditions for the processes of conception and gestation.

Similar to Cowan’s, Woodhull’s logic focuses on situating the mother as the primary influence during gestation. She proposes, “Nothing is more certain than that the mothers can make their children just what they want them to be, limited only by the inherited tendencies of the father” (*Tried* 30). Although scientists were proposing dual

influences on the formation of the embryo, in order to argue for women's rights, the woman's role in gestatory influence must be given presence. Woodhull achieves such presence by presenting her statements as self-evident and connecting the embryo growing within the body to the conditions of sexual relations. While men have influence, the woman is the vessel and thus a stronger influence during gestation. Consequently, women must be protected from harmful influences. They must also possess the agency to mold the characteristics of future people within their bodies. The pentadic ratio discussed earlier is evident here: It is the agency of the woman and the scene of her body that is given presence.

Woodhull's logic also relies on an evolutionary perspective in her insistence on the influence of the mother in creating better children. The process of evolution becomes an exigence to discuss sexual relations, since it is through sex that new beings are created to evolve. For Woodhull, science of evolution warrants the argument that only through sexual freedom can true evolution occur. Her audience, familiar with Darwin, would then view free love as an agency for evolution. Her 1874 speech, proposing such radical ideas as the importance of sexual pleasure and the right of women to experience that pleasure, the abolition of marriage, and the goal of sex education beginning at an early age, would not be viewed as "obscene" sex speech, a view of sex speech both she and Waisbrooker attempt to refute; her speech would instead present an argument for spiritual evolution positing sex as not an obscene but a natural process, the means to achieving progress in evolution. Science, then, not only became the warrant in these arguments but the justification for discussing such radical reforms concerning sexuality.

Lois Waisbrooker takes a different perspective on evolution in her 1879 work *From Generation to Regeneration, or The Plain Guide to Naturalism*. In this free love and spiritualist text, Waisbrooker argues that the ultimate goal of sex is not the production of better children to advance evolution, but rebirth on a spiritual plane as the end of evolution. To make this argument, she relies on the idea of ascent in evolution and on the connection between generation and “regeneration,” the term she uses to describe this rebirth. While Waisbrooker presents a different ultimate goal in human evolution, her argument is similar to Logan’s and Woodhull’s in her assumption of woman’s integral role in both generation and regeneration. The science of embryology refreshes the warrants for her arguments.

Waisbrooker’s logic is similar to that used by champions of evolution and recapitulation. She stresses understanding the “past history of our planet” to understand the future (*Generation* 3). She also explains, “this effort to renew life’s cycle is a prophecy--one of Nature’s hints--an index finger pointing to future possibilities” (4). In referencing this “cycle,” she implies the same logic as recapitulation since recapitulation itself implies the cycle of generation and development repeating earlier cycles. She also refers to an order in development and nature’s laws: “Are not Nature’s laws uniform in their action, only varying in modes of expression, as manifest through the different orders of life? If so, then the thought of any form of development, when it becomes a fixed and growing belief, must be to the human what the blossom is to the fruit--a pledge of its possibility...of its certainty, when the right conditions exist” (5). The references to the uniformity of nature’s laws, to variation, and to orders of life imply evolutionary

warrants. These warrants set the stage for her later arguments for what conditions should exist.

While Waisbrooker posits sex as the means to spiritual rebirth, or regeneration, she connects sex to the generative process. Her argument that the act of sex is the path to regeneration comes from her logical connection that since sexual relations are the path to generation, they must also be the path to regeneration: She proposes, “as generation is a tangible physical fact, why should not regeneration be also? Will nature never be able to gestate from matter an organized form which she can perpetuate to the same indwelling life, instead of through a succession of lives, bearing a like form” (*Generation* 6). This point then connects to how better sexual relations can produce better results: “Life, or the base upon which it rests, as we have already seen, comes from sex union, but the character of the life depends upon the nature or condition of the elements thus uniting” (10). As she establishes in *The Fountain of Life, or the Threefold Power of Sex* (1893), the view of sex as repulsive or obscene defines the conditions under which it takes place. Consequently, she argues, “We give it its character by the estimate we place upon it” and “The low idea makes the act low and the product low” (*Generation* 11). She also relates to free love arguments on the importance of the conditions under which two people engage in sex: the conditions must foster equality in status to produce positive results and end in “mutual benefit” (Woodhull, *Tried as by Fire*).

Evolution, according to Waisbrooker, has a higher goal than humanity. Like the scientists who positioned humanity as the culmination of evolution, Waisbrooker sees humanity as the top of a hierarchy, as when she says, “Every step of evolution from the monad to the human has been made possible through the interaction of the sex factors,

and through such interaction we must rise still higher, if at all” (*Eugenics* 60).

Waisbrooker adds that there are further goals to reach:

Going back to the time when organized forms first existed upon this planet, we find that the highest in the scale of development were crude compared with the lowest of to-day: not so much, perhaps, in form as in substance, while the distance between them and the highest now upon the earth is so great that we are astonished, and naturally ask for the law through which this advance has been made. And upon investigation we learn that sex lies at the base of it all--that the masculine and feminine forces are the factors, and sex union the steps in the spiral stairway which progress has continued to climb even till the present hour; and it is hardly supposable that the greatest blessing which can come to the race through the joint action of these factors has yet been reached; and the more especially when we remember that in each succeeding age of the past they have given its better and still better results...” (*Generation* 6).

Waisbrooker references how the chain of development has been explained from higher to lower. The “law” or agency of this advance is sex: males and females unite and form an embryo that develops into a person. However, Waisbrooker, like many sexual reformers who viewed sex as “the core of being” (Lefkowitz Horowitz, *Rereading Sex* 9),⁷² and emphasized sex as a physical and spiritual union, posits a less tangible result than the

⁷² Lefkowitz Horowitz identifies four frameworks for the discussion of sexuality during the nineteenth century, the fourth of which she calls the sex “at the core of being” framework, under which free love reformers are classified. She defines, “Believing that sex lay at the core of being, adherents held that sexual expression in heterosexual intercourse was the most vital facet of life, as important for women as for men. They asserted that because sex was so valuable to the self, it must be freely expressed, that any diversion or repression of sexual urges from their ‘natural expression’ in coition was harmful” (*Rereading Sex* 9).

individual new person: could sex, which under free love would be a pleasurable uniting of two equal beings with a romantic and spiritual connection rather than just a lawful one, produce a spiritual result? Waisbrooker ties together the romantic, individualist ideals of nineteenth-century social thought with the scientific ones: free love then becomes a means not only to produce evolved new beings, but also evolved spiritual beings. The science becomes a warrant for how this “regeneration” occurs.

Waisbrooker’s analogies between generation and regeneration, and between different forms of life, demonstrate the role of analogy in this discourse. At the level of the discourse of science, analogy was employed in relating higher and lower forms of life and in representing the part for the whole to illuminate the developments of embryology. Medical popularizations employed analogy to relate these microscopic and intangible developments to something more descriptive. Finally, free love reformers used analogy in connecting scientific warrants to specific rights. Thus, the process of creating analogies to discuss evolution in the scientific discourses carries over in reform discourses, though these analogies are employed for different purposes.

Dissociation techniques and representing the part for the whole are also common rhetorical devices used in tracing the incorporation of scientific discourses into reform discourses. In scientific discourses, this dissociation was twofold: the part of the embryo was dissociated from the body in order to look more deeply at cellular processes, but the part was also meant to represent a larger process, particularly in recapitulation theory. Medical popularizations then pick up on this first dissociation in their representations of embryos, but it is the reformers who exploit the second dissociation: the embryo representing the stages of evolution. If evolution is a process embodied by the embryo,

the woman is the embodied vessel of evolution. She therefore requires rights to fulfill her role. Thus, embryology supports a rhetoric of responsibility focused on the disembodiment and re-embodiment of the embryo.

Conclusion

Each of the important findings of embryology translated into this rhetoric of women's sexual rights. The triumph of epigenesis over preformation created a rhetoric focused on influence: since the embryo was no longer envisioned as a preformed entity, with each characteristic of the adult present and the stages pre-determined, a new potential opened for agency and influence over that embryo's characteristics, which was more clearly exploited in hereditarian discourses. Recapitulation theory, though controversial and later discredited, contributed the warrant that embryonic development represented the stages of human evolution, which then allowed women to position themselves as both vessels and agents for evolutionary change. Cell theory led to the finding that both men and women contribute material equally to a new life, which, under Lamarckian theories of heredity that accepted the transmission of acquired characteristics (discussed in Chapter 5), would then aid in arguments for providing advancements and education to women so that they too could pass on positive characteristics to the child.

While the developments in embryology led to a discourse of heredity, there are key differences between the discourses of embryology and heredity: Embryology was concerned with the study of the embryo itself and the changes it went through; the science of heredity was concerned with the causes and results of such changes. Embryology established the hierarchies in evolution; heredity theorized how to achieve those higher stages. Embryology showed how both parents' material contributed to the

new life; heredity posited how parents could manipulate the characteristics of that new life. These two discourses often overlap in the medical and reform communities.

While the ideas in this discourse, especially those of the physicians and reformers, often recall older superstitions, to these reformers, the findings in embryology seemed to provide a new warrant. Science also provided a justification and exigence for reformers speaking about sex. Associating sex with scientific processes made it more acceptable to argue for sexual rights. Science then helped to define the situation: it helped to eliminate the constraints on sexual speech and provided an audience united in their belief in the ascent of human life. The science was the exigence for talking about sex. Waisbrooker theorizes, “judging from [Nature’s] past results, she seems to carry her work to a given point, and then to wait for man to interpret her language and cooperate with her in its further development” (*Generation 4*). Free love reformers could collaborate with the scientists by “interpreting” Nature’s language, connecting their own personal experiences with sex to these processes. They also become agents “cooperating” with Nature. In hereditarian arguments, this “cooperation” becomes more of a challenge--they attempt to challenge and change the course of human development.

Chapter 5: Heredity

Real progress is growth. It must begin in the seed (Cooper 62).

Criminals are often made years and years before they are sentenced to prison. Alas! Too often made criminal before they are born (Logan 214).

[The] salvation of the world can only come through better children
(Woodhull, *Tried* 32).

Is there a gene for alcoholism? Is there a gene for sexual orientation? Is there a gene for a sense of humor? Do we create our likes, dislikes, habits, and talents, or is it all pre-determined at birth? Recent news articles have reported studies on genes for alcoholism and obesity.⁷³ The debate over nature versus nurture, a prominent debate of the nineteenth century, is clearly not over. Two centuries later, we are still trying to find reasons for our behaviors and we still give heredity a central power in our lives. The quotations above, from prominent nineteenth-century reformers Anna Julia Cooper, Adella Hunt Logan, and Victoria Woodhull, while speaking to our twenty-first century concerns over how we become what we are, very much epitomize the nineteenth-century nature versus nurture debates. Can we create better children? Can feminist reform bring this desired result?

Contemporary feminists often debate the role of nature versus nurture. For them, gender as an inherent or socially-constructed characteristic lays the foundation for many theories of social reform. Nineteenth-century feminist activists also took part in this debate, but with a major difference—they tended to attribute everything to nature, or

⁷³ See “Gene Mutation May Raise the Risk of Alcoholism.” *Reuters*. 10 January 2006. *Yahoo News*. 13 January 2006. <http://news.yahoo.com/s/nm/20070110/hl_nm/gene_alcoholism_dc>, for example.

heredity, though environment could affect heredity. What was different from our current “nature versus nurture” debates is how “nurture” is defined. Nineteenth-century thinkers defined “nurture” as not only what occurred after birth in the raising of children, but what occurred before, in preparation for birth. Debates on heredity and the ability to influence heredity emphasized the goal of producing “superior” or “ideal” children. Just as in the discourse of embryology, in the discourses on heredity, medical writers and social reformers stressed the importance of women in creating these ideal offspring. While today’s social constructionist feminists reject such determinism and essentialism, nineteenth-century feminists embraced it. Consequently, many feminist scholars have ignored a particularly prolific feminist rhetoric, one that feminist advocates from such diverse interests as temperance, social purity, racial uplift, and free love employed throughout the late nineteenth century. Determinism makes us uncomfortable. Racism makes us uncomfortable. Colluding with what seems like a highly gendered field of science makes us uncomfortable. But nineteenth-century feminist reformers found an ally in scientific discourse and popular ideas of heredity: women as vessels of progress could demand rights if their bodies were to influence the next generation. Thus, social purity, racial uplift, and free love reformers had a firm basis for their arguments for women’s rights in hereditarian discourse. These feminists created a “woman culture” out of a “child culture.”

Physician John Cowan stated in 1889 that the ideal of the “self-made man” did not exist (155; see also Chapter 4 on Cowan). His proclamation reflects the cultural values of this time period. Science had worked to determine the agency of progress throughout the century, beginning with Jean Jacques Lamarck. But the ideas prevalent in

the hereditarian discourse examined in this chapter do not come from science alone: it is in the discourse of heredity that we see most clearly how the scientific and the social overlap. In the early 1800s, Lamarck had theorized that acquired characteristics, that is characteristics that helped a species adapt to its environment, could be passed on to future generations. Thus, reformers posited that the surrounding conditions of the parents could help or harm the future offspring. Robert Chambers' 1844 work, *Vestiges of the Natural History of Creation*, assumed the embryo would ascend a stage in evolution, rising in the hierarchy of species. Darwin had theorized a blending of the parents' material in the transference of their characteristics to the offspring and emphasized the importance of competition in the battle for survival. Therefore, in reformist discourse, the begetting of children became a goal-oriented procedure, one whose results would elevate the species on the evolutionary hierarchy. Embryologists, in studying the cell, had found that both parents contributed material to the new organism, thus creating more responsibility on both sides. For reformers, this finding showed that parents were equal in their responsibility for hereditary characteristics, setting the stage for further arguments for equality. Finally, the fall of preformation theory had offered the opportunity for parents to intervene in influencing the characteristics of their offspring. These were the key ideas spurring discussions of heredity.

Later findings by Weismann and Mendel, theorizing the mechanism of transference and the dominance of some characteristics over others, would transform the discourse into what we find more recognizable today. But for much of the nineteenth century, it was the former ideas rather than the latter that infiltrated the social sphere. Combined with theories of population control and eugenics from social scientists Thomas

Malthus, Herbert Spencer, and Frances Galton, a new discourse of generation and degeneration emerged, the culmination of the findings in all of the biological sciences discussed in this dissertation: physiology, bacteriology, and embryology. This chapter analyzes the complicated terrain of the debates on heredity and how they prompted a discourse of women's rights and a discourse of eugenics.

From the discourse of the scientific communities to that of the social reformers, a rhetoric of responsibility emerged. Nineteenth-century thinkers asked, what does the current generation owe to future generations? This chapter asks what happens when a change occurred in their treatment of this question: how do we go from the findings of Lamarck and Darwin to ideas about prenatal influence, to women's rights, to a gendered and racist eugenics? We cannot look at nineteenth-century hereditarian discourse without looking at how it transformed into the idea that we should encourage some and discourage others from reproducing, the principle behind eugenics. Free love rhetoric often incorporated eugenic ideas: they became a means to argue why women should be given rights. However, a shift occurred at the turn of the century that caused the women's rights argument to drop out of this discourse. Eugenics became the end in itself, not the means for arguing for women's rights. What happened to cause this shift? This chapter looks at the beginnings of hereditarian discourse in science, its appearance in social science and medical popularizations, and finally at the feminist reformers' texts to examine how this rhetoric transformed. It is impossible to look at Woodhull's rhetoric, for example, without looking at how the discourse she participated in moved from questions of what makes a giraffe's neck long to statements about how humans can reproduce more genetically-desirable offspring, from Darwin's theory of natural selection

to the idea that women are owed sexual pleasure. The progression from findings in science, to social ramifications, to medical advice, to Victoria Woodhull's demand for sexual pleasure as a means of producing a more "fit" species can be followed through a close analysis of the arguments in each discourse community.

Towards a Science of Heredity and a Warrant for Women's Rights

The science of heredity, or the study of how parents transmit their characteristics to their children, was not developed as a formalized science on its own, but in conjunction with the other sciences of the body. Physiology enabled the understanding of the parts of the body and its functions. It was the changes that occurred in the body from generation to generation that led to interest in heredity. Evolutionary biology and cytology were also enormously influential in studying the changes from one generation to the next and how those changes occurred. But it was the growing scientific discipline of embryology and the growing science of heredity that were inextricably linked throughout the nineteenth century. Findings in embryology, such as whose material contributed to the characteristics of the embryo and the successive stages of the embryo, led to theories of heredity. Historians of science Bowler and Morus (2005) explain this strong link: "it simply did not seem conceivable that one could study the transmission of characters without thinking about how those characters were developed in the embryo. Debates in embryology were used to define alternative positions on the role of preformation and environmental influence, while evolutionary theory was eventually used to provide an understanding of why the embryo's development followed a preordained course" (191-192).

Clearly the debates in embryology spilled over into discussions of heredity. Although the preformation versus epigenesis debate had ended in favor of epigenesis, the term “preformation” came to mean something new. In the late nineteenth century, the term was employed to indicate how the characteristics of the embryo are “preformed” or determined at conception (Bowler and Morus 192). This idea perpetuated throughout the nineteenth century: the “refreshed” warrant that “like begets like” and that parents could influence the future characteristics of their children prompted opportunities for reform discourses. Heredity was key, but heredity could be influenced. As discussed in the previous chapter, the end of the preformation theory (the idea that every being was preformed and thus that the parents could not be significant influences on the new being) opened the possibilities for arguments based in prenatal influences and heredity. The knowledge that generations were not preformed generations before, but developed in an orderly process, offered the possibility of influencing the characteristics of the future child. Embryology thus provided the foundation for theories of heredity and hereditary transmission discussed in the present chapter. The key figures whose findings generated hereditarian discourse often were not searching for or did not even voice a theory of heredity. But the findings of Lamarck, Darwin, Weismann, and Mendel led to the rhetoric of heredity in reform discourse, despite these scientists’ initial intentions.

Lamarckian Theories of Heredity

Jean Baptiste Lamarck’s (1744-1829) theory of evolution prevailed as the dominant theory of heredity for much of the nineteenth century. Lamarck accepted spontaneous generation and published his theory of the inheritance of acquired characteristics in his 1809 work, *Zoological Philosophy*. This theory posited that species

could adapt to their environment, acquiring new characteristics, and then transfer those acquired characteristics, which would enable them to survive more easily in their environment, to future generations. Lamarck focused on characteristics of the body, such as the long neck of the giraffe, which he presumed had changed to adapt to the environment. Bowler and Morus illustrate another use of this theory using the muscles of a weightlifter as an example: the children of the weightlifter would acquire stronger muscles from birth through heredity (137).

Lamarck did not conceive environmental influence the same way we do today; we conceive of environment as all the factors influencing us after birth. For example, debates often concern the cause of intelligence: is a child intelligent because it is in her genes from parents, or is a child intelligent because she reads a lot? The same debate has raged on in feminist circles: do little girls like dolls because it is characteristic of their sex, or inherent in their sex, or do they like dolls because of the effect of social constructions? These modern examples, however, are different from the kind of nature versus nurture debates in the nineteenth century. “Environmental influence” in the nineteenth century could mean the environment before birth, in the womb or even before conception, rather than after, a meaning derived from both Lamarck and Darwin. Under a Lamarckian theory, parents who educated themselves would be able to pass on their enhanced intelligence to future generations, because their enhanced intelligence would be carried through the sperm or ovum. Thus, a Lamarckian theory of heredity provided exigence for social reform and women’s rights: educating women would lead to smarter children, for example. Though Lamarck probably would not have gone this far in his theory of acquired characteristics, his theories were applied by others who posited that such

attributes could become acquired characteristics. Once this theory of acquired characteristics was combined with Darwin's theory of natural selection and "survival of the fittest" rhetoric, reforms in the name of heredity adopted even more urgency.

Darwinian Discourse and Heredity

Darwin's theory of natural selection, along with his theory of sexual selection to a smaller degree, undoubtedly created warrants and set the tone for nineteenth-century debates on heredity. Darwin aimed to examine the variation among species, yet his theories of natural selection and sexual selection as the means to speciation also laid the groundwork for popular debates on heredity. While some of the theories based in what is called "Social Darwinism" offer interpretations that Darwin would not have intended, the theories expounded in *On the Origin of Species* (1859) and *The Descent of Man and Selection in Relation to Sex* (1871) often imply the kinds of reformist discourse that became known as "Social Darwinism."

Darwin's focus on variability and on progressive evolution provided a model of evolution of increasingly complicated hierarchies. Evolution went in an upwards scale of progress, and social reformist discourses on heredity exploited that directed hierarchy. That the population was in danger of outgrowing its resources had already been established by Thomas Malthus's theory, but natural selection explained who would survive to enjoy the remaining resources. Darwin theorized that "the vigorous, the healthy, and the happy survive and multiply" (*Origin* 66). Thus, the free love feminists' logic on the importance of both the physical and emotional health of women is supported by Darwin since he includes that the "happy," as well as the healthy, will "survive and multiply."

Feminist reforms concerning female choice, “voluntary motherhood,” and smaller families could also find support in Darwin’s writings. His emphasis on female choice of mates in the animal kingdom provided a firm warrant for feminist arguments. Thus, both natural selection and sexual selection could be used as support for feminist reforms. Women were the vessels in which evolution would occur, and only through them could the survival of the human race occur. Some of Darwin’s arguments seem more overtly feminist, such as when he says, “The parents, moreover, which had to nourish or provide for fewer offspring would themselves be exposed to a less severe strain in the struggle for existence, and would have a better chance of surviving” (*Descent* 320). Thus, feminists arguing for voluntary motherhood had firm support in the scientific realm--if they were able to choose to have fewer children, they could better mold and support the ones they had.

But how do Darwin’s theories of natural and sexual selection translate into a theory of heredity? While Darwin’s thoughts in *On the Origin of Species* concentrated more on finding the mechanism for speciation,⁷⁴ some of his observations led to the theories on heredity in the popular medical literature. For example, when he says, “the variation may be due to the male and female sexual elements having been affected by the conditions to which either parent, or their ancestors, have been exposed. Nevertheless an effect thus caused at a very early period, even before the formation of the embryo, may appear late in life” (*Origin* 358), he provides support for arguments that what affects the parents affects the future children. “Conditions to which either parent...” are exposed becomes interpreted differently in later discourse than Darwin might have intended. Darwin refers to the natural world in these “conditions”; later reformers would

⁷⁴ Darwin began with examining variation but had no idea how variation was produced.

encompass much more under these “conditions.” Similarly, he notes, “It is the opinion of most physiologists that there is no essential difference between a bud and an ovule in their earliest stages of formation, so that, in fact...variability may be largely attributed to the ovules or pollen, or to both, having been affected by the treatment of the parent prior to the act of conception” (*Origin* 10). Here, “treatment of the parent” can be interpreted by feminists to promote better treatment for women, and there is support for an interpretation of how parents can intervene in the creation of more healthy and superior children. It is in *The Descent of Man*, however, that Darwin comes closer to approaching a theory of heredity.

In *The Descent of Man* (1871), Darwin’s later work on human evolution, Darwin is clearly influenced by the popular debates provoked by the theories in the *Origin*, and he uses this work to elaborate his theory of sexual selection. His theory of heredity here adopts a more Lamarckian view, accounting for environmental influences as well as the influence of habit and surrounding conditions as causes of variation between parents and offspring. He says, “natural selection had been the chief agent of change, though largely aided by the inherited effects of habit, and slightly by the direct action of the surrounding conditions” (*Descent* 152-153). Like the reformers, Darwin also posits that more than physical characteristics are transmitted: “Besides special tastes and habits, general intelligence, courage, bad and good temper...are certainly transmitted” (*Descent* 110). Social purity and free love reformers would be especially interested in his thoughts on how virtuous habits will go stronger, “becoming perhaps fixed by inheritance” (*Descent* 104). Thus, under Darwin’s theory, habits could become fixed, and thus be transferred to future generations by inheritance. To return to my earlier example, the little girl’s

attention to dolls becomes a habit that is then fixed and passed on to her children. An example more relevant to nineteenth-century debates comes from discussions of temperance. The habit of drinking becomes fixed and will produce children with the same habit. Likewise, the habit of abstaining from drink would become a fixed tendency. While today we theorize a “gene” for such tendencies, nineteenth-century thinkers did not know the mechanism, but assumed that habits could be transferred. Thus, both Darwin’s and Lamarck’s theories offered the possibility for reform with hereditarian consequences.

Darwin’s chief contribution, of course, is his theory of natural selection, which, as historians have amply pointed out, underwrote a “Social Darwinist” discourse. Though scientists would not state with confidence that both parents contributed material to the new being until Hertwig and Fol’s cell experiments in the mid-1870s, Darwin assumed both parents’ material would blend together (Bowler and Morus 195). He did not address, however, how this transference occurred: Weismann would theorize this agency in the 1880s. While Lamarck and Darwin are clearly the most influential theorists on the topic of heredity through much of the nineteenth century, it is the work of Weismann and Mendel towards the end of the century that produced theories with even greater social ramifications in the next century.

Beyond Lamarck: Weismann and Mendel

August Weismann (1834-1914) and Gregor Mendel (1822-1884) would disprove the Lamarckian theory of heredity, creating a shift in the popular reformist literature by the end of the century. While Mendel’s work comes first, it was not deemed significant until its rediscovery in 1900. It was Weismann’s work in the 1880s that would later

reveal the significance of Mendel's findings. August Weismann refuted Lamarck's theory of the inheritance of acquired characteristics and he picked up where Lamarck, Darwin, and scientists studying embryology left off--he proposed a material entity by which hereditary characteristics are transferred, the germ-plasm.

Weismann, who had spent his early career studying insects, turned to the theoretical side of science after an eye disease left him unable to perform many of the experiments in his new areas of interest: natural selection and the mechanism for inheritance (Mayr, *Growth of Biological Thought* 698). Instead of a science based on his own experiments, Weismann combined the knowledge accumulated in the studies of species and the new knowledge in embryology and cytology to refute Lamarckian ideas of inheritance and propose a mechanism for hereditary transmission. Although Weismann had previously endorsed a more Lamarckian view of inheritance, findings in embryology and cytology prompted his rethinking of the established theories and resulted in his publication of a paper in 1883 that refuted the inheritance of acquired characteristics (Mayr, *One Long Argument* 118 and 120). Ernst Mayr (1991), himself an evolutionary theorist, describes Weismann's strategy of refutation as follows:

Weismann took up one cause after another that simply could not be explained by "use and disuse" and other Lamarckian mechanisms. How can the numerous special adaptations of the worker and soldier castes of ants be inherited by use, when those castes do not reproduce? How can habits become instincts through use, when a particular instinct is practiced only once in the whole life of the individual as is so often the case of reproductive instincts among insects? How can the external structure of

insects be modified by use and disuse, when the chitinous skeleton is laid down during the pupal stage and never changes afterward? (*One Long Argument* 120)

Weismann's refutation also showed how some of the characteristics attributed to a Lamarckian theory could be better explained by natural selection (121). Mayr explains, however, that it was not always considered contradictory in the nineteenth century to believe in both the inheritance of acquired characteristics and natural selection (119), especially considering that Darwin himself ascribed to Lamarckian ideas in some of his writings. This alliance between the two theories explains why Weismann's conclusions did not completely replace notions of inherited characteristics (120). Weismann, however, observed a gap in the science of heredity that needed to be filled--the question of a mechanism.

Influenced by the findings in embryology, Weismann proposed that the characteristics of the next generation were stored in what he called the "germ-plasm." However, he isolated this germ-plasm from the rest of the body, leaving no room for the inheritance of acquired characteristics (Bowler and Morus 158 and 200). Weismann explains, "the germ-cells are not derived at all, as far as their essential and characteristic substance is concerned, from the body of the individual, but they are derived directly from the parent germ-cell" (167-168). Weismann was able to differentiate between the germ cells that hold the hereditary material and the soma, or the rest of the body (Mayr, *One Long Argument* 121-122). Since later findings questioned whether germ cells and soma cells could affect each other, Weismann renamed the mechanism the "germ-plasm"

rather than “germ-cell.” Later writings, discussed below, would posit some influence on the germ-plasm, however.

Another of Weismann’s key contributions was his emphasis on the role of sexual reproduction in variation. As a result of findings in cytology in 1883 that the material from each parent was recombined rather than fused together, Weismann noted that “[g]enetic recombination together with natural selection can thus bring together previously separate and independent characteristics that greatly improve the selection value of their bearers” (Mayr, *One Long Argument* 123). Mayr lists this “recognition of the importance of sexual reproduction as a source of genetic variation” as one of Weismann’s key contributions, in addition to his more well-known contributions of the refutation of Lamarckian theory and the establishment of the germ-plasm theory of heredity. However, it would be the rediscovery of Mendel’s work that would resolve the nineteenth-century debate over the inheritance of acquired characteristics.

Though he published his findings in 1865, Gregor Mendel’s contributions to a “theory of heredity” went unrecognized until 1900. Mendel was looking to establish a theory of hybridization with his now famous experiments on pea plants. From these experiments, Mendel not only found that characteristics can be dominant over each other, but also that these characteristics are found in pairs, laying the foundation for the theory of genes (Mayr, *The Growth of Biological Thought* 715). Mayr expresses Mendel’s hypothesis as follows: “each character was represented in the fertilized egg by two hereditary elements (and no more than two) one derived from the mother (from the female gamete) and one derived from the father (from the male gamete)” (*Growth of Biological Thought* 713). Mendel’s findings showed how characteristics “existed as

discrete units and that one state was somehow ‘dominant’ over the other (the recessive)” (Bowler and Morus 197). At the time of the publication of his findings, Mendel was unfamiliar with advances in evolutionary biology and in the study of cells. After the rediscovery of his work in 1900, his results, combined with the findings in evolutionary biology, cytology, and embryology, would lay the foundation for modern ideas of heredity.

When published in 1865, Mendel’s findings failed to cause the explosion of interest that their rediscovery prompted in 1900. The reason for the lack of response is partly a matter of rhetorical situation. At the time, Mendel’s findings were not deemed significant since their applications to a theory of heredity went ignored. Mendel himself was not attempting to form a theory of heredity, but rather to record the laws of hybridization. Bowler and Morus attribute the difference in the reception of Mendel’s ideas in 1900 to the changes that occurred between their publication and rediscovery: among these changes were the failure of recapitulation theory, and an increased interest in eugenics (199-200). Thus, Mendel’s work was given new significance because of social reform discourse. James Wynn (2007) has also proposed that it was Mendel’s inattention to audience in his use of mathematical formulae that led to the poor reception of his 1865 article (5). It is clear that the scientific community was not ready for Mendel’s theories when they were first published, but recognized their significance due to the changes in rhetorical situation and in audience. Mendel’s work then became the basis of hereditarian thought in the twentieth century and the basis for our modern theories of genetics.

Lamarck's theories, however, did not completely subside as a result of Mendel's work. Throughout the early twentieth century, neo-Lamarckism often attracted social reformers because accepting Mendel's and Weismann's conclusions seemed to negate their arguments that social change could affect subsequent generations through heredity. Lamarckism would not completely disappear until findings in molecular biology in the 1950s (Mayr, *One Long Argument* 120). Early twentieth-century scientists, however, mostly accepted Mendel, and it is his work that caused a shift in the discourse at the beginning of the century and led to later revolutions in genetics.

Social Implications and Applications: Malthus, Spencer, and Galton

My contention is that the rhetoric of the social sphere not only overlaps but also influences the formation of scientific discourses as much as scientific discourses influence the formation of social reform rhetoric. This reciprocal effect is most apparent in the social theories of Malthus, Spencer, and Galton, and their later application by feminist reformers. While the theories of heredity derived from Lamarck, Darwin, Weismann, and Mendel laid the foundation for feminist arguments on the importance of women's physical role as bearers of children, and thus on the rights they should receive, it was the new scientific ideas combined with their social implications that created a stronger urgency for social purist, racial uplift, and free love feminism. The theory of population asserted by Thomas Malthus, the theory of the evolution of society advocated by Herbert Spencer, and the theories of hereditary intelligence adopted by Francis Galton helped to provide the warrants for feminist arguments. These theories also contributed to a new social science by the end of the century: eugenics. The rhetoric of female sexuality

in the nineteenth century owes much to the blending of the science of heredity with social science.

Thomas Malthus's (1766-1834) theory of population not only provided an impetus to Darwin's theory of natural selection, but it also created an exigence for discussing the problem of population and of heredity. Malthus's 1798 "Essay on the Principle of Population" critiqued Enlightenment proposals for how humanity would reach a "happier state of society" (1.8). He argued that these philosophers ignored the crucial premises of his own argument: the necessities of both food and "passion between the sexes" (1.14). Examining the ratio of the increase of the population to the increase in subsistence, he finds, "Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. A slight acquaintance with numbers will show the immensity of the first power in comparison of the second" (1.18). Malthus thus introduces a major premise for later eugenic arguments: the need for checks on the population. His main argument "that the power of population is indefinitely greater than the power in the earth to produce subsistence for man" (1.17) provided the basis for Darwin's later conception of natural selection. Malthus's conclusion on the effects of these ratios on the family unit also provided the basis for feminist arguments for smaller families. He concludes,

Impelled to the increase of his species by an equally powerful instinct, reason interrupts his career, and asks him whether he may not bring beings into the world, for whom he cannot provide the means of subsistence. In a state of equality, this would be the simple question. In the present state of society, other considerations occur. Will he not lower his rank in life? Will

he not subject himself to greater difficulties than he at present feels? Will he not be obliged to labour harder? and if he has a large family, will his utmost exertions enable him to support them? May he not see his offspring in rags and misery, and clamouring for bread that he cannot give them? And may he not be reduced to the grating necessity of forfeiting his independence, and of being obliged to the sparing hand of charity for support? (Malthus 2.22)

In introducing the competition for survival, Malthus provided the foundation for later arguments: how can humanity check its reproduction to ensure enough sustenance for the growing population? Would the human race actually devolve if subsistence diminished? Who would win the competition for survival? How can parents produce offspring “fit” to win? Malthus’s ideas greatly influenced Darwin’s thoughts on natural selection and also led to a new discourse of heredity some fifty years later. Were it not for Malthus’s mathematical and logical conclusions, later students of the evolution of societies, such as Herbert Spencer, could not have reached their seminal conclusions.

Social scientist Herbert Spencer (1820-1903), a prolific writer beginning at mid-century, also criticized Enlightenment philosophies of human nature, preferring instead to view the course of humanity as a long process of adaptation to environment (Spencer xx). Influenced by Malthus, Spencer concludes in his essay “A Theory of Population” (1852) that the growth of the population and its struggle for resources encourages rather than constrains the ability of humanity to reach perfection (xxi). Using the model of evolution as a branching tree in his 1851 work *Social Statistics*, Spencer compares the evolution of humanity to the evolution of society. He finds, “Progress, therefore, is not an accident,

but a necessity. Instead of civilization being artificial, it is a part of nature; all of a piece with the development of the embryo or the unfolding of a flower” (13).⁷⁵ Since species are influenced by their surrounding conditions, Spencer views civilization as the most important influence on human evolution. It is his theory of humanity’s ability to aid evolution that became a founding principle of later feminism:

The modifications mankind have undergone, and are still undergoing, result from a law underlying the whole organic creation; and provided the human race continues, and the constitution of things remains the same, those modifications must end in completeness. As surely as the tree becomes bulky when it stands alone, and slender if one of a group; as surely as the same creature assumes the different forms of a carthorse and a race-horse, according as its habits demand strength or speed....as surely as a passion grows by indulgence and diminishes when restrained...so surely must the human faculties be moulded into complete fitness for the social state; so surely must the things we call evil and immorality disappear; so surely must man become perfect. (Spencer 13)

To Spencer, humanity, the species, the family, and the civilization were evolving organisms. Applying evolutionary theory to the idea that civilizations are what instigate the upwards progression of humanity, Spencer embraced a more Lamarckian view and introduced the key concept, usually attributed to Darwin, of “survival of the fittest,” in his 1864 work, *Principles of Biology*. Although he adopts more anti-feminist views in

⁷⁵ Spencer’s metaphor of the branching tree (coming from the adherents of recapitulation theory and from evolutionary theory) was enormously prolific throughout the century. This metaphor was also employed in Hulda Potter-Loomis’s argument for social freedom in the 1890s and her claim that free love is a result of adaptation to environment.

much of his writings, such as his 1861 work *Education: Intellectual, Moral and Physical*, and his 1873-1874 article on the “Psychology of the Sexes,” both of which assert views on women as less developed than men,⁷⁶ Spencer’s theories of evolution and population were enormously influential to later feminists.

Francis Galton (1822-1911) is another pivotal figure in the debates over heredity in the nineteenth century. Darwin’s cousin, he was interested in proving hereditarian determinism. His 1869 work, *Hereditary Genius: An Inquiry into its Laws and Consequences*, attempts to solidify the importance of heredity through observing how intelligence occurs in successive generations of certain families. In his preface to *Hereditary Genius*, Galton claims to introduce the “law of deviation from an average” into discussions of heredity. Galton’s key contributions, however, are his contentions that humanity has a tendency to degeneration if left unchecked and that conscientious breeding could check this decline and produce more intelligent offspring. He compares the breeding of dogs and horses to the breeding of human children, an analogy that often recurs in this discourse. Reformers often inquired why less attention was paid to human breeding than to animal breeding. Galton postulates that human breeding could aim for more specific goals to “produce a highly-gifted race of men by judicious marriages during several consecutive generations” (1). This reference to “judicious marriage” prefigures later feminist arguments. His emphasis on the responsibility of parents to future generations, as when he says, “each generation has enormous power over the natural gifts of those that follow” (1), also appears in feminist discourse of the same time period. This rhetoric of responsibility to the next generation already existed in some feminist writings before Galton, but gained more prevalence afterwards. Galton’s theories

⁷⁶ See Russett (1989) on Spencer’s anti-feminist views.

were often contradicted, but the popularity of Darwin's work made them more appealing. Though Galton himself did not adhere to the Lamarckian theory of acquired characteristics, reformers who combined Galton's observations and calculations with their own Lamarckian views had support for social reforms in education: intelligence could be acquired and passed on to future generations.

Galton is also credited with coining the term "eugenics" in 1886, though the theory behind eugenics had existed before his formal naming of it. Eugenics, or the idea of improving the race through selective breeding, blended together the science of Darwin and Lamarck, and later of Weismann and Mendel, with the social theories of Malthus, Spencer, and Galton. Eugenic theories went from encouraging the "superior" to reproduce, known as "positive eugenics," to discouraging, or even forcing, the "unfit" from reproducing, known as "negative eugenics." Eugenic practices, such as sterilization, became institutionalized through laws in the early twentieth century, such as the 1927 Supreme Court decision upholding sterilization of the "feeble-minded" (English 13). Yet, nineteenth-century American feminists often invoked the theories behind eugenics long before laws were enacted in its name and even before Galton gave the concept a new name. "Stirpiculture," a form of eugenics, was often practiced in free love communes, such as John Humphrey Noyes' Oneida community, where men and women deemed worthy were paired to reproduce.

It is tempting to dismiss eugenics because of its subsequently discredited nature and its racist applications, but historian Nancy Stepan (1991) warns against dismissing eugenics as a "pseudoscience," since many prominent scientists were involved (5). The theory of eugenics gives us insight into how scientific theories were affected by and

affected popular value systems. Eugenics also reveals nineteenth-century concerns about imperialism, immigration, and race relations, as well as how such theories could be altered for different purposes

When do hereditarian discourse and the focus on relieving future suffering become eugenic? One of the central questions of this chapter concerns this shift from reformers discussing heredity to advocating more eugenic outcomes. I treat eugenics as more of a social science, on a par with Spencer's and Galton's popularizations of Darwin's theories, though biological science legitimized it. When Lamarckian theories of heredity were more popular, eugenics seems less like the insidious theory we currently know it as, because of twentieth-century practices and its popularity with racist policies (such as compulsory sterilization of certain groups). Lamarckian theories, combined with a eugenic goal, gave scientific credence to social reforms. Changes in education and in marriage laws could be justified in the name of evolution and progress, since the material that built future generations would improve. Eugenics left its mark on social reform discourse, and became integral in the racial uplift and birth control rhetoric of the 1920s.⁷⁷ The benefit of superior offspring becomes a driving force behind many reforms, with warrants in hereditarian science. The shift between these two discourses of heredity and eugenics occurs when arguments move from the cause and value stases, where heredity is theorized and celebrated, to the action stasis, where specific eugenic reforms are introduced. It is when reformers shift from the value to the action stasis in discussing heredity that hereditarian discourse becomes eugenic.

⁷⁷ W.E.B. DuBois, for example, urged the "talented tenth" to reproduce. Margaret Sanger's birth control goals were also influenced by eugenics.

The combination of theories on population control, social evolution, and eugenics with the theories of heredity based in the work of Lamarck, Darwin, and Weismann set the stage for late nineteenth-century women's reform rhetoric. Before it reached that stage, however, the medical community weighed in.

Medical Popularizations and the Power of Heredity

The shift in stasis from cause and value to action, resulting in a shift in the aims and kinds of hereditarian discourse, was aided by popular medical advice books. In the late nineteenth century, this genre frequently contained discussions of heredity. Combined with feminist goals, some of these advice books shifted into more explicitly eugenic discourses. Physicians' discussions of heredity often combined the disciplines of physiology, bacteriology, and embryology in the ultimate goal of advising women on the best choices to make in order to produce "fit" offspring.

Nineteenth-century physicians had already noted the importance of heredity in diagnosing patients and taking their histories, a popular methodology, as shown by critic Susan Wells's examination of the "heart history" in nineteenth-century women physicians' texts and by physician Clelia Mosher's late nineteenth-century sexuality questionnaire.⁷⁸ The medical advice books and essays by physicians Russell Trall, John Cowan, Elizabeth Blackwell, and Emma Drake illustrate both how physicians adapted medical knowledge and how they bolstered advice on sexual conduct, marriage, and health with discussions of heredity. Making lifestyle decisions on diet and sex were not only important to women's health, but to the health of future generations. This medical

⁷⁸ Mosher asked respondents for details on the paternal and maternal grandparents and parents, including the age they married, their health, and diseases in the family. She also asked about "any prenatal influences before your birth" in the section on the respondents' mothers' information.

advice genre often combined superstitions and “old wives’ tales” about pregnant women with scientific knowledge about heredity. However, each text reflects the specific moment of the knowledge of heredity: Trall and Cowan reflect more Lamarckian views, Blackwell reflects the Lamarckian and Darwinian focus on the effects of habit, and Drake reflects a combination of the older Lamarckian views, which had yet to be removed completely from hereditarian discourse, with the newer knowledge of germ plasm provided by Weismann.

Russell Trall

Russell Trall’s popular medical advice book, *Sexual Physiology: A Scientific and Popular Exposition of the Fundamental Problems in Sociology* (1866), argues more feminist points of view in attempting to naturalize women’s bodies and functions (See Chapters 2 and 4). Moving from chapters explaining the sexual organs to later chapters advocating specific lifestyle choices, Trall also invokes hereditarian arguments. At the time his book was written, hereditarian discourse had yet to gain the prominence it acquired in later texts. His arguments therefore seem more in line with older ideas about pregnant women and superstitions about heredity. However, as the findings in embryology had opened up the possibility for prenatal influence and for intervention on the part of the potential parents, his participation in hereditarian discourse illustrates the theories of his particular moment.

Trall’s advice book often borders on a women’s rights manifesto (as pointed out in Chapter 2), not only arguing for the naturalization of women’s bodies, but also specifically advocating women’s rights. For example, his chapter on “Regulation of the Number of Offspring” begins with a statement on “woman’s rights” to choose when and

under what circumstances to have children. He also blames the lack of women's rights for the stillbirths, the prevalence of venereal diseases, and the "depravities" of the current generation. He asserts, "And when her supremacy is fully recognized, there will soon be an end of stillbirths, and of frail and malformed offspring who can seldom be reared to an adult age, or, if they can, are only curses to themselves and to the world" (203). His arguments anticipate those of the reformers examined later in this chapter: if women are not given rights, how can they be expected to bear healthy children who will further the goals of evolution? His argument also reflects many of the feminist reformers' claims that the diseases and weaknesses in children are the result of the mother's limitations, since their status confines them to situations where their own health suffers.

Trall, however, goes further in his advocacy of women's rights by emphasizing the importance of women's choice of partner and of women's sexual pleasure in producing children more "fit" to live in the world. Although the idea that women must experience orgasm to conceive had been refuted by medical knowledge by this time, women's orgasm was yet represented as a means to producing superior children. Trall notes that orgasm is not required for conception, but enumerates its benefits when he discusses the conditions under which children should be conceived. He argues that what is transferred to the child, the characteristics that form the growing being, occurs at conception, and thus the conditions at conception must be of a certain kind to yield positive results. These conditions include women who desire sex with their husbands, since no "offspring [can] be as perfect as it should be unless the act is both desired and enjoyed by both parties. This rule or law, for it is a law of Nature, at once suggests the conditions which are necessary to insure this result" (245). Trall also defines these

conditions as including both women and men who experience pleasure during conception, and who are “in their best bodily and mental condition when the fruitful orgasm is experienced” (254). Trall believes, “Children are often from birth stamped through their whole organization with the depravities, propensities, infirmities, eccentricities, and disordered conditions which one or both parents exercised during the act of reproduction” (xiii). Thus, Trall combines ideas of “romantic love” popular in the nineteenth century with the idea that the parents can make impressions on the fertilized egg: if both parents have full rights and experience “at-one-ment” during the act of conception (232), what is transmitted to the child will less likely result in “depravities, propensities, infirmities, eccentricities, and disordered conditions” for the future generation. His rhetoric, blaming social ills on heredity, reflects the trends beginning in reformist rhetoric of the same time period. Trall’s emphasis on women’s rights in order to perfect the qualities passed on to the offspring also occurs in other medical texts.

John Cowan

Physician John Cowan’s *The Science of a New Life* (1889) is based on the premise that parents can consciously influence the characteristics of their future children, a view owing much to embryology (see Chapter 4). His book thus becomes a conduct book with the aim of producing better children. Like Trall, Cowan includes sections explaining sexual physiology, as well as sections on women’s rights. Like the larger reform movements, Cowan bases his hereditarian ideas on the possibility of influence, adopting a Lamarckian perspective also supported by embryological theories of the time.

Cowan, like many social reformers, believes that the responsibility for reform lies with parents rather than reformers and temperance workers (21). He participates in the

rhetoric of responsibility that attributes both good and bad characteristics and actions in offspring to their parents' behavior. However, unlike our current "rhetoric of responsibility" that emphasizes the way parents rear their children, the rhetoric of responsibility in the nineteenth century concentrated on actions taken by the parents before the child is born. If a child is imperfect, it must be because of hereditary influence or influence while the child was in the womb.

The Science of a New Life posits three different periods of influence on the young: the period of introductory preparation, the period of gestatory influence, and the period of nursing influence (141). In all three instances, Cowan emphasizes what is passed to children through the body rather than social or environmental influences. The body of the woman becomes more central, since she is housing the soon-to-be life, but both parents are included in Cowan's rhetoric of responsibility. Cowan devotes sections in his advice book to what men should abstain from, such as alcohol and meat, since both men and women can influence future generations through their current habits.

Cowan goes so far as to tell parents that they should choose the profession of their child before it is born. He lists professions and goes through actions, thoughts, and readings likely to produce a child who will become this type of professional (151). For example, he advises that if parents want their child to be a geologist, they should travel, go for long walks, and read in preparing to have such a child (156). His advice in this area recalls older ideas about the influence pregnant women have over the unborn, even to the point that images the pregnant woman looks at will affect the offspring's appearance (166). Cowan also recalls earlier nineteenth-century physiological ideas on

the importance of the nervous system (see Chapter 2), since he states that daily thoughts and actions influence children, through the reactions of the nervous system (189).

Women's rights also become a central part of Cowan's hereditarian ideology. The bedroom becomes a setting for women's rights, since he believes that if children are not propagated under the right conditions, they cannot be reared under the right conditions (131-132). He advocates female choice in a partner, which has its warrant in Darwin's sexual selection theory, as well as choice in when to have sex (109). He also advises that parents should prepare their future offspring for professions regardless of the sex of the baby since females can be inventors, too (154). For Cowan, it is not only the actual characteristics passed on through heredity that influence the offspring, but also the surrounding conditions and agency of both parents before conception and before birth. He adheres to the nineteenth-century ideology that there is no such thing as a "self-made man" (155)--it is all determined before birth.

Elizabeth Blackwell

Elizabeth Blackwell combined her medical knowledge and social purity aims in her essays, and her advice on heredity focused on the power of habit. Her 1894 essay *The Human Element in Sex: being a Medical Inquiry into the Relation of Sexual Physiology to Christian Morality* by Dr. Elizabeth Blackwell attempts to connect the mental and physical aspects of sexual relations (see Chapter 2), a connection which also occurs in her discussions of heredity. Blackwell's hereditarian discourse centers on the power of the will and on the power of habit.

Blackwell acknowledges that there is not enough information on heredity, but, following Lamarck and Darwin, she believes in the power of habit and how habits can

become tendencies that are transferred to future generations. Darwin had speculated, “Natural selection had been the chief agent of change, though largely aided by the inherited effects of habit, and slightly by the direct action of the surrounding conditions” (*Descent* 152-153), and his reference to “the inherited effects of habit” provides the warrant for Blackwell’s contention that potential parents should work hard to control their habits, also a Lamarckian perspective. She enumerates how the power of the will can help humans change their tendencies, which then can become modified through habit and become part of the hereditary strain (*Human Element* 61). Her social purity aims are apparent in these beliefs, since the tendencies and habits she discusses concern temperance and the power of the will. The power of will, to Blackwell and many others before her, is what separates humanity from lower evolutionary stages.

Blackwell also participates in the growing connection between the rhetoric of heredity and the rhetoric of women’s rights. Referring to women as “mothers of the race” (*Human Element* 30), she highlights the role of women’s health in the production of a “vigorous healthy race” (*Essays* 253). As the woman’s body is the vessel in which this race will be bred, Blackwell theorizes that the uterus is “capable of containing a perfect child” (*Human Element* 29). In this way, she shows that deficiencies in the child are not the result of its pre-natal housing, and sets up her argument for how women can achieve that “perfect child” through a temperate lifestyle for both parents. Blackwell combines the discourse of physiology in her discussions of what the female body is capable of, with the discourse of bacteriology in her discussions of how venereal disease leads to “degenerations” and how purity can result in more perfect children, and with the

discourse of heredity in her discussion of the improvement of the race as the ultimate result of these lifestyle choices.

Blackwell's rhetoric also anticipates more racist eugenics in her discussions of heredity and self-sovereignty. Stephanie Athey's (2000) study of the rhetoric of eugenics posits that the rhetoric of female self-sovereignty, or the right of women to control their own bodies, often privileged the white race (1-2). When discussing the power of the mind over the body, or the power of the will over the control of venereal disease, Blackwell notes, "We should uproot our whole national life and destroy the characteristics of the Anglo-Saxon race, if we gave up this natural right of sovereignty over our own bodies" (*Essays* 125). Like other reformers of the time, Blackwell places women's control or rule over their own bodies as the key to race progress; if women cannot control their own bodies, the tendency towards degeneration will continue. This argument reflects the growing trend of discussions about heredity contributing to nationalistic discourse. Recalling the rhetoric of Herbert Spencer, Blackwell argues that sex education is vital to the growth of a nation (*Essays* 239), because of the central function of the family in society (*Essays* 204). Thus, the role of heredity becomes crucial not only in the health and well-being of individual families and future generations, but also in the survival of a nation. This argument reflects many of the changes occurring in the late nineteenth-century and the combination of hereditarian and nationalistic arguments in the discourse of eugenics. Blackwell, like many feminist social reformers, created a feminist eugenics by stressing women's rights.

Emma Drake

While Blackwell's essays often focus more on purity arguments, using hereditarian arguments as part of her case for moral responsibility, physician Emma Drake, also a social purity advocate, focuses more on moral responsibility in heredity itself. Hereditarian arguments are the claim, rather than the support, in her writing. Drake's 1901 advice book, *What a Young Wife Ought to Know*, includes a chapter entitled "The Moral Responsibility of Parents in Heredity," and her text explicitly refers to the science of heredity, quoting Frances Galton and Charles Darwin. This chapter falls before the chapter on intrauterine growth, which incorporates recent knowledge in embryology, demonstrating the science at this time: advice on heredity comes before the advice on intrauterine growth because the influence of heredity comes first.

Drake begins the chapter with a quotation from Galton on parents' moral responsibility to the next generation, which becomes a key feature of her argument. For Drake, parents are responsible not only for bringing up their children once they have been born, but also for the characteristics they transmit to the children before they are born. She then leads into a quotation from Charles Darwin on how both parents contribute characteristics to the new life. Unlike Blackwell, who acknowledges that heredity is not yet an exact science and that there is still much to learn concerning heredity, Drake believes the opposite: "We might go on indefinitely making quotations from undisputed authorities on this great science of heredity, for to-day it has become almost an exact science" (137). Drake's rhetoric positions Galton and Darwin as "undisputed authorities" in this science in order to make her argument that since the effects of heredity are known, it is the responsibility of the parents to control those effects. Her book, contrasting with

the three previous ones, not only benefits from the writings of Darwin and Lamarck, but also the later theories of Galton and Weismann. She refers to Weismann's theories when she quotes Dr. Holbrook, who says, "Every child born into the world is essentially an experiment; we cannot tell what its chief characteristics will be; these depend upon the potentialities stored up in the germ-plasm" (qtd in 143-144). This quotation references the germ-plasm theory of heredity and incorporates social values. Thus, Drake's writings show how the newer knowledge of the sciences was being combined with older ideas on heredity at the turn of the century. Though Weismann's ideas, which negated the possibility for influence from the parents' habits, had gained more popularity by this time, many still believed in the possibility for influence on the future generation from the parents' lifestyle.

Drake insists that both parents contribute characteristics to the new life, which draws on the newer scientific knowledge, but she clarifies that the mother is a stronger influence since it is her body that holds the new life, which recollects older ideas. Drake writes,

That both in the law and the gospel of heredity, of the two parents, the mother has a far greater influence we believe firmly; yet this does not relieve the father from responsibility. The germ from him, which is "bone of his bone, flesh of his flesh," contributed to the formation of the child in its beginning, must be of high nature and cultivation, seed from a noble sire, or the little life is dwarfed from the outset, and the mother must expend much precious time and strength in making good the terrible

deficiencies which such a beginning entails, and then mourn that so much can never be overcome. (138)

Drake's word choices signify a combination of the scientific and the social: the science is "the law" and social values "the gospel." The gender roles implied--the man supplying a germ that must be cultivated and corrected by the woman--also demonstrates how social values were derived from scientific discoveries: while both parents contribute, the woman is more important in molding the new life. Drake directs young women on their choice of a mate throughout the book and in this chapter also focuses on the responsibilities they have to change themselves, saying, "Begin by weeding out the habits and tendencies that you would not wish to transmit, and by cultivating the qualities and accomplishments, which you would delight to see repeated in your children" (145). Her advice is both part of her rhetoric of responsibility and a conduct edict. Drake combines the ideas of the past on the influence they can exert, citing that "children have become what they were trained to be in intra-uterine life" (144). She also combines scientific ideas with anecdotal evidence in her advice. She tells a story about a traveler who meets a family of several "coarse, boorish" sons and one "refined" daughter. When asked about the difference, the mother attributes the difference not to gender, but to her reading of Scott's *Lady of the Lake* while pregnant with the daughter, which she believed helped to mold the child's refined character (142-143). This example recalls the arguments, ultimately derived from embryology, on prenatal influence.

Drake's combination of older, even ancient, ideas with newer ones on heredity and prenatal influence shows the status of the discourse at this particular point in time, when Mendel's work was just beginning to become more well-known, though not yet

incorporated. Drake's proclamations also begin to sound more familiar to the modern reader, such as ideas about listening to classical music and reading to the unborn. What also becomes more modern is her notion of "environment" because "environment," once known as conditions before birth, now becomes what children experience after birth: "What our children become depends upon two conditions; what they are at birth, and what environment makes them" (138).

Medical Advice and Heredity

These four texts by Trall, Cowan, Blackwell, and Drake demonstrate the trend in the use of hereditarian discourse in medical advice manuals aimed at popular audiences. Each text is a hybrid, starting with an explanation of the body and its processes and ending with advice on conduct that will aid these processes in producing better offspring. Each text also exemplifies the status of hereditarian knowledge at its particular time. Trall has no knowledge of Weismann, so his hypothesis of how characteristics are transferred focuses on conditions outside the body that affect it; for him, the feelings of pleasure experienced by the parents during the act of conception impress themselves on the embryo. Two happy, healthy, and self-owning parents result in healthy, happy, self-owning (and less depraved) offspring. For Cowan, writing at the time when embryological theories proliferated, influences on the embryo can mold its future characteristics. Both men imply Lamarckian and Darwinian ideas in their rhetoric of self-improvement for the sake of future generations. Blackwell, writing at a time when fears of venereal disease caused fears of "degeneration" in future offspring, focuses on how to avoid these degenerating influences through a life of purity motivated by the will. Last Drake, with her knowledge of Weismann, combined with purity ideals, focuses on how

women can make the best decisions to ensure that the germ transferred and cultivated becomes the more refined offspring desired, and her rhetoric of responsibility accounts for both heredity and environment. It is in these four texts that we see the discourses of physiology, bacteriology, and embryology combined into a new rhetoric of heredity that reformers in the social purity, racial uplift, and free love movements exploited in emphasizing the rights of women in sexual practices and motherhood.

Feminist Reformers, Heredity, and Eugenics

What made hereditarian discourse and eugenic rhetoric so appealing to nineteenth-century social reformers? Many contemporary feminists would reject such discourse, since arguing on the basis of heredity often implies biological determinism for women's abilities and roles. While this determinism was undoubtedly present throughout the nineteenth century in anti-feminist arguments, causing our current wariness of it, feminists of that time period also found support in stressing the all-encompassing nature of heredity. Since arguments for women's rights based on natural law and "Republican motherhood" did not always appeal to audiences hostile to giving women rights and viewing them as sexual beings, a focus on the role of women in the evolution of the human race would appeal to stronger values in these audiences. What Karlyn Kohrs Campbell has called the argument from expediency, or what we might know as the argument from difference, focused on giving women rights since they are different from men and one of their differences is their refining role in begetting and raising children. Nan Johnson's study of nineteenth-century women's rhetoric shows how women rhetors often positioned themselves as "mothers of the nation," arguing to extend their sphere of influence on the basis of the values of "Republican motherhood" (113). These are

familiar arguments. But something is added to these arguments when we look at them through the lens of nineteenth-century hereditarian discourse. Feminist rhetors participated in the intense focus on progress through better children, but added the position of women as a key factor in that progress. We see how women could argue for rights on the basis of their status as “mothers of the race” because of scientific discourse.

The “mothers of the race” argument led to material reforms, such as the eugenic law testing men for venereal disease before a marriage license was granted, the change in the age of consent, and more liberal divorce laws. This “scientized” rhetoric was often convincing to nineteenth-century audiences. But using an appeal to “mothers of the race” led to other developments: a rhetoric of feminist eugenics. In earlier texts, the type of eugenics advocated is the more positive kind: feminists asserted a woman’s right to choose a partner that would help her bear more fit offspring. Many rights could be advocated under this line of argument. However, towards the late nineteenth century, eugenic discourses became more racist and more deterministic.⁷⁹ The new consciousness of disease transmission and its effects on degeneration also influenced this discourse. Later feminist advocates of eugenics, instead of using eugenic arguments for feminist ends, created arguments that champion more “negative” eugenics than “positive” eugenics. Eugenics became the end rather than the means to argue for feminist reforms.

Despite its appeal to nineteenth-century feminists, few scholars have addressed the prevalence of eugenic rhetoric in their texts. An exception is Stephanie Athey’s essay “Eugenic Feminisms in Late Nineteenth-Century America: Reading Race in Victoria Woodhull, Frances Willard, Anna Julia Cooper, and Ida B. Wells” (2000), which

⁷⁹ Angeliqe Richardson’s (2003) study of the same discourse in British feminist texts notes that in England, eugenics became a discourse centered on class rather than race.

identifies eugenic arguments in four famous rhetors and focuses on how such women reinforced white supremacy and imperialism with their use of eugenic discourses. Athey, however, often seems to view the discourse of hereditarian science itself as racist, rather than its applications in eugenics. However, examining key texts of the social purity, racial uplift, and free love movement, we see a more complicated use of hereditarian and eugenic discourse. These feminists used eugenic rhetoric in their positioning of women's sexuality as a purifying force, an argument that later degenerates into more raced, classed, and nationalist discourse. In the following examples, the focus of the eugenic arguments is on women's rights, but the implications for the later, more negative eugenics are also present.

Social Purity

The social purity movement's arguments, with their goals of eliminating the double-standard between men and women and instituting temperance for both sexes, often seem similar to the rhetoric of responsibility present in medical reformers' texts. Both discourses emphasize that better children result from temperate and healthy lifestyles. Though less radical than the arguments of free love advocates, social purity advocates do participate in the conversation on female sexuality and women's rights. For them, female sexuality can be a purifying force. Frances Willard, one of the most prominent advocates for social purity and temperance, reveals how the discourses of sexuality and motherhood transformed in the late nineteenth century with the addition of the goals of heredity. Her interest in abolishing alcoholic beverages, for example, had added backing when it was believed that alcoholism could be passed on through heredity.

She also attempted to “scientize,” or professionalize, the role of motherhood in her concept of “scientific motherhood.”

Willard discusses “scientific motherhood” in her 1891 presidential address to the National Women’s Council, where she urges a shift from “The empirical maxims and old wive’s [*sic*] fables of the nursery...to the hard-earned results of scientific investigation” (27). Willard employs the term “science” here in a different sense: as a method and theory that will professionalize motherhood. In other parts of the speech, however, more familiar contemporary meanings of science are employed in her references to hereditary and pre-natal influences: “The best work of the mother will be intelligently done, on the bases of heredity, pre-natal influence, and devout obedience to the laws of health” (27). Willard here uses the same arguments employed in contemporary medical advice books: in order to bear healthy children and have these children survive their early years, women needed education in hygiene, considered a “science” by many medical schools and women’s colleges in the nineteenth century, a field that applied medical knowledge of the body and of disease to everyday life. To Willard’s ideal mothers with the proper education, “Children will be born of set purpose and will cut their teeth according to a plan” (27). Thus, the right of females to an education had even more exigence: if mothers were to bear children who would survive their first year, they needed extensive education. Willard repeatedly emphasizes the role of educated mothers in this speech. Her theories allude to eugenics as a method for bearing and raising a “happy specimen of scientific babyhood, who rapturously greets this scientific woman as ‘ma-ma.’” (28).

Willard's exigence concerns the mortality rate of children during the time period, an "imperfection" (in Bitzer's terms) also noted by other feminists. It is here that we begin to see her hereditarian ideas shift into eugenic rhetoric:

Four hundred thousand babies annually breathe their first and last in the United States--being either so poorly endowed with vital powers or so inadequately nourished and cared for that they can no longer survive. One-third of all the children born depart this life before they reach five years of age. In Oriental countries they swarm thick as flies, and the existence of woman (a being so impure that her husband begs pardon for referring to his wife at all) is tolerated only because she is a necessary prerequisite to the transformation of a man into a father of sons. It thus appears that exclusive devotion to maternity has not resulted in the best good of woman or the highest development of humanity. In those same Oriental countries, the Anglo-Saxon race has conquered the native and holds it in subjection, though outnumbered at the rate of twenty-five hundred to one. Possibly if fewer children were born, and of a better quality, it might be a blessing to all concerned. (27)

Willard's criticism of the subjugation of women in order to show that more than an "exclusive devotion to maternity" is needed to bear and raise healthy children takes the conclusions of Malthus, Darwin, and Spencer as its basis, and adds women's rights goals. Her goal to elevate the roles of wives and mothers is evident in her critique on the status of "Oriental" women as "impure." Her language choices, such as "thick as flies," in relation to Oriental society, show her condemnation of the status of women and of a

society so low on the evolutionary hierarchy that outsiders, the Anglo-Saxon race, have conquered it. Thus, Willard creates a mixture of feminist and racist rhetoric typical in “mothers of the race” discourse. Herbert Spencer would have approved of her conclusions that progress in societies can also be measured by evolution. Willard’s eugenic ideal is also illustrated by her belief that “It seems to be a law of nature that quantity decreases as quality improves” (27). For Willard, then, it is not only education that is needed, but also attention to producing a “better quality” of children. Thus, she shifts from the value stasis in enumerating the benefits of heredity and critiquing the status of women and children in societies, to the action stasis in urging fewer children to produce better children--demonstrating the shift into eugenic rhetoric. Her particular references reveal the racist ideologies produced by more explicit eugenic theories, but also stress the role of honoring and educating women with the goal of producing “better quality” children. Willard creates a new version of the voluntary motherhood arguments produced by suffragists: women should choose when and how often to have children and choose to have fewer children to improve their quality; rather than “voluntary motherhood,” she advocates “scientific motherhood.”

Like her characterization of motherhood, Willard’s discussions of sexuality also employ hereditarian discourse and contain eugenic implications. In “A White Life for Two” (1890), she critiques the double standard that allows men free reign over their wives and does not hold men to the same standard of purity as women. She criticizes laws that allow marital rape and grant custody to fathers rather than mothers. She adds,

Last of all, and chiefest, the *magnum opus* of Christianity, and Science, which is its handmaid, the wife will have undoubted custody of herself,

and as in all the lower ranges of the animal creation, she will determine the frequency of the investiture of life with form. My library groans under accumulations of books written by men to teach women the immeasurable iniquity of arrested development in the genesis of a new life, but not one of these volumes contains the remotest suggestion that this responsibility should be equally divided between husband and wife. (336)

Willard's combination of Christianity and science is similar to Drake's later reference to the "law and gospel" of heredity. Her reference to the "lower ranges of the animal creation" incorporates evolutionary theory by showing that, in subjugating women, human beings are not adhering to natural laws, such as sexual selection. That women should choose when to have sex and bear children based on the rule of female choice followed in the animal kingdom is a popular argument in this discourse, one also employed by free love feminists. This line of argument is an attempt to give scientific backing to voluntary motherhood. The phrase "arrested development" in relation to "the genesis of new life" not only refers to the practice of abortion, but also implies the argument found in other feminist texts that restricting women from choosing when to have children, and subjecting them to undesirable conditions to bear children, will not produce a "better quality" of children to be the "hope of the race." Willard also criticizes the men who blame only women for the "arrested development" of a child. She knows that both parents contribute germ plasm to the new child. Her argument that "this responsibility should be equally divided between husband and wife" further echoes some of the free love rhetoric that emphasizes that equality in the marriage bed will produce

better results and implies the argument that men are just as responsible as women for “arrested development,” or what they called “degenerate” children in later discourse.

Willard’s “scientific motherhood” becomes one of the means to her overall purity aims. Emphasizing the ultimate result of better quality children also makes her argument for purity more appealing. Though she urges protection for women, it is not a rejection of women’s sexuality; she wants women to have complete control over their sexuality. Willard’s discussion of sexuality and eugenics is less explicit, but the more explicit rhetoric of the more radical feminists reveals how even Willard is participating in this larger discourse while also creating her own trademark rhetorical style, blending religious and scientific language in her goal of “home protection.”

Racial Uplift

While the social purity movement’s interest was the elevation of women, the racial uplift movement’s interest was the elevation of African Americans through education and legislation. Many African American women, however, thought that not enough attention was paid to the role of women in this uplift, and aimed to fill that gap. They noted the importance of women, and used hereditarian discourse to do so. Although some nineteenth-century science writers aimed to use such discourse to promote determinism and inferiority of the black race, the discourse of heredity could also be used to promote positive changes to show how racial improvement would benefit future generations. Women, once again, were the vessels for evolution and racial uplift. The use of hereditarian discourse in racial uplift rhetoric also shifts into eugenics. In the early twentieth century, activists such as W.E.B. DuBois urged the “talented tenth” to reproduce, an example of positive eugenics. Women speaking for racial uplift in the

nineteenth century also incorporated eugenics. Anna Julia Cooper and Adella Hunt Logan provide two examples of the overlap between scientific rhetoric and racial uplift.

Anna Julia Cooper (c1858-1964) was born a slave in Raleigh, North Carolina, likely the child of a union between Hannah Stanley and her white master. Cooper earned several degrees, including a Bachelors in 1884 from Oberlin College, and a doctorate from the Sorbonne in 1925 (Garraty and Carnes 5.432-433). Cooper taught literature and math at Wilberforce University and later became the principle of the M Street Colored High School in Washington, D.C. Cooper left her position as principal after she lost the battle to keep college preparatory courses when the school wanted to focus on vocational training (432). In 1930, Cooper became the president of Frelinghuysen University, which focused on educating adult learners; she even held classes in her home (Logan, *With Pen and Voice* 48). Cooper was active in many social organizations, such as the NAACP, and founded the Colored Women's League.

Cooper's goal s to elevate womanhood within the discourse of racial uplift shares some similarities with Willard in her goals and language choices. Like Willard, she is not as explicit in addressing women's sexuality, but such discourse is implied. Her language also blends religious and scientific terms. Her speech "Womanhood a Vital Element in the Regeneration and Progress of a Race" (1886) points to the importance of women in the goal of racial uplift, but also alludes to arguments about sexuality and motherhood. Her references to an "impure homelife" (54) and to the Christian church's influence on the marriage relation reveal a subtle critique of restrictive ideologies of women's sexuality. For example, in speaking of the ways the Christian Church has prevented the elevation of womanhood, she says, "Making of marriage as a sacrament and at the same

time insisting on the celibacy of the clergy and other religious orders, she gave an inferior if not an impure character to the marriage relation, especially fitted to reflect discredit on woman” (56). Her argument here seems similar to that of free love advocates, especially Lois Waisbrooker, who criticize the way the Church positioned sex as impure, thus demeaning and degrading women’s position. Her goals are also similar to Willard’s in her insistence that women and men should be held to the same standard of morality (57).

The very title of Cooper’s work, ending in “Progress of a Race,” implies a eugenic argument, but her eugenic rhetoric is created mostly through metaphors that show how she is participating in the same scientific and cultural discourses as Willard. Rather than focusing on women’s role as mothers of children, however, Cooper focuses on how women’s role in society is holding back “real progress.” She refers to “the vitalizing, regenerating, and progressive influence of womanhood on the civilization of to-day,” and the “narrow, sickly and stunted growth” of nations (58). She also mentions “the hope in germ of a staunch, helpful, regenerating womanhood on which, primarily, rests the foundation stones of our future as a race” (62). The “germ” of “regenerating womanhood” also engages with hereditarian ideas, such as August Weisman’s germ theory of heredity. Cooper employs this metaphor to show how women hold the promise of regenerating the race. Cooper further refers to “regeneration” and “progress,” two terms often employed in the discourse of evolution and heredity. The reference to the “narrow, sickly and stunted growth” of a nation is also similar to the rhetoric used as exigence in feminist eugenics to describe the children who are ill and dying. Moreover, her rhetoric seems similar to hereditarian thought when she refers to “[Women’s] influence on the individual personality, and through her on the society and civilization

which she vitalizes and inspires...” (60). These metaphors reveal how Cooper hopes to elevate women’s role in racial uplift by comparing womanhood to nationhood, a comparison whose possibilities are implied in Herbert Spencer’s rhetoric. When these general arguments are read against the backdrop of widely held scientific beliefs, rather than the more popular interpretation of the woman as nation, we can see that Cooper implies a eugenic ideal: women are the hope of uplifting the race since they hold and protect the germs of future generations, and may control whether the race will “regenerate” rather than “degenerate.”

Cooper seems to use an argument for how environment affects heredity to blame slavery for any “degeneration” that has occurred. According to Stephanie Athey (2000), Cooper reconfigures what counts as “inheritance” to include the legacy of institutionalized racism affecting future generations (par. 45). Cooper observes that African Americans not only inherit the characteristics of their parents, but also a legacy of inequality encompassing social and economic factors, and she legitimizes that legacy by connecting it to the science of heredity. In Cooper’s speech “What are we Worth?” Athey finds evidence of explicit engagement with eugenic theories as Cooper expands the discourses on heredity to show that centuries of oppression have produced inequalities. Cooper sees in women of the race the promise of overcoming such obstacles and creating a more positive legacy for the future generations they will grow and nurture. Athey adds, “Cooper...alters the emphasis of ‘regeneration’ from strictly reproductive citizenship to an emphasis on women’s role in training and regenerative reform” (par. 45). Thus, Cooper’s mixture of the discourses of science, religion, and nationhood creates a rhetoric

of racial uplift that forefronts the role of women, combining “Republican motherhood” discourse with “mothers of the race” discourse.

Another rhetor in the racial uplift movement, Adella Hunt Logan (see Chapter 4), makes explicit what Cooper alludes to in metaphor in her 1897 address significantly titled “Prenatal and Hereditary Influences.” Logan presented this speech at the Second Conference for the Study of Problems Concerning Negro City Life in Atlanta. Her speech was the only one by a woman at the conference not delivered at the separate women’s meeting (Logan, *We are Coming* 169), which signifies the powerful status of hereditarian rhetoric in this discourse. In the speech, she argues for the duty of the mother to raise good children, but her argument relies less on the kind of republican motherhood and scientific motherhood appeals found in Willard and more on the hereditarian thought of the late nineteenth century. She urges not only more prenatal care, but also attention to acquired characteristics. Logan applies the argument that women are a “vital element in the regeneration and progress of the race” quite literally: in Logan’s view, it is through production of children and attention to heredity and prenatal influences that racial uplift will occur.

Logan begins her speech by noting common ideas associated with hereditary transmission: “The boy takes his large nose from his grandmother, the small mouth from his father, and a quick temper from his mother” (211). She even brings in the question of “how is it that the young man seems prone to the social sin” (211)? She urges attention to the “silent, but powerful, thing known as heredity” (212) and also advocates a scientific education for those involved in racial uplift. Unlike Willard, however, when she uses the word “science,” she is not using it to describe the need for a method or theory of

childbearing and rearing, but is rather referring to scientific disciplines and their discoveries. She references the findings of embryology in her discussion of men's and women's contributions to a new life and in her ideas of prenatal influence. Logan also applies Lamarck's theory of acquired characteristics (which had yet to fall out of favor, despite Weismann's refutations). She invokes the "like begets like" warrant to argue that mental, moral, and physical characteristics are transferred to the offspring:

[T]he intellectual and ethical cast will follow as closely the law, "Like begets like," as will the physical. We do not expect to find the children of white parentage having black faces or kinky hair, nor the children of black ancestry having fair brows, blue eyes, and flaxen locks. It would be just as unreasonable to expect the intellectual and ethical characteristics of children to be radically unlike those of their ancestors as it would be to expect their physical features to be radically different. (212)

Thus, potential parents must ensure that they can transfer "intellectual and ethical characteristics" to their children; if they do so, racial uplift must occur. Logan adds a new dimension to the racial uplift arguments of the late nineteenth century since individuals would not only be elevating themselves and the race, but also future generations.

Logan also emphasizes women's rights in her contention that women need a positive atmosphere so they do not transfer negative characteristics to the next generation. She urges that women control their thoughts in order to prevent negative thoughts from making an impression on the growing embryo. Thus, in her line of argument, women need to be in positions where they will not dwell upon their oppression and lowly position; their position should be elevated to prevent such thoughts. Women

need to be in a position where their children will not be unwanted, not perceived as a burden, where female inequality will not cause resentment, and where their subjection won't cause thoughts of rage to be transmitted to the unborn children. This ideal "mother of the race" needs rights to fulfill her special goal in racial uplift. These older arguments become refreshed by the new warrants provided by scientific theories and medical discourse.

For Cooper and Logan, eugenic rhetoric is a means to argue for women's prominence in racial uplift. Using hereditarian logic, they show how women's low status can be transferred to future generations if not corrected. This logic becomes eugenic when they specify the goal of superior children in giving these rights to women. Both rhetors are more concerned with motherhood than other aspects of women's sexuality, but we can see how sexuality arguments are implied when we look at them alongside free love rhetoric.

Free Love

As discussed in earlier chapters, the goals of the free love movement were more radical than the social purity and racial uplift movements, and thus required more radical interpretations of the new sciences. They critiqued the current system of marriage that allowed husbands "ownership and control of their wives' sex organs."⁸⁰ To free love advocates, the marriage system was corrupt and often entered into for the wrong reasons, such as societal expectations and economic necessity. Free love rhetors drew on evolutionary theory as a warrant, positing that the race could not evolve and achieve progress without sexual freedom--which they defined as the freedom to choose a partner

⁸⁰ A popular phrase in free love texts to refer to the wife's subjugation to the husband under the law.

regardless of church, state, or other compulsory influences. They also drew on sexual selection theory in their insistence on the female's choice, violated only in humans. Early free love practitioners include John Humprey Noyes who practiced an early form of eugenics, referred to by Woodhull as "stirpiculture," in his Oneida commune, matching the "best" women and men for "superior" results. The free love feminists writing in the 1870s, such as Woodhull and Severance, critiqued such a practice on the basis that love, rather than a notion of "superiority," would create more fruitful unions. Later male writers who promoted free love, such as Moses Hull and Moses Harman, also explored eugenic theory, as illustrated by Harman's change in the name of his radical free love periodical from *Lucifer, the Light Bearer* to *The American Journal of Eugenics* in 1907. This shift from free love to eugenics is critiqued by feminist writer Lois Waisbrooker, although even she does not dismiss eugenics entirely, but simply attempts to make it more suited to a women's rights agenda.

Like Adella Hunt Logan, Juliet Severance, a physician and free love speaker who lectured throughout the midwest in the 1870s and 1880s, was concerned about the hereditary and prenatal influences affecting the next generation, which she elaborates in her 1881 pamphlet and lecture, *A Lecture on Life and Health, or How to Live a Century*. Like Willard, she begins her discussion by referring to loved ones lost, using the deaths of children as an exigence for her eugenic thought (3-4). She then harshly condemns the conditions that result in infant mortality to introduce her main argument:

Are we fit to reproduce? This is the question! How many fathers and mothers ever think of, much less seriously consider, this question? They see puny, sickly, half-made-up children born to them, living out a few

years of miserable existence and then, with streaming eyes and lacerated hearts, they place their little forms around which cluster so many tender memories and loving associations, beneath the sod and call it a dispensation of Providence. It should be said that every child who dies, *had better never* have been born. Aye more: Those who live to grow up filled with disease and pain, a constant burden to themselves [and] all around them, *should* never have been born and *would* never had their parents been instructed in the grand law of parentage. (5; emphasis in original)

Severance explicitly addresses the question that Willard, Cooper, and Logan skirted around: fitness for reproduction. It is here we see the implications of positive and negative eugenics. While most feminists asserted a positive eugenics, they leave the question of negative eugenics, of keeping the “unfit” from reproducing, unstated (though some, like Woodhull, incorporated both “positive” and “negative” eugenics). Severance’s rhetoric seems to draw attention to the elephant in the room. Women’s rhetoric, in participating in eugenics to argue for women’s rights, implies a “fit” and “unfit” mentality. However, each woman had a specific purpose in engaging in such rhetoric, and Severance’s was to promote free love ideology and sexual rights for women.

As a basis for her argument for women’s rights, Severance shows that obstacles are placed in the way of women producing healthy children, in contrast to children who are “a constant burden.” These obstacles, she clarifies, are both the fault of the marriage laws and of women’s choices in husbands. Like other free love rhetors, she blames the marriage laws, where the husbands dominate and own their wives, for creating obstacles

in securing the best “conditions” for creating healthy children. She insists, “...man alone, of all the animals, takes from the female the control of her person and compels her to maternity, and...he has invented and maintains laws to perpetuate this usurpation. Woman wants the control of her person and right to exercise her maternal instincts under her own direction. These our present marriage system takes away” (7). Her wording here and comparison to the animal kingdom evoke the free love emphasis on evolutionary theory and sexual selection theory: a woman should have control over her own body and choice of mate since withholding such choice violates the natural order found in the animal kingdom. She, like Darwin, points out that while the female has the choice in the animal kingdom, the human male takes the choice away from the woman. Consequently, Severance’s first “prerequisite for proper parentage” is “Woman should exercise the right entrusted to her by virtue of her functions, to determine when, and under what circumstances she will, and under what she will not become a mother, and it is her right and sacred duty to do this inexorably...” (6). For Severance, “proper parentage is not a question of legality” (9). She focuses not only on the law’s role in ensuring proper conditions for proper parentage, but also the woman’s role. Like Willard, she urges women to question the habits of the man “who seeks to associate himself with her” to ensure that they are not drinkers or tobacco users who would impart such habits to the offspring (9), advice frequently found in medical advice books addressed to women in the late nineteenth century. She also incites women to ask, “Are you as pure and free from the effects of social vice as you expect me to be” (9), critiquing the double-standard, aligning her stand with social purity reform goals, which took on a new urgency after the discovery of bacteria as the agent in venereal disease and the prevalence of venereal

disease in women. Finally, she requires that women take responsibility for the kinds of unions they seek: they should reject unions based on economic necessity, tradition, or compulsion, only accepting unions based on mutual love:

Is the attachment between us worthy to be called love? and will it secure the transmission of our best instead of worst qualities; is either of us induced to this association for any reason, other than that of love? Is either of us seeking any selfish gratification incompatible with proper parentage? Do I seek a home, position, fortune, or any other thing more than a father for my children and a lover for myself... (9)

This popular demand for love between the parents is given new urgency due to texts like Russell Trall's, who was a mentor of Severance. Severance's "mothers of the race" discourse urges women to claim choice and freedom for themselves as a "prerequisite for proper parentage" (6). She differs from Willard, Cooper, and Logan in her emphasis on sexuality and the nature of the relationship between the parents. In other works, such as her treatise on *Marriage* (1901), she brings in arguments based on children almost as an afterthought, mentioning the benefit of better children towards the end of her argument promoting the practice of free love. That the argument about better children receives such prominence in many other works on free love speaks to the persuasiveness of such discourse to popular audiences.

Severance also participates in the discussions of prenatal influences, and her similarities to Logan reveal the connections in this family of arguments. She writes, "As certainly as like begets like, as surely as temperament, traits of character, complexion, color of eyes and hair are imparted by parents to offspring, so surely is the loathing, the

pollution, the hate that filled that mother's mind transmitted to her child" (*Marriage* 29-30). This image of the mother's resentful feelings creating resentful and hateful children recurs across social movements and boundaries, though employed for different ends. It reveals the adaptability of "mothers of the race" discourse to different situations.

Victoria Woodhull's "mothers of the race" rhetoric shares some of the same goals as Severance's in her insistence on love between parents, but Woodhull's rhetoric undergoes shifts between her 1874 speech, *Tried as by Fire, or The True and the False Socially*, and her later works, *Stirpiculture; or, The Scientific Propagation of the Human Race* (1888) and *The Rapid Multiplication of the Unfit* (1891). Woodhull's early arguments highlight the importance of love between parents to produce healthy children; later, she gives more emphasis to how women's health is improved by giving her more freedoms; finally, her later work, such as *The Rapid Multiplication of the Unfit*, seems to drop women's rights arguments for a more purely eugenic ideology.

Woodhull's radical rhetoric of women's sexuality urged increased sex education, as well as more liberal marriage and divorce practices and laws. She conducts her personal "war against marriage," often calling for the abolition of a marriage system that degrades women. Her eugenic rhetoric is particularly evident in her 1873 and 1874 speeches, *The Elixir of Life, or Why do we Die?* and *Tried as by Fire, or The True and the False Socially*, the first aimed at an audience of spiritualists and the second at a more popular audience. In both speeches, she justifies her radical social reform goals by eugenic ends: if women are given more knowledge about sex, as well as about hereditary and prenatal influences, and if they are given the freedom to choose sexual partners regardless of the marriage laws, they will produce "superior" children who will be the

“hope of the race.” Woodhull’s arguments even go so far to posit that pleasurable sexual lives will lead to “superior” offspring. For Woodhull, women need to be supplied with the proper conditions, and those conditions include a sexual partner where “mutual love” and “reciprocal benefit” are observed (*Tried* 15). Similar to Severance, she insists that because it is a system that keeps partners together when love is not present and it does not always uphold “reciprocal benefit” in marital relations, “[Marriage] stands directly in the way of any improvement in the race, insisting upon conditions under which improvement is impossible” (*Tried* 7). Her argument proposes that relationships that observe these rules will see the results in their offspring, whether they are married or not. She juxtaposes these two types of relationships and results when she says, “a woman who bears a dozen or less scraggy, scrawny, puny, half-made-up children, by a legal father, is a disgrace to her sex and a curse to the community; while she who bears as many perfect specimens of humanity, no matter if it be by as many different fathers is an honor to womanhood and a blessing to the world” (*Tried* 30). Woodhull’s argument is actually similar to Willard’s in its characterization of the “disgraceful” children populating the earth, and clearly influenced by the new focus on physical fitness caused by Spencer’s “survival of the fittest” discourse.

Woodhull even uses her own mentally-challenged son as an illustration of the harmful results of marriages where women are uneducated about sex and heredity and forced to submit to brutal husbands without “mutual love” and “reciprocal benefit”: “My boy, now nineteen years of age, who should have been my pride and joy, has never been blessed by the dawning of reasoning. I was married at fourteen, ignorant of every thing that related to my maternal functions. For this ignorance, and because I knew no better

than to surrender my maternal functions to a drunken man, I am cursed with this living death” (*Tried* 27). Her rhetoric reveals the “fit” and “unfit” mentality in eugenic rhetoric, but she expands the definitions of “fit” and “unfit” to include a feminist argument: give women rights and give them sex education and they will no longer bear children who suffer a “living death.” Her condemnation of the “unfit” is more prominent than in other feminist rhetoric at the time.

However, Woodhull does refute certain ideologies of eugenics. Responding to John Humphrey Noyes’ and the Oneida community’s practice of “stirpiculture,” she clarifies that this type of eugenics will not produce “superior” children, noting, “when a woman desires a child she should select for its parent, some person, who, from physical health and perfectness, should be something like an ideal man. I utterly repudiate all such stirpiculture as this. I do not believe it possible for a woman to produce her best child, except by the man whom she loves best and for whom she has the keenest sexual desire” (*Elixir* 11). Woodhull and Severance both agree that the key ingredient in the formula for a healthy and intelligent child is not the characteristics of its parents but the conditions under which the child is produced. For them, the love between parents will create a happy and stable environment, and those feelings will be passed on to the healthy child, due to environmental and prenatal influence. Free love feminists reinterpreted the degree of environmental influence on heredity in order to create a theory compatible with their feminist reforms.

Woodhull in particular both uses and abuses scientific discourses in her rhetoric. Her earlier arguments suggest eugenics as a means and a result of feminist reform, but her later arguments in *Stirpiculture; or, The Scientific Propagation of the Human Race*

(1888) and *The Rapid Multiplication of the Unfit* (1891) de-emphasize the feminist arguments and focus more on eugenic arguments, to the point where eugenics becomes the end in itself rather than a benefit of giving women rights. She thus illustrates the shift occurring in free love discourse: in using eugenic ideologies to justify free love, these rhetors become so enmeshed in it that the eugenic ideologies start to supercede other aims. The discourse seems to lend itself to this shift: if one is going to argue that creating better children is an important end, how far does one have to go to then argue that certain groups of people should be prevented from propagating the species? Not very far. The implied arguments of negative eugenics that were part of the earlier discourse then begin to take over feminist eugenics. Woodhull's 1891 book, *The Rapid Multiplication of the Unfit*, displays this tendency in its title itself. Though Woodhull had attempted to redefine who was "fit" and "unfit" in earlier discourses, her definitions got away from her, and her later arguments emphasize a more "hard line" eugenics, discouraging the poor and ill from procreating, lines of argument later picked up by birth control pioneer Margaret Sanger. While Woodhull does discuss social causes of "unfitness" in this text, noting that some workers are worked so hard that their bodies become unhealthy, which then prevents the bearing of healthy children (*Rapid Multiplication* 10), a sense of inherent hereditary "unfitness" of some people is also present: "The best minds of to-day have accepted the fact that if superior people are desired, they must be bred; and if imbeciles, criminals, paupers, and otherwise unfit are undesirable citizens they must not be bred" (*Rapid Multiplication* 38). Here, Woodhull expresses a determinism not found in her earlier works, and the women's rights arguments are given much less emphasis while the case for eugenics is given more.

The shift from free love advocacy to a more purely eugenic discourse is critiqued by Lois Waisbrooker, who puts a different spin on hereditarian ideas in her 1907 book on eugenics. This text responds to arguments by free love advocates such as Woodhull and Moses Harman that used eugenics to justify reforms and that urged women to change their practices to produce better children. She refutes these ideas drawing from theories of heredity that stressed the power of habit, such as Elizabeth Blackwell's. Waisbrooker maintains that if a woman changes her habits only to produce a better child, the child will not inherit that changed tendency. Instead, she urges, the woman must change for herself. For example, she notes that if a woman stops drinking for the benefit of her child, her child will still be born with a tendency to drink. However, if the woman stops drinking for the benefit of herself, her child would not be born with a tendency to drink. For Waisbrooker, if the woman changes the habit and alters her own self, she will transmit that tendency to the children. In her argument, the warrant of "like produces like" means that a woman must change herself for herself; otherwise, such superficial changes will not create a "like" result. She implores women, "You are the material out of which the race is built, and only as you live for yourself do you live for the race" (10). Her argument recalls Darwin's focus on the effects of habit and how habits can become tendencies transmitted to the future generation. She uses this discourse on the power of habit, also endorsed by Elizabeth Blackwell, to emphasize the power women have to change themselves for the better. Waisbrooker's main critique of the type of eugenics expounded by the later Woodhull lies in its means rather than its end: "the transformation from sex slavery to living for the next generation is not freedom" (*Eugenics* 65).

Yet, Waisbrooker does not entirely condemn eugenic ideology since she does not critique the goal itself of producing an improved race. She compares the womb to a chemist's lab (*Eugenics* 10), a comparison strengthened by the fifty years focus on producing stronger children through heredity in the medical and popular literature.⁸¹ In her 1893 book *The Fountain of Life, or the Threefold Power of Sex*, she argues that in order for a race to be "well born" and in order to clear out jails, new laws and social reforms "must supply women with the very best conditions" (81). In these conditions, no undesired sexual relations will occur (*Eugenics* 30). Therefore, even though she critiques the way some conceived of eugenics and feminism, she does not reject the connection entirely nor question the goal itself. She shows how free love feminist eugenics focused on the conditions under which children can be produced, a focus which allowed for arguments on women's sexuality as well as rights pertaining to motherhood. In their free love arguments, the emphasis on observing natural laws, laws established by natural and sexual selection theories, shows a basis in science applied to very radical reform goals.

Conclusion

The movement from the discourse of science to social reform in the science of heredity reveals the depth of impact of scientific discoveries on social reform. The shift I have identified, the shift from arguing for women's rights using eugenics to simply arguing for eugenics, fully occurs after the turn of the century. Looking at this shift alongside the discoveries of science reveals a parallel: it was after the rediscovery of Mendel's work that a shift fully occurs from women's rights arguments to eugenic discourse. While Weismann had refuted Lamarckian ideas, the inheritance of acquired

⁸¹ See the Holbrook quotation in Drake discussed in this chapter on children as "an experiment."

characteristics persisted in reform discourse until the rediscovery of Mendel's work, which changed the nature of hereditarian and eugenic discourse. Though eugenics would later be used in Margaret Sanger's arguments for birth control, it was a different kind of eugenics, more focused on discouraging the "unfit" from breeding than on encouraging women to better themselves to create better children. Once Lamarck's theory of acquired characteristics becomes less accepted, the arguments for social reforms to improve the next generation receive less exigence, since an "improved person" would not be able to pass these improvements on to the next generation through the body. "Environment" becomes the conditions after birth rather than conditions before birth; there is thus no longer any need to argue for specific improvements in parents or in conditions during sexual intercourse.

Lois Waisbrooker proposes, "Instead of child culture I would have the movement called eugenics named woman culture" (17). From the discourse of Lamarck and Darwin to the free love reformers who used their conclusions as a warrant, a "child culture" emerged, celebrating the next generation as the means to human evolution. The nineteenth-century women examined here created a "woman culture" out of a theory of eugenics that often resulted in raced, classed, and gendered discourse. The argument from difference, long examined by scholars of women's rhetoric, evolved into "mothers of the race" discourse, showing that women could use arguments from difference with a basis in science to actually support women's rights. Reading these women's arguments alongside the findings in science and the rhetoric by social scientists and medical reformers that emerged from these findings shows how this shift in women's arguments occurred. We can see the new dimensions of arguments based in "Republican motherhood" and how

the ethical appeals of the “mothers of the nation” were transformed into the logical appeals of the “mothers of the race.”

**Coda: Rereading and “Refreshing”: Contributions to Rhetorical Scholarship on
Women’s Movements**

“*[T]hose who want sex-science will get it*” (Forster 9).

In 2005, Michael Perry published two anthologies of Victoria Woodhull’s speeches, *Free Lover: Sex, Marriage and Eugenics in the Early Speeches of Victoria Woodhull* and *Lady Eugenist: Feminist Eugenics in the Speeches and Writings of Victoria Woodhull*. In his introductions to the speeches, he often dismisses her claims as “too weird and too mystical” (106). With qualifying statements such as “Medically, what Woodhull was saying was nonsense” (103) and “Science would never find evidence for what even Woodhull could not argue logically” (136), Perry’s interpretations indicate why nineteenth-century free love texts have mostly gone unexamined by scholars. Woodhull’s claims may be “weird” from a twenty-first-century perspective, but looking more closely at the scientific context behind her claims shows that there is a logic to her claims, however far she may stretch it. Perry’s reading, based on Woodhull’s adherence to spiritualism and eugenics, only touches on the intersections between her claims and nineteenth-century science and ignores the context of the free love movement, where other rhetors made similar claims. This dissertation, in elaborating the discoveries of science and their popularizations by physicians to read against the claims of the free love movement, attempts to provide a context for Woodhull’s startling statements. By situating her claims not only in the traveling discourses of science, but also in the larger conversations about women’s sexuality by physicians and reformers, we see that while her strategies were unusual, they were shared by many other rhetors. Looking at women’s

free love rhetoric and its use of scientific warrants illuminates some of Woodhull's "weirder" rhetorical choices.

To conclude, I explore the questions of why texts by nineteenth-century free love advocates have gone unnoticed by rhetorical scholars and consider contributions to feminist historiography and feminist recovery practices. I then explore how rereading nineteenth-century discussions of sexuality against the background of science can contribute to the scholarship not only on women's rhetorical practices, but also on scientific discourses. Finally, I conclude how examining warrants has aided in illuminating the choices of nineteenth-century sexual reform rhetors.

Feminist Historiography

Woodhull is not the only free love advocate who has been misread or under-examined by scholars. In recovering the rhetorical practices of nineteenth-century women, many scholars have found a rich body of texts by women previously unknown to us. Yet, recovery work has not extended to the prolific rhetors Mary Gove Nichols, Juliet Severance, and Lois Waisbrooker, for example. One of my initial questions in my study of nineteenth-century rhetorics of female sexuality was: Why have these texts been under-examined by rhetorical scholars? Perry's reading of Woodhull offers one possible answer: perhaps the rhetorical practices of women discussing sexuality are just "too weird." However, Carol Mattingly (2002) offers another possible explanation: she questions whether texts from moral purity advocates have gone unexamined because of seeming "conservative" or too different from contemporary feminism ("Telling Evidence" 103). Mattingly notes that many social purity arguments were dismissed by feminist scholars because of their equating temperance with "prudery" (103). The focus

on motherhood as a benefit of free love (and stances against abortion) in nineteenth-century feminist texts would also remove their arguments from contemporary feminists looking for views that separated sexuality from reproduction or views adhering to (post)modern definitions of feminism.

Recent recovery work by historians has illuminated some of the fascinating lives and writings of these women in the nineteenth-century free love movement, yet rhetorical scholars have rarely examined their collective discourse. The focus on suffragist rhetoric and its offshoots in contemporary criticism offers yet another possibility for the absence of these women in rhetorical scholarship: are we not looking at “unsuccessful” rhetorical practices? That the “prudish” reading of nineteenth-century sexuality has persisted indicates that free love rhetoric, countering “Victorian prudery,” was not successful in its aims. They are simply lone voices from the “lunatic fringe.” However, as reading these texts in the context of medical discussions shows, both medical and popular reformers used similar lines of argument, and there were multiple voices in the nineteenth-century debate over women’s sexuality.

The final chapter of this dissertation, analyzing hereditarian discourse and its production of a feminist eugenics, provides yet another possibility for the gap in scholarship: is it the racist implications of such rhetoric that revolt contemporary feminist scholars? Do we feel, as scholars, that a recovery of feminist practices must also celebrate and endorse those practices? It would seem so, since anti-suffragist arguments by women are not often included in anthologies of women’s rhetorical practices. As discussed above, perhaps we are looking for rhetorical practices similar to the goals of contemporary feminism. Perhaps eugenics is a movement we do not want identified with

feminism. Uncovering the prolific use of eugenics in feminist discourse, we see that it was a line of argument with cultural power in the nineteenth century. Further work could illuminate how scientific, economic, and nationalistic forces helped to shape feminist eugenics. Therefore, feminist recovery work must acknowledge the forces and biases that have excluded certain rhetors and social movements from the rhetorical tradition. This project aims to contribute to feminist history, not only in recovering the work of previously unexamined feminist rhetors, but also in situating these social movements in a specific context: the cultural capital of nineteenth-century science. In doing so, this project also encourages a “rereading” of the traditional view of nineteenth-century discussions of female sexuality as only endorsing “prudery.” What these women said was quite different from how current feminists discuss sexuality. But their practices should nevertheless be included in definitions of feminist advocacy.

“Rereading”

Feminist scholars of women’s rhetoric have often examined what prompted women to speak publicly when such speech was often restricted, what constraints upon their speech these women faced, and how they accommodated those constraints. These questions are especially important in thinking about women discussing sexuality in the nineteenth century. In answering these central questions, this project examines the growth of sexual speech as a movement and its connections to the emerging cultural capital of science. This dissertation offers the possibility that it is science that provided the context for speeches on sexuality. Offering alternatives to the reading of “Victorian prudery” and of nineteenth-century science as a central force in justifying limitations on women, the chapters of this dissertation read both scientific and medical texts in a different context.

Such a rereading reveals the multi-faceted nature of discussions of sexuality in scientific and reform fields. Carol Mattingly (2002) observes, “We must continue to question the stories handed down to us, and even those we have helped to create” (“Telling Evidence” 102). This project takes as its premise the questioning of the traditional reading of nineteenth-century discussions of sexuality.

Kenneth Burke’s theory of terministic screens, also noted by Mattingly, is useful to explain the “rereading” method in this project: If we read these texts through a screen, or lens, of “Victorian prudery,” we will find evidence supporting such a reading. If we read these texts through a screen that acknowledges the multi-faceted nature of the nineteenth-century conversations about female sexuality, our reading will reveal it. Thus, this project contributes to the growing scholarship on “rereading” nineteenth-century sexuality by both looking at medical texts in new ways and looking at previously unexamined reform texts.

The history of women’s rhetoric and the examination of scientific discourses have often seemed at odds with each other. This project questions whether such a contradiction exists by showing that women could use scientific warrants for feminist reforms. It further enlarges the view of women’s participation in science. The analysis of Darwinian warrants in Chapter 1 reveals a clear rhetorical trend, showing that it is impossible to read these women’s texts fully without the context of science. Furthermore, while much scholarship has uncovered how women wrote science, it has left out the participation of reformers who used scientific warrants in their goals. Could these feminist reformers, then, be seen as participating in science? If we acknowledge the roles of Herbert Spencer and Francis Galton in the making of scientific ideas since they applied science to their

social theories, we must also acknowledge the women using scientific warrants to support their own feminist social reform theories. It is in analysis of warrants that this project finds the strongest evidence for rereading nineteenth-century discourses of sexuality.

“Refreshing”

In reading women’s rhetoric of sexuality through the lens of the scientific discoveries of the time, this project finds evidence of both an explicit and an implicit use of science. Darwinian discourse, analyzed in Chapter 1, presents the most obvious example of the explicit use of science in feminist discourse: Free love feminists used the language of Darwin to prove that marriage was a culturally-imposed institution holding back progress and that women should be given freedom to choose a mate. Social purists also explicitly invoke Darwin in their arguments that women are more evolved than men and that women should therefore set the standards of “purity.” Language use and emphasis also prove some of the more explicit uses of science. For example, in their insistence on “plain speaking” (see Chapter 1), free love feminists established a preference for scientific language. Waisbrooker’s preference for “race creating” over “the language of the street” (qtd in McElroy, *Individualist* 83) reveals an inclination for situating the sexual and reproductive acts in a more scientific context. In addition, many of the free love feminists urged naming the actual organs of the body, a choice they deemed more scientific, rather than alluding to them in euphemism. Furthermore, the titles of some of the works examined in this project reveal a scientific bias: Anna Julia Cooper’s “Womanhood: a Vital Element in the Regeneration and Progress of a Race” (1886), Woodhull’s *Stirpiculture; or, The Scientific Propagation of the Human Race* (1888), Hulda Potter-Loomis’s *Social Freedom: The Most Important Factor in Human*

Evolution (c1890), and Adella Hunt Logan's "Hereditary and Prenatal Influences" (1897), to name a few. These titles indicate the enormous impact of nineteenth-century science on discussion of social topics. There are some explicit references to scientific discoveries in feminist discourse as well. Again, the use of Darwin is the most explicit, as he and his supporters, such as Herbert Spencer and Francis Galton, are often referenced by speakers like Victoria Woodhull. Other references to scientific discoveries also received mention, such as Adella Hunt Logan's emphasis on how both parents contribute material to the offspring, a fairly recent discovery at the time of her speech (see Chapter 4), and Margaret Sanger's references to Albert Neisser's discovery of the gonococcus germ and Prince Albert Morrow's findings on the prevalence of venereal diseases within marriages (see Chapter 3). These more explicit references to scientific discoveries confirm that reading these works against this background reveals their rhetorical influences.

However, such a reading also finds more implicit uses of science that may go unnoticed without an analysis of warrants. Perry's reading of Woodhull claims, "Science would never find evidence for what even Woodhull could not argue logically" (136). However, he looks at the more direct evidence for her claims, rather than their warrants, or the assumptions or premises that connect her claims to her evidence. Chapter 2 explores the use of a warrant from the medical community: the anti-feminist idea that defined women's bodies as controlled by their sexual and reproductive organs. Reformers advocating free love made the claim that practicing free love would help maintain women's health, with the support that sexual pleasure leads to good health. Thus, the warrant behind this claim appropriates the "rewriting" of women's bodies as defined by

their sexual organs to argue that women should be able to practice free love and that they are entitled to pleasurable sex. The warrants provided by bacteriology are more concrete. Since science had established that venereal diseases were caused by a germ, reformers could argue that, like other infectious diseases, the spread of that germ could be prevented. They were then able to attack social ideologies, such as the belief that young men need to “sow wild oats,” on the basis of prevention. Physicians such as Morrow who studied the prevalence of venereal diseases also provided reformers with an important warrant: that marriage did not protect a woman from venereal disease. The feminist critiques of the inequalities within marriage were then given more salience.

Embryology and bacteriology, though, provide the strongest warrants to the claims for women’s protection and for their improvement. Chapter 4 demonstrates how embryology provided the important warrant for women’s protection. By using the embryo as the model for evolution, especially salient in recapitulation theory, reformers could then situate evolution as occurring within the woman’s body. She, therefore, is an agent of evolution and deserves protection. Hereditarian theories derived from Lamarck’s theory of the inheritance of acquired characteristics also lent weight to reformers’ claims. Cell theory had enabled scientists to show that both women and men contributed characteristics to the new embryo. Lamarckian theories of inheritance posited that acquired characteristics, such as intelligence gained through education, could be transferred to the offspring. Combined, these findings produced the argument that women should have rights because they could then transfer the benefits of those rights to their offspring, creating a stronger race. That the eugenic feminism found in these texts shifted after the discoveries of Weismann and, especially, Mendel were made public shows the

clear influence of science on their reforms. After the rediscovery of Mendel's work, reformers lacked the Lamarckian warrant that supported personal improvement. Consequently, feminist eugenics became centered on keeping the "unfit" from breeding. Thus, reading these texts against the discoveries of science reveals how and why free love discourse became more focused on eugenic arguments.

Finally, my project introduces the idea that new warrants can "refresh" old arguments. Combining the work of Stephen Toulmin, which reveals the warrants behind an argument, and of Lloyd Bitzer, which defines how a situation is rhetorical by the exigence for the rhetorical response, we see that the newly available warrants from science created the exigence for arguments for feminist reforms. Yet, in many cases, the arguments for reform seem to precede the new scientific warrant. Thus, the science, in providing the new warrant, "refreshed," or gave a new dimension to old arguments.

The analysis of Darwinian discourse in Chapter 1 presents one such case for the "refreshing" of old warrants. Feminists had argued that women should choose who they selected as a mate and the conditions under which they would engage in sexual relations or bear children. Mary Gove Nichols' 1854 arguments imply such female choice arguments. After Darwin's publication of his sexual selection theory in *On the Origin of Species* (1859) and *The Descent of Man* (1871), the argument for female choice was refreshed by the warrant that, in the animal kingdom, females not males choose mates. The arguments for female choice were then given more prominence in arguments by Victoria Woodhull and Lois Waisbrooker, who even explicitly referred to sexual selection theory in their arguments. The timeline that presents the dates of scientific

discoveries alongside the dates for free love texts also provides evidence that old arguments were given new life by the sciences.

Chapter 2, while concentrating primarily on the multi-faceted nature of the conversation surrounding women's sexuality in the nineteenth century, also provides an instance of a scientific warrant "refreshing" old arguments. Why is it that Clelia Mosher was still making the same arguments that physicians like Mary Gove Nichols, Russell Trall, and Elizabeth Blackwell were making in earlier texts? Since Mosher was still attempting to refute ideas that women's bodies make them inherently less capable than men in 1921, does that mean that previous arguments by Nichols, Trall, and Blackwell were unsuccessful? Or, is it that Mosher, a product of the more scientific medicine of the late nineteenth-century, was able to use that emphasis on scientific medicine as a warrant for older claims? Mosher's argument is supported by the statistics she gathered on women's menstruation, and the warrant that scientific medical study is guided by statistics then refreshes the older arguments of physicians who had attempted the same arguments, but only had the theoretical focus of physiology to draw on.

Bacteriology provides the strongest evidence of a warrant "refreshing" old arguments. Chapter 3 shows how women often critiqued marriage by invoking the metaphor of a "diseased" institution. Gove Nichols' 1854 critique in *Marriage* and Woodhull's 1873 critique in *The Elixir of Life* present two examples of this metaphor. In the 1870s, scientists were discovering the germs for specific diseases. These findings then allowed further study into the prevalence of venereal disease, and findings like Emil Noeggerath's and Morrow's in the late nineteenth century "refreshed" the argument that

marriage was in fact a “diseased” institution: their findings revealed the prevalence of actual diseases within the marriage system.

Finally, ideas from embryology and the study of heredity gave new life and new meaning to even older arguments. The fall of preformation theory in favor of epigenesis created the possibility for prenatal influence since the characteristics of an embryo were no longer conceived as “preformed” and encased in a primordial organism. Thus, older ideas on how women’s thoughts and surroundings affected the embryo seemed newly warranted to medical writers and feminist advocates. The persistence of Lamarckian ideas on inheritance is also explained by this “refreshing” of older ideas. Darwin and Spencer offered more Lamarckian views at mid-century, which lent further scientific support to the theory of inheritance of acquired characteristics. Weismann’s refutation of Lamarck did not seem to cause an immediate shift in reform arguments, perhaps because writers like Darwin and Spencer were “refreshing” Lamarckian ideas with their own theories. Reformers’ arguments, then, mostly remained in a Lamarckian perspective until the twentieth century.

Therefore, the rhetorical strategies of women arguing for sexual reform were influenced by what was newly available to the situation. It is clear that events can “refresh” older debates and arguments. To use a few contemporary examples, the case of Terry Schiavo revived the debate on euthanasia, Al Gore’s movie *An Inconvenient Truth* provided exigence for further debates on global warming, and Hilary Clinton’s candidacy for president will most likely revive older arguments on women’s capabilities as politicians. In offering the possibility that new warrants can “refresh” older arguments, this project aims to provide a new perspective on analyzing rhetorical influences: while

events can clearly “refresh” older arguments and debates, new warrants derived from science can as well.

Conclusion

This project offers one way to reread the nineteenth-century discourse on female sexuality and sexual reforms. The speeches on sexuality by women offer new insights into what nineteenth-century women spoke about and how they spoke about it. Further analysis of these texts could examine how legal, economic, and scientific influences converged in these texts. Further research could illuminate the role of science in other early women’s movements, or connect social movements that may seem at odds with each other, as free love and social purity might initially seem. Finally, the idea that arguments can become refreshed by a new context, that old arguments can gain renewed cultural power, offers another way to read the rhetorical strategies and logic behind a text. Therefore, the story that this project tells about the ways women used science to promote social reform provides a methodology for situating nineteenth-century discourse on sexuality as part of a rhetorical tradition.

Appendices

Appendix to Chapter 2: Timeline of Texts on Physiology

Year	Physiology Text	Year	Free Love Text
1684	<i>Aristotle's Master-piece</i>		
1686	Nicolas Venette, <i>Tableau de L'amour Conjugal</i>		
1720	Venette, <i>Conjugal Love Revealed</i> (English translation)		
1787	Albrecht von Haller, <i>First Lines in Physiology</i>		
c1780	Venette, <i>Conjugal Love, or the Pleasures of the Marriage Bed</i> (English translation)		
1801	Marie-Francois-Xavier Bichat, <i>Anatomie generale</i>		
1846	Mary Gove, <i>Lectures to Women on Anatomy and Physiology with an Appendix on Water Cure</i>		
1850	Frederick Hollick, <i>The Marriage Guide or Natural History of Generation; A Private Instructor for Married Persons and Those about to Marry</i>		
		1854	Mary Gove and Thomas L. Nichols, <i>Marriage: Its History, Character, and Results; its Sanctities, and its Profanities; its Science and its Facts. Demonstrating its Influence, as a Civilized Institution, of the Happiness of the Individual and the Progress of the Race</i>
		1855	Mary Gove Nichols, <i>Mary Lyndon</i>
1859	Robert Dale Owen, <i>Moral Physiology</i>		
1866	Russell Trall, <i>Sexual Physiology: A Scientific and Popular Exposition of the Fundamental Problems in Sociology</i>		
1873	Edward Clarke, <i>Sex in Education: A Fair Chance for Girls</i>	1873	Victoria Woodhull, <i>The Elixir of Life, or, Why Do We Die?</i>
1873	John M. Scudder, <i>On the Reproductive Organs, and the</i>		

	<i>Venereal</i>		
1874	Mary Gove Nichols, <i>A Woman's Work in Water Cure and Sanitary Education</i>	1874	Victoria Woodhull, <i>Tried as by Fire; Or, The True and the False Socially</i>
		1876	Juliet Severance, <i>A Lecture on the Philosophy of Disease, and How to Cure the Sick Without Drugs, with an Explanation of Magnetic Laws</i>
		1881	Juliet Severance, <i>A Lecture on Life and Health, or How to Live a Century</i>
		c1890	Hulda Potter-Loomis, <i>Social Freedom: The Most Important Factor in Human Evolution</i>
1894	Elizabeth Blackwell, <i>The Human Element in Sex: Being a Medical Inquiry into the Relation of Sexual Physiology to Christian Morality</i> by Dr. Elizabeth Blackwell		
		1901	Juliet Severance, <i>Marriage</i>
		1905	Dora Forster, <i>Sex Radicalism as seen by an Emancipated Woman of the New Time</i>
1923	Clelia Mosher, <i>Woman's Physical Freedom</i>		

Appendix to Chapter 3: Timeline for Bacteriology

Year	Scientific Discovery	Year	Medical Popularization	Year	Reform Text
1837	Phillipe Ricord, difference between gonorrhea and syphilis, previously conceived as the same disease				
				1854	Mary Gove Nichols and Thomas L. Nichols, <i>Marriage: Its History, Character, and Results; its Sanctities, and its Profanities; its Science and its Facts. Demonstrating its Influence, as a Civilized Institution, of the Happiness of the Individual and the Progress of the Race</i>
1859	Louis Pasteur, microorganisms as cause of disease				
1872	Emil Noeggerath, “latency period” of gonorrhea				
		1873	John M. Scudder, <i>On the Reproductive Organs, and the Venereal</i>	1873	Victoria Woodhull, <i>The Elixir of Life, or, Why Do We Die?</i>
1876	Robert Koch, anthrax bacillus				
1879	Albert Neisser, gonococcus				
		1880	Alfred Fournier, <i>Syphilis and Marriage</i> (English translation)		
		1881	Elizabeth Blackwell, “Rescue Work in Relation to Prostitution and Disease: An Address Given at the Conference of Rescue Workers held in		

			London, June, 1881”		
1882	Robert Koch, microbe for tuberculosis				
1885	Louis Pasteur, rabies vaccine				
				1888	Victoria Woodhull, <i>Stirpiculture; or, The Scientific Propagation of the Human Race</i>
				1890	Frances Willard, “A White Life for Two”
				c1890	Hulda Potter-Loomis, <i>Social Freedom: The Most Important Factor in Human Evolution</i>
				1890	Victoria Woodhull, <i>Humanitarian Government</i>
				1893	Angela Heywood, “Body Housekeeping”
		1897	Elizabeth Blackwell, “Medical Responsibility in Relation to the Contagious Diseases Act: An Address Given to a Meeting of Medical Women in London, April 27, 1897”		
		1901	Emma Drake, <i>What a Young Wife Ought to Know</i>	1901	Juliet Severance, <i>Marriage</i>
		1902	Elizabeth Blackwell, <i>Essays in Medical Sociology</i>		
		1904	Prince Albert Morrow, <i>Social Diseases and Marriage</i>		
				1920	Margaret Sanger, <i>What Every Girl Should Know</i>

Appendix to Chapter 4: Timeline for Embryology

Year	Scientific Milestone	Year	Medical Popularization	Year	Reform Text
1651	William Harvey, “All that is alive comes from the egg” (qtd in Pinto-Correina 2)				
1684	<i>Aristotle’s Master-piece</i>				
1686	Nicolas Venette, <i>Tableau de L’amour Conjugal</i>				
1821	Johann Friedrich Meckel, endorsement of recapitulation theory				
1827	Carl Ernst von Baer, <i>On the Origin of the Mammalian and Human Ovum</i>				
1828	Carl Ernst von Baer, <i>The Developmental History of Animals</i>				
1843	Embryologists, observation of sperm within the egg				
1855	Robert Remak, cells form by division				
1859	Charles Darwin, <i>On the Origin of Species</i>				
1860s	Wilhelm His, three-dimensional models of embryos				
1866	Ernst Haeckel, recapitulation theory	1866	Russell Trall, <i>Sexual Physiology: A Scientific and Popular Exposition of the Fundamental Problems in Sociology</i>		
				1874	Victoria Woodhull, <i>Tried as by Fire; Or, The True and the False Socially</i>
1876-1877	Oscar Hertwig and Hermann Fol, examination of how sperm penetrates the egg and how the cell to form a new organism comes out of two nuclei				

				1879	Lois Waisbrooker, <i>From Generation to Regeneration, or The Plain Guide to Naturalism</i>
		1889	John Cowan, <i>The Science of a New Life</i>		
				1893	Lois Waisbrooker, <i>The Fountain of Life, or the Threefold Power of Sex</i>
				1897	Adella Hunt Logan, “Prenatal and Hereditary Influences”
		1901	Emma Drake, <i>What a Young Wife Ought to Know</i>	1901	Juliet Severance, <i>Marriage</i>
				1907	Lois Waisbrooker, <i>Eugenics; or, Race Culture Lessons</i>

Appendix to Chapter 5: Timeline for Heredity

Year	Scientific Milestone	Year	Medical Popularization	Year	Reform Text
1798	Thomas Malthus, "Essay on the Principle of Population"				
1809	Jean Baptiste Lamarck, <i>Philosophie Zoologique</i>				
1844	Robert Chambers, <i>Vestiges of the Natural History of Creation</i>				
1851	Herbert Spencer, <i>Social Statistics</i>				
1852	Herbert Spencer, "A Theory of Population"				
1859	Charles Darwin, <i>On the Origin of Species</i>				
1864	Herbert Spencer, "survival of the fittest"				
1864	Herbert Spencer, <i>Principles of Biology</i>				
1865	Gregor Mendel, theory of hybridization				
		1866	Russell Trall, <i>Sexual Physiology: A Scientific and Popular Exposition of the Fundamental Problems in Sociology</i>		
1869	Francis Galton, <i>Hereditary Genius: An Inquiry into its Laws and Consequences</i>				
1871	Charles Darwin, <i>The Descent of Man and Selection in Relation to Sex</i>				

				1873	Victoria Woodhull, <i>The Elixir of Life, or Why do we Die?</i>
				1874	Victoria Woodhull, <i>Tried as by Fire; Or, The True and the False Socially</i>
				1881	Juliet Severance, <i>A Lecture on Life and Health, or How to Live a Century</i>
1883	August Weismann, refutation of inheritance of acquired characteristics				
1886	Francis Galton, term "eugenics"			1886	Anna Julia Cooper, "Womanhood a Vital Element in the Regeneration and Progress of a Race"
				1888	Victoria Woodhull, <i>Stirpiculture; or, The Scientific Propagation of the Human Race</i>
1889	August Weismann, <i>Essays Upon Heredity</i>	1889	John Cowan, <i>The Science of a New Life</i>		
				1890	Frances Willard, "A White Life for Two"
				1891	Frances Willard, "Address of Frances E. Willard, President of the Woman's National Council of the United States ... at its First Triennial Meeting, Albaugh's Opera House, Washington, D.C., February 22-25, 1891."
				1891	Victoria Woodhull, <i>The Rapid Multiplication of the Unfit</i>
				1893	Lois Waisbrooker, <i>The Fountain of Life, or the Threefold Power of Sex</i>
		1894	Elizabeth Blackwell, <i>The Human Element in Sex: being a Medical Inquiry into the Relation</i>		

			<i>of Sexual Physiology to Christian Morality by Dr. Elizabeth Blackwell</i>		
				1897	Adella Hunt Logan, "Prenatal and Hereditary Influences"
1900	Gregor Mendel, work rediscovered				
		1901	Emma Drake, <i>What a Young Wife Ought to Know</i>	1901	Juliet Severance, <i>Marriage</i>
		1902	Elizabeth Blackwell, <i>Essays in Medical Sociology</i>		
1905	William Bateson, term "genetics"				
				1907	Moses Harman, <i>The American Journal of Eugenics</i>
				1907	Lois Waisbrooker, <i>Eugenics; or, Race Culture Lessons</i>

Bibliography

- Alexander, Adele Logan. *Ambiguous Lives: Free Women of Color in Rural Georgia, 1789-1879*. Fayetteville: U of Arkansas P, 1991.
- Anderson, Elizabeth Garrett. "Sex in Mind and Education: A Reply." *Fortnightly Review* 15 (1874). Reprinted in Rowold 54-68.
- Appel, Toby A. "Physiology in American Women's Colleges: The Rise and Decline of a Female Subculture." *History of Women in the Sciences: Readings from Isis*. Ed. Sally Gregory Kohlstedt. Chicago: U of Chicago P, 1999. 305-336.
- Aristotle. *The Rhetoric and Poetics of Aristotle*. Ed. Friedrich Solmsen. Trans. W. Rhys Roberts and Ingram Bywater. NY: The Modern Library, 1954.
- Athey, Stephanie. "Eugenic Feminisms in Late Nineteenth-Century America: Reading Race in Victoria Woodhull, Frances Willard, Anna Julia Cooper, and Ida B. Wells." *Genders* 31 (2000): 98 paragraphs. <<http://www.genders.org/>>
- Battan, Jesse. "The 'Rights' of Husbands and the 'Duties' of Wives: Power and Desire in the American Bedroom, 1850-1910." *Journal of Family History* 24.2 (April 1999): 165-186.
- . "'The Word Made Flesh': Language, Authority, and Sexual Desire in Late Nineteenth-Century America." *American Sexual Politics: Sex, Gender, and Race since the Civil War*. Eds. John C. Fout and Maura Shaw Tantillo. Chicago: U of Chicago P, 1993. 101-122.
- . "'You Cannot Fix the Scarlet Letter Upon My Breast': Women Reading, Writing, and Reshaping the Sexual Culture of Victorian America." *Journal of Social History* 37.3 (2004): 601-624.

- Biesecker, Barbara. "Coming to Terms with Recent Attempts to Write Women into the History of Rhetoric." *Philosophy and Rhetoric* 25.2 (1992): 140-161.
- Bitzer, Lloyd. "The Rhetorical Situation." *Philosophy and Rhetoric* 1.1 (1968): 217-227.
- Bizzell, Patricia. "Opportunities for Feminist Research in the History of Rhetoric." *Rhetoric Review* 11.1 (1992): 50-58.
- Bizzell, Patricia and Bruce Hertzberg. *The Rhetorical Tradition: Readings from Classical Times to the Present*. NY: Bedford/St. Martin's, 2001.
- Blackwell, Elizabeth. *The Human Element in Sex: being a Medical Inquiry into the Relation of Sexual Physiology to Christian Morality by Dr. Elizabeth Blackwell*. London: J. and A. Churchill, 1894.
- . *Essays in Medical Sociology*. Reprint 1902 edition. NY: Arno Press, 1972.
- Bowler, Peter J. and Iwan Rhys Morus. *Making Modern Science: A Historical Survey*. Chicago: U of Chicago P, 2005.
- Brandt, Allan M. *No Magic Bullet: A Social History of Venereal Disease in the United States since 1880*. NY: Oxford UP, 1985.
- Brown, JoAnne. "Crime, Commerce, and Contagionism: The Political Language of Public Health and the Popularization of Germ Theory in the United States, 1870-1950. In Walters, *Scientific Authority*, 53-81.
- Buchanan, Lindal. "Regendering Delivery: The Fifth Canon and the Maternal Rhetor." *Rhetoric Society Quarterly* 32.4 (2002): 51-73.
- Bullough, Vern. "The Development of Sexology in the USA in the Early Twentieth Century." *Sexual Knowledge, Sexual Science*. Eds. Roy Porter and Mikulas Teich. Cambridge: Cambridge UP, 1994. 303-322.

- . *Science in the Bedroom: A History of Sex Research*. New York: Basic Books, 1994.
- Burke, Kenneth. *A Rhetoric of Motives*. Berkeley: U of California P, 1969.
- Campbell, George. *The Philosophy of Rhetoric*. Ed. Lloyd Bitzer. Carbondale: Southern Illinois, UP, 1988.
- Campbell, Karlyn Kohrs. "Biesecker Cannot Speak for Her Either." *Philosophy and Rhetoric* 26.2 (1993): 153-159.
- . "Consciousness-Raising: Linking Theory, Criticism, and Practice." *Rhetoric Society Quarterly* 32.1 (2002): 45-64.
- . *Man Cannot Speak For Her*. Vol. I. *A Critical Study of Early Feminist Rhetoric*. Westport, CT.: Greenwood Press, 1989.
- Cantor, Geoffrey and Sally Shuttleworth, eds. *Science Serialized: Representations of the Sciences in Nineteenth-Century Periodicals*. Cambridge: MIT Press, 2004.
- Cayleff, Susan E. *Wash and Be Healed: The Water-Cure Movement and Women's Health*. Philadelphia: Temple UP, 1987.
- Clark, Gregory and S. Michael Halloran, eds. *Oratorical Culture in Nineteenth-Century America: Transformations in the Theory and Practice of Rhetoric*. Carbondale: Southern Illinois University Press, 1993.
- Clarke, Edward. *Sex in Education: A Fair Chance for Girls*. 1873. Boston: James R. Osgood and Company, 1874.
- Coleman, William. *Biology in the Nineteenth Century: Problems of Form, Function, and Transformation*. Cambridge: Cambridge UP, 1977.

- Connell, Erin and Alan Hunt. "Sexual Ideology and Sexual Physiology in the Discourses of Sex Advice Literature." *The Canadian Journal of Human Sexuality* 15.1 (2006): 23-45.
- Consigny, Scott. "Rhetoric and Its Situations." *Philosophy and Rhetoric* 7.3 (1974): 175-186.
- Cooper, Anna Julia. "Womanhood: a Vital Element in the Regeneration and Progress of a Race." In *With Pen and Voice*, 53-74.
- Cott, Nancy. "Passionlessness: An Interpretation of Victorian Sexual Ideology, 1790-1850." *A Heritage of Her Own: Toward a New Social History of American Women*. Eds. Nancy Cott and Elizabeth Pleck. NY: Simon & Schuster, 1979. 162-181.
- Cowan, John. *The Science of a New Life*. New York: John B. Alden, 1889.
- Darwin, Charles. *The Origin of Species*. Ed. Gillian Beer. Oxford: Oxford UP, 1996.
- . *The Descent of Man and Selection in Relation to Sex*. Princeton: Princeton UP, 1981.
- Degler, Carl. "What Ought to Be and What Was: Women's Sexuality in the Nineteenth Century." In Leavitt, 192-212.
- De Kruif, Paul. *Microbe Hunters*. NY: Harcourt, Brace and Company, 1926.
- D'Emilio, John and Estelle B. Freedman. *Intimate Matters: A History of Sexuality in America*. NY: Harper & Row, Publishers, 1988.
- DeLamotte, Eugenia. "Refashioning the Mind: The Revolutionary Rhetoric of Voltairine de Cleyre." *Legacy* 20.1-2 (2003): 153-174.
- Devitt, Amy J. "Integrating Rhetorical and Literary Theories of Genre." *College English* 62.6 (Jul. 2000): 696-718.

- Donawerth, Jane, ed. *Rhetorical Theory by Women Before 1900*. Lanham, MD: Rowman & Littlefield, 2002.
- Donnison, Jean. *Midwives and Medical Men: A History of Inter-Professional Rivalries and Women's Rights*. New York: Schocken Books, 1977.
- Drake, Emma F. Angell. *What A Young Wife Ought to Know*. Philadelphia: The Vir Publishing Company, 1901.
- Duffey, Eliza. *The Relations of the Sexes*. NY: Wood & Hobrook, 1876. Reprint NY: Arno Press, 1974.
- Eldred, Janet Carey and Peter Mortensen. *Imagining Rhetoric: Composing Women of the Early United States*. Pittsburgh: U of Pittsburgh P, 2002.
- English, Daylanne. *Unnatural Selections: Eugenics in American Modernism and the Harlem Renaissance* Chapel Hill: U of North Carolina P, 2004.
- Engs, Ruth Clifford. *Clean Living Movements: American Cycles of Health Reform*. Westport, CT: Praeger, 2000.
- Erskine, Fiona. "The Origin of Species and the Science of Female Inferiority." *Charles Darwin's The Origin of Species: New Interdisciplinary Essays*. Eds. David Amigoni and Jeff Wallace. Manchester: Manchester UP, 1995. 95-121.
- Fahnestock, Jeanne. "Accommodating Science." *Written Communication* 15.3 (July 1998).
- . *Rhetorical Figures in Science*. NY: Oxford UP, 1999.
- Fee, Elizabeth. *Science and the Woman Question 1860-1920*. Princeton University, PhD, 1978.

- Fellman, Anita Clair and Michael Fellman. *Making Sense of Self: Medical Advice Literature in Late Nineteenth-Century America*. Philadelphia: U of Pennsylvania P, 1981.
- Ford, E. B. *Mendelism and Evolution*. London: Methuen & Co. LTD, 1957.
- Frankel, Simon. "The Eclipse of Sexual Selection Theory." In Porter and Teich 158-183.
- Friskien, Amanda. "Sex in Politics: Victoria Woodhull as an American Public Woman 1870-1876." *Journal of Women's History* 12.1 (2000): 89-100.
- . *Victoria Woodhull's Sexual Revolution: Political Theater and the Popular Press in Nineteenth-Century America*. Philadelphia: U of Pennsylvania Press, 2004.
- Forster, Dora. *Sex Radicalism as seen by an Emancipated Woman of the New Time*. Chicago: M. Harman, 1905.
- Foucault, Michel. *The Birth of the Clinic: An Archaeology of Medical Perception*. Trans. A.M. Sheridan Smith. NY: Vintage Books, 1994.
- . *The History of Sexuality*. 3 vols. Trans. Robert Hurley. NY: Vintage Books, 1985.
- Fye, W. Bruce. *The Development of American Physiology: Scientific Medicine in the Nineteenth Century*. Baltimore: Johns Hopkins UP, 1987.
- Gabriel, Mary. *Notorious Victoria: The Life of Victoria Woodhull, Uncensored*. Chapel Hill: Algonquin Books of Chapel Hill, 1998.
- Galton, Francis. *Hereditary Genius: An Inquiry into its Laws and Consequences*. Second Edition. London: Macmillan and Co., 1892. Online Edition, *Galton.org*, 2000. 22 December 2006. <<http://galton.org/books/hereditary-genius/>>
- Garraty, John A. and Mark C. Carnes. *American National Biography*. 24 vols. NY: Oxford UP, 1999.

- Geison, Gerald L. *The Private Science of Louis Pasteur*. Princeton: Princeton UP, 1995.
- “Gene Mutation May Raise the Risk of Alcoholism.” *Reuters*. 10 January 2006. *Yahoo News*. 13 January 2006.
- <http://news.yahoo.com/s/nm/20070110/hl_nm/gene_alcoholism_dc>
- Gillispie, Charles Coulston, ed. *Dictionary of Scientific Biography*. 18 vols. NY: Charles Scribner’s Sons, 1974.
- Gilman, Charlotte Perkins. *Women and Economics: The Economic Factor between Men and Women as a Factor in Social Evolution*. NY: Harper & Row, 1966.
- Glenn, Cheryl. *Rhetoric Retold: Regendering the Tradition from Antiquity Through the Renaissance*. Carbondale: Southern Illinois University Press, 1997.
- Gordon, Linda. *Woman’s Body. Woman’s Right: A Social History of Birth Control in America*. NY: Penguin Books, 1977.
- Gordon, Michael. “From an Unfortunate Necessity to a Cult of Mutual Orgasm: Sex in American Marital Education Literature, 1830-1940.” *Studies in the Sociology of Sex*. Ed. James M. Henslin. NY: Appleton-Century-Crofts, 1971. 53-77.
- Gove, Mary S. *Lectures to Women on Anatomy and Physiology with an Appendix on Water Cure*. NY: Harper & Brothers, Publishers, 1846.
- Grant-Davie, Keith. “Rhetorical Situations and Their Constituents.” *Rhetoric Review* 15.2 (Spring 1997): 264-279.
- Gross, Alan G. *The Rhetoric of Science*. Cambridge: Harvard UP, 1990.
- Hall, Thomas S. *History of General Physiology: 600BC to AD 1900*. 2 vols. Chicago: U of Chicago P, 1969.

- Haller, John S. *A Profile in Alternative Medicine: The Eclectic Medical College of Cincinnati, 1845-1942*. Kent, OH: Kent UP, 1999.
- Haller, John S. and Robin M. Haller. *The Physician and Sexuality in Victorian America*. Urbana: U of Illinois P, 1974.
- Haraway, Donna. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." *Feminist Studies* 14.3 (1988): 575-599.
- Harper, Frances E. Watkins. "Enlightened Motherhood: An Address before the Brooklyn Literary Society." *Gifts of Speech: Women's Speeches from Around the World*. 6 December 2006. Online. 12 December 2006. <<http://gos.sbc.edu/h/harperf.html>>
- Hasian, Marouf Arif Jr. *The Rhetoric of Eugenics in Anglo-American Thought*. Athens, GA: U of Georgia P, 1996.
- Haynes, April. "The Trials of Frederick Hollick: Obscenity, Sex Education, and Medical Democracy in the Antebellum United States." *Journal of the History of Sexuality* 12.4 (2003): 543-574.
- Heywood, Angela. "Body Housekeeping." *Freedom, Feminism, and The State: An Overview of Individualist Feminism*. Ed. Wendy McElroy. NY: Holmes & Meier, 1991. 131-134.
- Hollick, Frederick. *The Marriage Guide or Natural History of Generation; A Private Instructor for Married Persons and Those about to Marry*. NY: T.W. Strong, 1850. NY: Arno Press, 1974.
- Hopwood, Nick. "'Giving Body to Embryos: Modeling, Mechanism, and the Microtome in Late Nineteenth-Century Anatomy.'" *Isis: An International Review Devoted to the History of Science and Its Cultural Influences* 90.3 (Sep. 1999): 462-96.

- . "Pictures of Evolution and Charges of Fraud: Ernst Haeckel's Embryological Illustrations." *Isis: An International Review Devoted to the History of Science and Its Cultural Influences* 97 (2006): 260-301.
- . "Visual Standards and Disciplinary Change: Normal Plates, Tables, and Stages in Embryology." *History of Science* 43.3 (Sep. 2005): 239-303.
- Isenberg, Nancy. *Sex and Citizenship in Antebellum America*. Chapel Hill, NC: U of North Carolina Press, 1998.
- Jackson, Margaret. *The Real Facts of Life: Feminism and the Politics of Sexuality c 1850-1940*. London: Taylor & Francis, 1994.
- Jacob, Kathryn Allamong. "The Mosher Report: The Sexual Habits of American Women, Examined Half a Century Before Kinsey." *American Heritage Magazine* 32.4 (June/July 1981). Online. 5 March 2007.
<http://www.americanheritage.com/articles/magazine/ah/1981/4/1981_4_56_print.shtml>
- Johnson, Nan. *Gender and Rhetorical Space in American Life, 1866-1910*. Carbondale: Southern Illinois UP, 2002.
- . *Nineteenth-Century Rhetoric in North America*. Carbondale: Southern Illinois UP, 1991.
- Jordanova, Ludmilla. "Sex and Gender." *Inventing Human Science: Eighteenth-Century Domains*. Eds. Christopher Fox, Roy Porter, and Robert Wokler. Berkeley: U of California P, 1995. 152-183.
- Keetley, Dawn. "The Ungendered Terrain of Good Health: Mary Gove Nichols's Rewriting of the Diseased Institution of Marriage." *Separate Spheres No More:*

- Gender Convergence in American Literature, 1830-1930*. Ed. Monika M. Elbert. Tuscaloosa: The University of Alabama Press, 2000. 117-142.
- Kern, Stephen. *Anatomy and Destiny: A Cultural History of the Human Body*. Indianapolis: The Bobbs-Merrill Company, Inc., 1975.
- Kisner, Arlene, ed. *Woodhull and Claflin's Weekly, the Lives and Writings of Notorious Victoria Woodhull and her Sister Tennessee Claflin*. Washington, NJ: Times Change Press, 1972.
- Kraut, Alan M. "Physicians and the New Immigration During the Progressive Era." In Warner and Tighe, 264-268.
- Laqueur, Thomas. *Making Sex: Body and Gender from the Greeks to Freud*. Cambridge: Harvard UP, 1992.
- Leach, William. *True Love and Perfect Union: The Feminist Reform of Sex and Society*. NY: Basic Books, Inc., 1980.
- Leavitt, Judith Walzer. "Gendered Expectations: Women and Early Twentieth-Century Public Health." In Leavitt 612-633.
- . ed. *Women and Health in America*. Madison: U of Wisconsin P, 1999.
- Lefkowitz Horowitz, Helen. *Rereading Sex: Battles Over Sexual Knowledge and Suppression in Nineteenth-Century America*. NY: Vintage Books, 2002.
- . "Victoria Woodhull, Anthony Comstock, and Conflict over Sex in the United States in the 1870s." *Journal of American History* 87.2 (2000): 403-35.
<http://www.historycooperative.org/journals/jah/87.2/horowitz.html>.
- Locy, William A. *Biology and Its Makers*. NY: Henry Holt and Company, 1915.

- Logan, Adella Hunt. "Hereditary and Prenatal Influences." In *We are Coming*, 211-214.
- Logan, Shirley Wilson. "*We are Coming*": *The Persuasive Discourse of Nineteenth-Century Black Women*. Carbondale: Southern Illinois UP, 1999.
- ,ed. *With Pen and Voice: A Critical Anthology of Nineteenth-Century African-American Women*. Carbondale: Southern Illinois UP, 1995.
- Lunsford, Andrea A., ed. *Reclaiming Rhetorica: Women in the Rhetorical Tradition*. Pittsburgh: University Of Pittsburgh Press, 1995.
- Mackinnon, Alison. *Love and Freedom: Professional Women and the Reshaping of Personal Life*. Cambridge: Cambridge UP, 1997.
- Maines, Rachel. *The Technology of Orgasm: "Hysteria," The Vibrator, and Women's Sexual Satisfaction*. Baltimore: Johns Hopkins UP, 1999.
- Malthus, Thomas Robert. "An Essay on the Principle of Population as it Affects the Future Improvement of Society, with Remarks on the Speculations of Mr. Gowin, M. Condorcet, and Other Writers." London: J. Johnson, 1798. *The Library of Economics and Liberty*. Online. 19 December 2006.
<<http://www.econlib.org/library/Malthus/malPoptoc.html>>
- Martin, Victoria Woodhull. *Humanitarian Government*. London: 1890.
- . *The Rapid Multiplication of the Unfit*. London: 1891.
- . *Stirpiculture; or, The Scientific Propagation of the Human Race*. London: 1888.
- Mattingly, Carol. *Appropriate[ing] Dress: Women's Rhetorical Style in Nineteenth-Century America*. Carbondale: Southern Illinois University Press, 2002.
- . "Telling Evidence: Rethinking What Counts in Rhetoric." *Rhetoric Society Quarterly* 32.1 (Winter 2002): 99-108.

- Maudsley, Henry. "Sex in Mind and in Education." *Fortnightly Review* 15 (1874).
 Reprinted in Rowold 32-53.
- Mayr, Ernst. *The Growth of Biological Thought: Diversity, Evolution, and Inheritance*.
 Cambridge: Belknap Press, 1982.
- . *One Long Argument: Charles Darwin and the Genesis of Modern Evolutionary
 Thought*. Cambridge: Harvard UP, 1991.
- McElroy, Wendy. "The Contagious Disease Acts." *iFeminists.com*. 30 January 2001.
 Online. 5 March 2007. <
<http://www.ifeminists.com/introduction/editorials/2001/0130.html>>
- , ed. *Freedom, Feminism, and the State: An Overview of Individualist Feminism*. NY:
 Holmes & Meier, 1991.
- . *Individualist Feminism of the Nineteenth Century: Collected Writings and
 Biographical Profiles*. Jefferson, NC: McFarland & Company, Inc., 2001.
- McGregor, Deborah Kuhn. *From Midwives to Medicine: The Birth of American
 Gynecology*. New Brunswick, NJ: Rutgers University Press, 1998.
- Miller, Carolyn. "Genre as Social Action." *Quarterly Journal of Speech* 70.2 (May
 1984): 151-167.
- . "Kairos in the Rhetoric of Science." *A Rhetoric of Doing: Essays on Written
 Discourse in Honor of James L. Kinneavy*. Eds. Stephen P. Witte, Neil Nakadate,
 and Roger D. Cherry. Carbondale: Southern Illinois UP, 1992. 310-327.
- Morantz-Sanchez, Regina Markell. *Conduct Unbecoming a Woman: Medicine on Trial in
 Turn-of-the-Century Brooklyn*. New York: Oxford University Press, 1999.

- . "Female Science and Medical Reform: A Path Not Taken." In Walters, *Scientific Authority*, 99-115.
- . "Feminist Theory and Historical Practice: Rereading Elizabeth Blackwell." *History and Theory* 31.4 (December 1992): 51-70.
- . *Sympathy and Science: Women Physicians in American Medicine*. New York: Oxford University Press, 1985.
- Morrow, Prince Albert. *Social Diseases and Marriage*. NY: Lea Brothers & Co., 1904.
- Mosher, Clelia Duel. *The Mosher Survey: Sexual Attitudes of 45 Victorian Women*. Eds. James MaHood and Kristine Wenburg. NY: Arno Press, 1980.
- . *Personal Hygiene for Women*. Stanford: Stanford UP, 1927.
- . *Woman's Physical Freedom*. NY: The Woman's Press, 1923.
- Needham, Joseph. *A History of Embryology*. NY: Arno Press, 1975.
- Nichols, Mary Gove. "The Murders of Marriage." *Root of Bitterness: Documents of the Social History of American Women*. Ed. Nancy Cott. Boston: Northeastern UP, 1996. 303-308.
- . "Woman The Physician." *Water-Cure Journal* 12.4 (Oct. 1851): 73.
- . *A Woman's Work in Water Cure and Sanitary Education*. London: Nichols & Co., 1874.
- Nichols, J. Ben. "The Eclectic Medical System." *Medical News* 66.14 (6 April 1895): 370.
- Nichols, T.L., and Mary Gove Nichols. *Marriage: Its History, Character, and Results; its Sanctities, and its Profanities; its Science and its Facts. Demonstrating its*

- Influence, as a Civilized Institution, of the Happiness of the Individual and the Progress of the Race.* Cincinnati: Valentine Nicholson & Co., 1854.
- Oppenheimer, Jane M. "Embryology and Evolution: Nineteenth Century Hopes and Twentieth Century Realities." *The Quarterly Review of Biology* 34.4 (Dec. 1959): 271-277.
- Otis, Laura. *Membranes: Metaphors of Invasion in Nineteenth-Century Literature, Science, and Politics.* Baltimore: Johns Hopkins UP, 1999.
- Owen, Robert Dale. *Moral Physiology; or, A Brief and Plain Treatise on the Population Question.* London: Holyoake and Co., 1859.
- Passet, Joanne E. *Sex Radicals and the Quest for Women's Equality.* Urbana: U of Illinois P, 2003.
- Peppis, Paul. "Rewriting Sex: Mina Loy, Marie Stopes, and Sexology." *Modernism/Modernity* 9.4 (2002): 561-579.
- Perelman, Chaim, and Lucie Olbrechts-Tyteca. *The New Rhetoric.* Trans. John Wilkinson and Purcell Weaver. Notre Dame: University of Notre Dame Press, 1969.
- Perry, Michael, ed. *Free Lover: Sex, Marriage and Eugenics in the Early Speeches of Victoria Woodhull.* Seattle: Inkling Books, 2005.
- , ed. *Lady Eugenist: Feminist Eugenics in the Speeches and Writings of Victoria Woodhull.* Seattle: Inkling Books, 2005.
- Pinto-Correia, Clara. *The Ovary of Eve: Egg and Sperm and Preformation.* Chicago: U of Chicago P, 1997.
- Porter, Roy and Lesley Hall. *The Facts of Life: The Creation of Sexual Knowledge in Britain, 1650-1950.* New Haven: Yale UP, 1995.

- Porter, Roy and Marilyn Ogilvie, eds. *The Biographical Dictionary of Scientists*. Third Edition. 2 vols. NY: Oxford UP, 2000.
- Porter, Roy and Mikulas Teich, eds. *Sexual Knowledge, Sexual Science: The History of Attitudes to Sexuality*. Cambridge: Cambridge University Press, 1994.
- Potter-Loomis, Hulda. *Social Freedom: The Most Important Factor in Human Evolution*. Chicago: M. Harman, c1890.
- Richardson, Angeliq. *Love and Eugenics in the Late Nineteenth Century: Rational Reproduction and the New Woman*. Oxford: Oxford UP, 2003.
- Rossiter, Margaret. *Women Scientists in America Volume 1: Struggles and Strategies to 1940*. Baltimore, Johns Hopkins UP, 1982.
- Rouse, P. Joy. "Margaret Fuller: A Rhetoric of Citizenship in Nineteenth-Century America." In Clark and Halloran 110-136.
- Rowbotham, Shelia. *Women in Movement: Feminism and Social Action*. NY: Routledge, 1992.
- Rowold, Katharina, ed. *Gender & Science: Late Nineteenth-Century Debates on the Female Mind and Body*. Bristol: Thoemmes Press, 1996.
- Russett, Cynthia Eagle. *Sexual Science: The Victorian Construction of Womanhood*. Cambridge, MA: Harvard UP, 1989.
- Sanchez-Eppler, Karen. *Touching Liberty: Abolition, Feminism and, the Politics of the Body*. Berkely: U of California P, 1993.
- "The Scientific Education of Women." *Scientific American* 23.4 (23 Jul. 1870): 53.

- Sanger, Margaret. *What Every Girl Should Know*. Springfield, Ill: United Sales Co., 1920.
- Scudder, John. *On the Reproductive Organs, and the Venereal*. 1873. Third Edition. Cincinnati: John M. Scudder, Publisher, 1890.
- Sears, Hal D. *The Sex Radicals: Free Love in High Victorian America*. Lawrence: The Regents Press of Kansas, 1977.
- Selections from Public Health Reports and Papers Presented at Meetings of the American Public Health Association (1884-1907)*. NY: Arno Press, 1977.
- Severance, Juliet H. *A Discussion of the Social Question between Juliet H. Severance, M.D. and David Jones, Editor of the "Olive Branch."* Milwaukee: National Advance, Print, 1891.
- . *A Lecture on Life and Health, or How to Live a Century*. Milwaukee: Godfrey & Crandall, Printers, 1881.
- . *A Lecture on the Philosophy of Disease, and How to Cure the Sick Without Drugs, with an Explanation of Magnetic Laws*. Milwaukee: Trayser Bros, Book and Job Printers, 1876.
- . *A Lecture on Religious, Political, and Social Freedom*. Milwaukee: Godfrey & Crandall, Printers, 1881.
- . *Marriage*. Chicago: M. Harman, 1901.
- Silver-Isenstadt, Jean L. *Shameless: The Visionary Life of Mary Gove Nichols*. Baltimore: The Johns Hopkins UP, 2002.

- Skinner, Carolyn. "A Delicate Authority: Ethos in Advice Books by Nineteenth-Century Women Physicians." 12th Biennial Rhetoric Society of America Conference, Memphis, Tennessee, May 27, 2006.
- Smith-Rosenberg, Carroll. *Disorderly Conduct: Visions of Gender in Victorian America*. NY: Oxford UP, 1985.
- Smith-Rosenberg, Carroll and Charles E. Rosenberg. "The Female Animal: Medical and Biological Views of Woman and Her Role in Nineteenth-Century America." In Leavitt 111-130.
- Somerville, Siobhan B. *Queering the Color Line: Race and the Invention of Homosexuality in American Culture*. Durham, NC: Duke UP, 2000.
- Spencer, Herbert. *Herbert Spencer on Social Evolution: Selected Writings*. Ed. J.D.Y. Peel. Chicago: U of Chicago P, 1972.
- Spongberg, Mary. *Feminizing Venereal Disease: The Body of the Prostitute in Nineteenth-Century Medical Discourse*. NY: New York UP, 1997.
- Spurlock, John C. *Free Love: Marriage and Middle-Class Radicalism in America, 1825-1860*. New York: New York UP, 1988.
- Stepan, Nancy Leys. *The Hour of Eugenics: Race, Gender, and Nation in Latin America*. Ithaca: Cornell University Press, 1991.
- Stern, Madeleine B., ed. *The Victoria Woodhull Reader*. Weston, MA: M & S Press, 1974.
- Stoehr, Taylor, ed. *Free Love in America: A Documentary History*. NY: AMS Press, Inc., 1979.

- Storer, Horatio Robinson. "The Mutual Relations of the Medical Profession, its Press, and the Community." *Chicago Medical Examiner* 12.6 (Jun 1871): 350-359.
- Taylor, Lloyd C., Jr. *The Medical Profession and Social Reform, 1885-1945*. NY: St. Martin's Press, 1974.
- Theriot, Nancy M. "Gender and Medicine in Nineteenth-Century America." *NWSA Journal* 15.2 (Summer 2003): 144-153.
- . "Negotiating Illness: Doctors, Patients, and Families in the Nineteenth Century." *Journal of the History of Behavioral Sciences* 37.4 (Fall 2001): 349-368.
- . "Women's Voices in Nineteenth-Century Medical Discourse: A Step toward Deconstructing Science." *Signs* 19.1 (Autumn 1993): 1-31.
- Tomes, Nancy. "Germ Theory, Public Health Education, and the Moralization of Behavior in the Antituberculosis Crusade." In Warner and Tighe, 257-264.
- . *The Gospel of Germs: Men, Women, and the Microbe in American Life*. Cambridge: Harvard UP, 1998.
- . "Spreading the Germ Theory: Sanitary Science and Home Economics, 1880-1930." In Leavitt 596-611.
- Toulmin, Stephen. "From *The Uses of Argument*." In Bizzell and Hertzberg 1413-1428.
- . "From *Logic and the Criticism of Arguments*." In Bizzell and Hertzberg 1429-1431.
- Trall, Russell. *Sexual Physiology: A Scientific and Popular Exposition of the Fundamental Problems in Sociology*. 1866. New York: M.L. Holbrook, 1881. Reprinted Arno Press, 1974.
- Tuchman, Arleen Marcia. "'Only in a Republic Can it be Proved that Science has no Sex': Marie Elizabeth Zakrzewska (1829-1902) and the Multiple Meanings of

- Science in the Nineteenth-Century United States.” *Journal of Women’s History* 11.1 (1999): 121-142.
- Underhill, Lois Beachy. *The Woman Who Ran for President: The Many Lives of Victoria Woodhull*. Bridgehampton, NY: Bridge Works Publishing Co., 1995.
- Vatz, Richard E. “The Myth of the Rhetorical Situation.” *Philosophy and Rhetoric* 6.3 (1973): 154-61.
- Vicinus, Martha, ed. *Suffer and Be Still: Women in the Victorian Age*. Bloomington, IN: Indiana University Press, 1972.
- Wagner, Joanne. “‘Intelligent Members or Restless Disturbers’: Women’s Rhetorical Styles, 1880-1920.” In Lunsford 185-202.
- Waisbrooker, Lois. *From Generation to Regeneration, or The Plain Guide to Naturalism*. Los Angeles: 1879.
- . *The Fountain of Life, or the Threefold Power of Sex*. Topeka: 1893.
- . *Eugenics; or, Race Culture Lessons*. Chicago: 1907.
- Waller, John. *The Discovery of the Germ: Twenty Years that Transformed the Way We Think about Disease*. NY: Columbia UP, 2002.
- Walters, Ronald G. *Primers for Prudery: Sexual Advice to Victorian America*. Baltimore: Johns Hopkins UP, 2000.
- , ed. *Scientific Authority and Twentieth-Century America*. Baltimore: Johns Hopkins UP, 1997.
- Warner, John Harley and Janet A. Tighe, eds. *Major Problems in the History of American Medicine and Public Health*. Boston: Houghton Mifflin, 2001.
- Warner, Michael. *Publics and Counterpublics*. NY: Zone Books, 2002.

- Weismann, August. *Essays upon Heredity and Other Kindred Biological Problems*.
 Trans. and Eds. Edward B. Poulton, Selmar Schonland, and Arthur E. Shipley.
 Oxford: Clarendon Press, 1889. Online. 15 December 2006.
 <<http://www.esp.org/books/weismann/essays/facsimile/>>
- Weiss, Harry B. and Howard R. Kemble. *The Great American Water-Cure Craze: A History of Hydropathy in the United States*. Trenton: The Past Times Press, 1967.
- Wellman, Kathleen. "Physicians and Philosophes: Physiology and Sexual Morality in the French Enlightenment." *Eighteenth-Century Studies* 35.2 (2002): 267-277.
- Wells, Susan. *Out of the Dead House: Nineteenth-Century Women Physicians and the Writing of Medicine*. Madison: U of Wisconsin P, 2001.
- Willard, Frances. "Address of Frances E. Willard, President of the Woman's National Council of the United States ... at its First Triennial Meeting, Albaugh's Opera House, Washington, D.C., February 22-25, 1891." *Votes for Women: Selections from the National American Woman Suffrage Association Collection, 1848-1921*. Library of Congress. Online. 22 July 2006.
 <<http://memory.loc.gov/ammem/naw/nawshome.html>>
- . "A White Life for Two." *Man Cannot Speak for Her: Key Texts of the Early Feminists*. Volume II. Ed. Karlyn Kohrs Campbell. NY: Greenwood Press, 1989. 317-338.
- Williams, Perry. "The Laws of Health: Women, Medicine, and Sanitary Reform, 1850-1890." *Science and Sensibility*. Ed. Marina Benjamin. Oxford: Basil Blackwell, 1991. 60-88.

- Williams, Trevor. *Biographical Dictionary of Scientists*. Glasgow: HarperCollins Publishers, 1994.
- Woodhull, Victoria. “*And the Truth Shall Make You Free:” A Speech on the Principles of Social Freedom*. New York: Woodhull, Claflin, & Co., Publishers, 1871.
- . *The Elixir of Life, or, Why Do We Die?* New York: Woodhull and Claflin, 1873.
- . *The Human Body the Temple of God; or the Philosophy of Sociology*. London: Hyde Park Gate, 1890.
- . *Tried as by Fire; Or, The True and the False Socially*. New York: Woodhull & Claflin, 1874.
- Wynn, James. “Alone in the Garden: How Gregor Mendel’s Inattention to Audience May Have Affected the Reception of His Theory of Inheritance in ‘Experiments in Plant Hybridization.’” *Written Communication* 24.1 (January 2007): 3-27.