

## Introduction

In April of 1834, an itinerant lecturer and reformer named Mrs. Hamilton delivered a speech on women's rights to a crowded audience at the Unitarian chapel in Greenock, Scotland. After folding a handkerchief into the "form of a brain," she argued that a correct understanding of that organ would reveal both the source of women's oppression and how they would achieve liberation from their male oppressors. According to one witness, she made the following claims:

all the bad thoughts, words, and actions of mankind were produced from external impressions, made through the medium of the eyes, the ears, and the other organs of the senses, and that all the errors and ignorance, faults and follies of women, were caused by their being exposed to the foul and contaminating moral influence of bad men; and . . . women's brains were capable of being improved to a degree which would make them equal and even excel the men in all the better accomplishments of our common nature, and give them power to break the chains of the tyrant and the oppressor, and set them completely free. ("Mrs. Hamilton" 32)

For Mrs. Hamilton, the female brain was the ultimate site of conflict and contest: situated at the intersection of external influence and internal capability, it materially encoded the negative effects of male dominance and control and, in doing so, revealed how such treatment was an abuse of nature. Organic structure showed that women possessed brains equal in capability to men, but subjugation literally deformed women's minds, impeding their natural development. Of course, challenging sexual inequality with the argument of social determination was nothing

new—Mary Wollstonecraft had made the same point in her *Vindication of the Rights of Woman* more than forty years earlier. Hamilton’s appeal, however, superadded the physiological evidence of women’s innate mental potential. In this new formulation, nature does not negate or deny the power of external influence to affect women’s mental development but rather reveals that the quality of the nurture they receive is incommensurate with their inherent capabilities. Whereas supporters of women’s rights had earlier argued that a lack of education prevented the world from knowing what women’s natural abilities actually were, this scientific argument went one step further, insisting that women’s impressive intellectual capacity could *already* be observed.

Decades later, the astronomer John Herschel and physiological psychologist George Henry Lewes also recognized the implications of brain research for women’s rights in a jointly written article for *The Cornhill Magazine*.<sup>1</sup> Responding to recent debates among anatomists about the average difference in size between the male and female brain, they observe, “Let women have the same advantages as men, it is said, and they will exhibit their intellectual equality. Of course there could be no sustaining such an argument if it were demonstrated that women *were* organically inferior to men” (276). Although Lewes and Herschel conclude that neuroanatomy had not advanced far enough to settle the matter, for some Victorian women the brain already offered the proof of possibility for women, and the idea of providing women with all the advantages men possessed was no longer a gamble, but a sure thing.

Unlike Herschel and Lewes, Mrs. Hamilton was not a member of the scientific establishment, and the brain science to which she referred was not neuroanatomy or physiological psychology (both of which would not emerge until the 1860s), but rather phrenology, the popular science of character that held that the shape of the skull was an index of an individual’s attributes of mind. Mrs. Hamilton claimed that “phrenologists had proved” that women’s minds were equal to men—and she made this argument from authority as she was, herself, a professional phrenologist of considerable renown (32). According to the prominent American phrenologist Lorenzo Niles Fowler, she was the “most successful and correct itinerant lecturer and examiner” in Great Britain, who “travelled extensively . . . and made many friends for herself and for the science” (5). Mrs. Hamilton was one of many professional female phrenologists, in addition to an impressive number of women who wrote manuals and books about the science (Figure I.1).

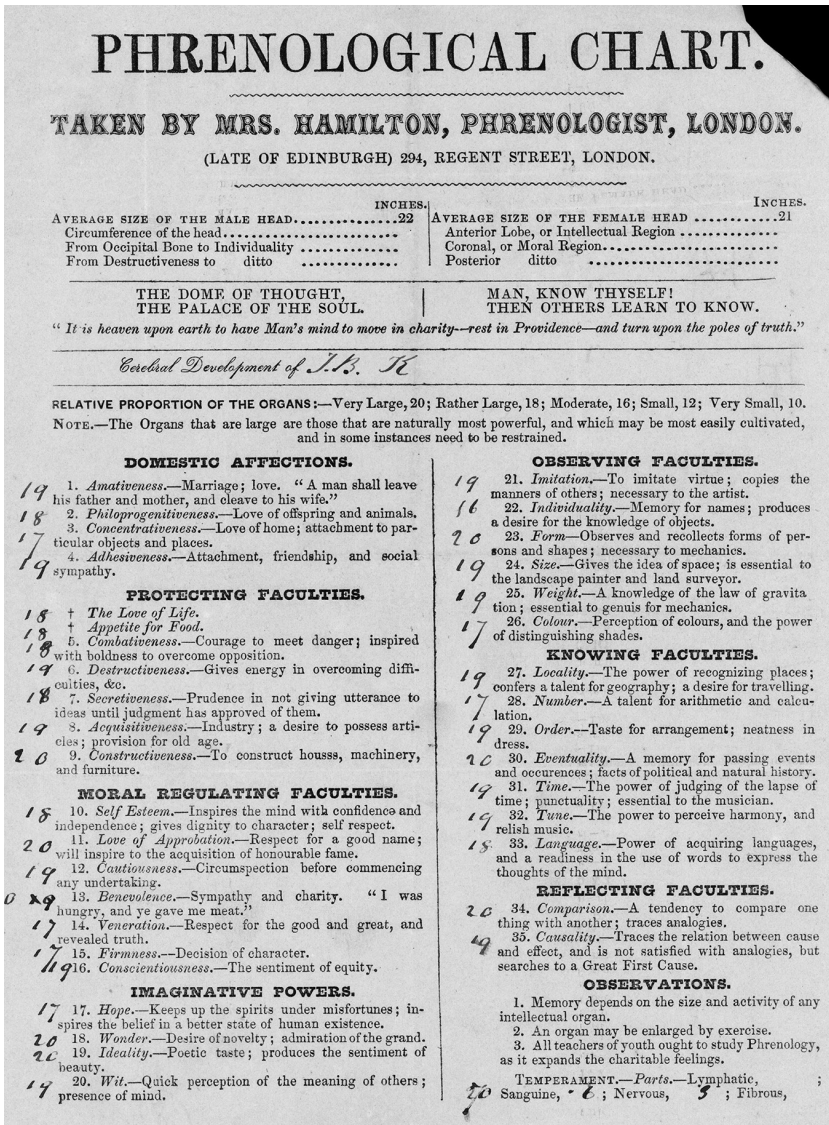


Figure I.1. "Phrenological Chart—Taken by Mrs Hamilton," mid-nineteenth century, Science Museum, London. *Source:* 4.0 International (CC BY 4.0).

Although phrenology was not created as a science for women, it was nevertheless appropriated by them to advance their personal and collective interests. Most important for this book, however, were the

women authors who used this physiological science of mind to question existing social arrangements. Rather than using phrenology as a simple shorthand for characterization or for its iconographic value, these women were deeply concerned with the foundational premise that the basis of mind is physiological rather than solely determined by social influence. In works by Anne Brontë, Harriet Martineau, Mary Elizabeth Braddon, and George Eliot, brain science is a way to think through the implications of an innate identity for such important aspects of personhood as domestic relations, spirituality, public identity, and race. And, much like Mrs. Hamilton, they saw how an appeal to an innatist psychology had the potential to challenge and overturn, at a stroke, ideological assumptions long anchored in tradition and culture.

*Equal Natures* seeks to restore this lost chapter in the history of women's writing and thinking about science, essentialism, and the body. To be clear, these women writers did not deny the reality of social determination in relation to identity formation; rather, they found its power so prevalent and coercive that they embraced an entirely new foundation for the origin of identity in order to challenge it. Despite women's enthusiastic engagement with the brain's materiality for progressive ends, very little has been said about Victorian women's engagement with brain science. This is most likely because the physiological psychology to which they had access—phrenology—has been debunked and is now invoked as an example of Victorian eccentricity at best, and a racist science at worst. Certainly, phrenology was used throughout the century to support dominant and dominating ideologies in troubling ways, and this book is in no way an attempt to defend a dubious science. The focus here is not phrenology itself but rather on how and why women used an appeal to mental physiology to question entrenched social practices. Although this science was created and popularized by men with little interest in women's rights, the internal logic of the discourse provided women with a point of entry into physiological concepts that, in turn, gave them a biological foundation for challenging established social systems.

This book has three overarching conceptual aims that emerge at the intersection of gender, science, and literary studies. First, it counters the position in feminist theory that essentialism has been the exclusive province of patriarchal values and reactionary political agendas. Essentialism has long been a suspect concept in feminist theory, and rightly so: the history of sexual difference from Plato to present has repeatedly returned to the supposedly irrefutable evidence of nature to justify social and political inequality. In response, the feminist perspective on essen-

tialism has, with few exceptions, remained the same: in 1949, Simone de Beauvoir proclaimed that “one is not born, but rather becomes, a woman” (283), and forty years later Judith Butler similarly observes that “gender operates as an act of cultural *inscription*” (146). Feminist thought has so closely associated itself with social construction that even contemplating the possibility of assuming an essentialist stance seems risky. As Ann Rosalind Jones puts it, “if we argue for an innate, precultural femininity, where does that position . . . leave us in relation to earlier theories about women’s ‘nature’?” (255). Essentialism, especially in its biological aspect, is the can of ontological worms we dare not open, even if there might be something useful inside.

One exception to this tendency has been in considerations of “the body,” which has remained a subject of concern since the 1990s, although it first appeared in 1970s French feminism. Rejecting the hierarchical implications of the Western mind/body dualism that associated women with the body and men with mind, theorists including Luce Irigaray, Hélène Cixous, and Julia Kristeva celebrated women’s connection to biological femininity as an aspect of *l’écriture féminine*, which they claimed offered a distinct but equally valuable contribution to culture. This school is unique in the history of feminist thought for adopting a politically and philosophically positive stance toward the body, as most work since—whether theoretical, historical, or literary—has argued that cultural perceptions of sexual difference contribute to the control of women’s bodies. Susan Bordo, for instance, traces how internalized sexism materially manifests itself through self-imposed body modifications, and Hortense Spillers has argued that redirecting attention to the material body brings into focus how power marks and disciplines subjects at the intersection of race and gender.<sup>2</sup> Similarly, in her attempt to “rescue the body” from feminist neglect, Elizabeth Grosz has argued that the body is “inscribed, marked, engraved, by social pressures,” which necessarily contests the precultural status ascribed to it by the natural sciences (x). These more recent treatments of the body, however, are actually more tempered versions of the constructivist position: they eschew talking about the body as a postmodern abstraction but do not abandon the idea that sexual identity materializes as such through cultural perceptions. As Spillers puts it, to claim otherwise “would appear reactionary, if not dumb” (66).

The project of *Equal Natures* is not to oppose or criticize these important interventions but rather to show that appeals to essentialism and the body have historically been used by women in ways as yet

unaccounted for by contemporary critical and theoretical discourse. In part, this is because what all of the approaches outlined above have in common is a focus on sexual difference: on reproductive function, sexuality, or physical dominance.<sup>3</sup> But what happens if, instead of denying the mind/body schism (as in *l'écriture féminine*) or claiming that gender is a construct that gets attached to the body through discursive practice (Butler et al.), we were to critically embrace a mind/body distinction and assert that while the bodies of men and women are different, their minds are equal, *and the material structure and substance of the brain proves it*. With the exception of the italicized portion, this last sentence is hardly a novel perspective—it is just one that has been notoriously difficult to prove. The history of disproportional achievement has been the primary evidence of intellectual difference, and understandably the earliest political critiques of sexual inequality aimed at showing how the argument by achievement failed to account for environmental, social, and cultural influence. Constructivism is a valuable way to invalidate the premise of this causal argument; an appeal to mental physiology, however, is an argument by another type of evidence altogether. This book reconstructs and examines how women authors crafted progressive arguments from this entirely different premise, one based on biologically determined mental capabilities that revealed an innate essence frequently at odds with its social conditions.

The second aim of this book is to restore to the literary and cultural record a different aspect of women's cultural engagement with nineteenth-century science. Much work on women and physiology in Victorian studies, and science studies more generally, has focused on how women have historically been an object of study *for* science. Historians have shown how scientific discourses have defined women as biologically and psychologically different from (and inferior to) men, and that such assessments stemmed from and reinforced the dominant ideology. For instance, Thomas Laqueur has shown that in the Western tradition, the science of sex from the ancients through the Enlightenment supported a one-sex model in which women were underdeveloped men. This was gradually replaced in the 1700s by a two-sex model that naturalized the separate and distinct social roles of men and women.<sup>4</sup> Ornella Moscucci has demonstrated how the development of nineteenth-century gynecology contributed to characterizing women as domestic and maternal, and thus naturally suited for the private sphere (1–5). And, as Londa Schiebinger has argued, the specificity of biological distinctions did more

than just reinforce the separate spheres ideology: it effectively precluded women from pursuing science in ways that had been possible in the past, since their domestic natures disqualified them from participating in the increasingly professionalized realm of science.<sup>5</sup> This exclusion was further reinforced by the fact that formal training in physiology was taught in medical schools that barred women from attending because of the perceived “indelicate” of the subject matter (Farnes 273). In the Victorian period, when it comes to human biological science and women, the story is one of uniform dominance and exclusion.<sup>6</sup>

However, when we consider the popular fields that have since been dismissed as “pseudoscientific,” it becomes clear that Victorian women certainly *were* engaging with theories about the biological body. Since the emergence of the history of science as a discipline, nineteenth-century fields of inquiry formerly regarded as pseudoscientific have been reclaimed as serious subjects for scholarship. As Alex Warwick has argued, pseudoscience is typically defined as either a science representing itself as “true” when it is deliberately false, or a science cast off from the establishment for sociocultural reasons. This bifurcated view, however, ignores the relationship between culture and “what it is possible to represent as science at any particular time” (4). Groundbreaking work by Steven Shapin, Roy Wallis, and Alison Winter (among many others) has shown that Victorian sciences anachronistically assumed to be marginal were in fact central to sociocultural developments in the period.<sup>7</sup> Such work has also shown how emerging scientific disciplines claimed legitimacy by distinguishing themselves over and against less specialized popular sciences.<sup>8</sup> This consolidation of authority took the form of developing gatekeeping procedures (including degree programs, professional societies, and specialized journals), and a concomitant effect of these developments was to formally and forcefully shut the door against women.<sup>9</sup> Women, however, could far more easily participate in popular sciences. One form this took was the development of a parallel track of popular science writing, in which women authors could disseminate scientific ideas for the education of women and children. Such contexts, however, often replicated a division of scientific knowledge along the lines of a separate spheres ideology, with women writers acting as domestic counterparts to professional male scientists.<sup>10</sup> In the case of popular or contested sciences, however, women could sometimes achieve roles on par with male practitioners and even contribute original ideas about their object of study. Thus, women became professional phrenologists, mesmerists, and spiritualists.<sup>11</sup> Admit-

tedly, there were comparatively fewer women than men to do so, but given the context of women's virtual absence in the more elite fields of professional Victorian science, such participation deserves attention—not merely because women were participating but because of what they had to say when they were in those rooms and publishing in those journals.

The elision in scholarship about this participation is particularly problematic when gender becomes a consideration, not only because the popular sciences were the ones to which women had more access, but also because women's engagement with contested sciences offers an important counterpoint to the sexist strain of the evolutionary discourse that dominated the era. Charles Darwin's theory of natural selection was revolutionary, but it was also used to legitimate the patriarchal organization of nineteenth-century society. In *The Descent of Man*, for instance, Darwin claims that the "chief distinction in the intellectual powers of the two sexes is shewn by man attaining to a higher eminence, in whatever he takes up, than women can attain—whether requiring deep thought, reason, or imagination, or merely the use of the senses and hands" (327). Basing his argument on physical attributes rather than disproportionate achievement, Herbert Spencer comes to the same conclusion, asserting that "as certainly as [women] have physical differences which are related to the respective parts they play in the maintenance of the race, so certainly have they psychological differences," and to claim otherwise "is to suppose that here alone in all of Nature there is no adjustment of special powers to special functions" (31). Such statements are characteristic of the illogical thinking and implicit bias that pervaded biological assessments of women in the period. As Cynthia Eagle Russett has demonstrated, showing how women were intellectually inferior and physiologically suited only for domestic roles was one of the greatest preoccupations of Victorian science in general, and evolutionary theory in particular.<sup>12</sup> Placed in the larger framework of natural selection, women's social functions became immutable because they were understood as natural capacities resulting from thousands of years of incremental adaptation.

While phrenology lacked the scientific legitimacy later accorded to evolutionary biology, its comparative inclusiveness enabled ways of thinking about natural law that challenged this mounting body of scientific "evidence" that claimed women were innately inferior in mind. Also, while sexist evolutionary thought posited that it would take millions of years of felicitous selection for women to achieve intellectual parity,



phrenological discourse could be used to justify an immediate change in women's conditions. The Scottish educationalist James Simpson, for instance, successfully used phrenology to justify his advocacy for boys and girls receiving the same education, explaining in his *Philosophy of Education*:

Why should the faculties of females, which are the same as the faculties of males, be deprived of the intellectual food which is intended for them? If the cultivation of these faculties shall elevate the male character, will it not likewise elevate the female, and, through the elevation of the female character, unspeakably benefit society? All the *moral* training proposed for the one sex will be granted to be proper and necessary for the other, but not less is the intellectual. (132)

As Simpson points out, the common educational argument that there should be a sexual division of curriculum, in which women receive a moral education but not an intellectual one, is necessarily challenged by the material existence of intellectual faculties in both sexes. As soon as women's brains were understood to have the same morphology as those of men, reformers were able to challenge their unequal intellectual treatment on biological grounds.

Like Simpson, women phrenologists also placed a great deal of hope in the brain as an organ that had no sex. Rather than science being the discourse that naturalizes sexual difference and justifies unequal treatment, in this case a biological science catalyzed and legitimated ideological critique. In a sense, these Victorian women anticipated the work of Donna Haraway, who has called for women to embrace the "sciences of liberation" made possible by twentieth- and twenty-first-century scientific advancements (8). Victorian women's identification of brain science as potentially progressive, however, moves the assumed timeline of sexual liberation through science back by more than a hundred years and reveals a concealed history of women's strategic use of biological essentialism, a scientific discourse otherwise consistently associated with patriarchal dominance. As this book shows, men were not alone in apprehending the power of scientific naturalism to affect cultural perceptions of gender identity. Victorian women's serious consideration of the physiological basis of mind posits innate psychology as a forceful tool to question and overturn problematic social relations.

Finally, this book seeks to significantly expand our knowledge of Victorian literature that grapples with the social implications of cerebral localization both before and outside of the research of mainstream, professional scientists. Recent studies on the connection between literature and Victorian brain science have tended to focus on the impact of physicians, biologists, and psychologists who either possessed or eventually achieved widespread recognition from the scientific establishment for their groundbreaking theories and discoveries. Rick Rylance's *Victorian Psychology and British Culture, 1850–1880* (2000), for instance, limns the development and cultural effects of the physiological theories of Alexander Bain, Herbert Spencer, and George Henry Lewes—three of the most influential representatives of high-Victorian psychology. Similarly, Nicholas Dames's *The Physiology of the Novel: Reading, Neural Science, and the Form of Victorian Fiction* examines how the work of Lewes and Bain, in addition to E.S. Dallas, helped to establish a “physiological novel theory” in Victorian literary criticism, which attempted to elucidate the ways in which narrative form and reading practices might achieve physiological effects.<sup>13</sup> Focusing on neurology rather than psychology, Anne Stiles's *Popular Fiction and Brain Science in the Late Nineteenth Century* (2012) traces how researches into cerebral localization by such neurologists as David Ferrier, John Hughlings Jackson, and Paul Broca influenced the development of the Gothic romance in the fin de siècle. These important studies into the literary and cultural effects of prominent research on the brain by eminent scientists are certainly worthy of our attention, but it is also important to remember that there is a temporal and gendered specificity to readings that focus on Victorian physiological psychology and neurology. As Dames observes, physiological novel theory was largely owing to “the work of a small set of mid-Victorian *male* figures” working between 1850 and 1880 (9, my emphasis). Similarly, Rylance focuses on the work of a small number of male psychologists, whereas Stiles focuses on cerebral localization experiments performed by male neurologists in the 1860s and '70s. This focus on men is not an elision or a misrepresentation on their part—the key players in developing Victorian physiological psychology and neurology *were* men, and the fact that they were men is simply an effect of the structural sexism of the scientific establishment in the second half of the nineteenth century. Long before the 1850s, however, the idea that the brain was the organ of mind—and further, that its physiological properties in large part determined individual personality—had already come to the attention

of the British public through phrenology, the first psychology to claim an innatist foundation.

Literary texts are crucial to understanding the popular acceptance of a physiological basis for identity because they form an important part of the public discourse on science in the Victorian period. As Ilana Kurshan has argued, phrenology was particularly well suited to popularization through literature because both center the act of reading, although in phrenology the text is anatomical rather than literary (35). Phrenologists, in fact, even courted this analogy, frequently using the metaphor of reading in their journals (34).<sup>14</sup> Even beyond this surface correspondence, insofar as human identity is a central concern of fiction and philosophical prose, phrenology offered authors a culturally relevant foray into the social implications of a psychological science. Despite the incredible amount of scholarly work available on literature and mainstream Victorian science, and most particularly on evolutionary theory, the relationship between Victorian literature and popular sciences of the period remains less explored.<sup>15</sup> As Barbara T. Gates observes, this tendency in scholarship has led to a “valorization of eminent scientists and their writing” that “paint[s] a limited picture of Victorian scientific culture, both in terms of what science was and in terms of its audience” (“Ordering Nature” 180). By looking beyond the legacies of the most prominent Victorian scientists, *Equal Natures* restores to view the powerful ways in which a popular psychological science challenged conventional understandings of individual identity and interpersonal relations in ways that were particularly relevant to women writers.

Briefly described, phrenology was a science of character based on the research of Viennese physician Franz Joseph Gall, which encompassed five related claims: first, that the brain is the organ of mind; second, that the brain is composed of an aggregate of mental organs; third, that these organs have distinct, or localized, functions; fourth, that the relative size of any given mental organ corresponds to its power; and fifth, that the shape of the skull serves as an index of the power of the organs underneath. Although today phrenology is generally regarded only in terms of its practical application of reading one’s character from the shape of the skull, Gall’s doctrine revolutionized conceptions about the mind and its operations. As one historian of science puts it, “Gall was the first to treat mental phenomena as well as the human passions (previously located in the heart and elsewhere) as purely organic problems of neuroanatomy and neurophysiology” (Cooter, *Cultural Meaning* 3). The foundational

assumptions about identity that phrenology popularized are now widely accepted: that the brain is the seat of consciousness, that educational interests and professional choices are in part determined by an individual's innate mental abilities, and that discovering what one is predisposed for (or "finding oneself") and bringing that self into alignment with external circumstances is one of life's greatest imperatives.<sup>16</sup> As sociologist Thomas Gieryn observes, "The claim that the brain is the organ of mind was phrenologists' monopoly in the early nineteenth century, though today it is fact for everybody. If phrenologists 'got it wrong' by correlating the size of brain regions with cranial bumps, their other claims pushed science forward by moving the question of mental functioning from metaphysics and epistemology to biology, anatomy, and physiological psychology" (122). This is not to say that phrenology deserves to be valorized in the history of science, but it is to suggest that the cultural diffusion of the idea that there is a biological component to our personalities has an unacknowledged connection to popular understandings of the brain in the nineteenth century.

In Britain, phrenology was nothing short of a sensational phenomenon that captured and held the attention of the public for nearly a century. Phrenology was popularly introduced to England by Gall's former medical student Johann Gaspar Spurzheim, who frequently lectured in the country between 1813 and 1831 (Cooter, *Cultural Meaning* 296). These efforts at dissemination, however, pale in comparison to those of the Edinburgh lawyer George Combe, who, after watching Spurzheim dissect a brain in 1816, made it his life's mission to reorganize society around the principles of the science (108). Combe, a major figure in this book, published more than one hundred works on phrenology and its social applications, including his best-selling *Constitution of Man*, which by 1860 had sold twice as many copies as Darwin's *Origin of Species* would by the end of the century.<sup>17</sup> According to Harriet Martineau, it was the fourth most popular book in the English language, surpassed only by the Bible, *Pilgrim's Progress*, and *Robinson Crusoe* (*Biographical Sketches* 275).

Phrenological devotees amplified Combe's work throughout the British Isles, spreading the science by establishing numerous phrenological journals and societies and publishing thousands of phrenological texts.<sup>18</sup> Proponents of phrenology urged its application in nearly every aspect of public and private life, as evidenced in the titles of such books as *Christian Phrenology*, *Phrenology in the Family*, and *Phrenology: and Its Application to Education, Insanity, and Prison Discipline*.<sup>19</sup> The science's

popularity and influence, however, is difficult to estimate from statistical and bibliographic records alone since its omnipresence ushered in an entirely new way of conceptualizing and speaking about personality traits. As the editor of the *British and Foreign Medical Review* remarked in 1840, “the rapid diffusion of phrenological ideas under the cover of ordinary language, and without any reference to their true source, is a proof . . . that the new philosophy is making progress” (Forbes 193). For the contemporary reader, the cover of “ordinary language” often conceals phrenology’s pervasive presence in Victorian texts, in which casual references to faculties, organs, and prominent foreheads assume a shared context that can today appear merely descriptive. Far more than being a mere Victorian curiosity, phrenology was everywhere, and it popularized an entirely new way of evaluating one’s own identity and the identity of others by foregrounding the mind’s organic nature.

The popularization of Gall’s claims through phrenology dramatically altered social conceptions about the mind and its operations. Prior to the nineteenth century, psychology was the province of philosophy, so Gall’s focus on the brain and his insistence on correlating structure with mental function was the first foray into cognitive science. As George Henry Lewes put it in his *History of Philosophy*, “Every impartial and instructed thinker, whether accepting or rejecting Phrenology, is aware of the immense services rendered to Physiology and Psychology” by Gall, who “rescued the problem of mental functions from Metaphysics, and made it one of Biology” (2: 397–98, 407).<sup>20</sup> Victorian psychologist Alexander Bain claimed that because phrenology claimed that character was “founded in nature,” it was “really the first analysis of the mind itself that has anything like a basis to go upon. Phrenology, therefore, is even greater in what it implies than in its more immediate and obvious application to deciphering men’s characters by their heads” (24). As Bain recognized, the true importance of phrenology lay in its premise rather than its practice. While it would be an overstatement to assert that phrenology was solely responsible for the cultural shift to recognizing an innatist basis for human psychology, phrenological discourse was nevertheless the first science to make these claims and popularize them.

Phrenology’s rapid cultural diffusion was in part owing to its numerous social applications. Phrenologists reasoned that assessing innate mental tendencies could help to better orient the individual to society and provide a reliable basis for adjusting institutional practices to better serve individual needs. As George Combe explains, “until Phre-

nology was discovered, the nature of man was not scientifically known, and . . . in consequence, very few of his institutions, civil or domestic, were founded on principles accordant with the laws of his constitution” (*Constitution* 28). While private readings might aid the individual in selecting the correct profession, hiring the right employee, or choosing a compatible spouse, phrenological reformers (none more zealous than Combe) envisioned large-scale change, such as educational reform, abolishing the death penalty, and altering the treatment of mental patients. Whether applied to institutional reform or used to guide personal decisions, phrenology offered the promise of reconciling the individual to the external world through an appeal to innatist psychology. Phrenology, it was thought, would lead to individual fulfillment and social progress, achieved entirely through a better understanding of mental functions, capabilities, and limitations.

Phrenology’s widespread appeal was also due in large part to its ability to embrace both natural and environmental influence as a way of explaining character development. On the one hand, phrenology took as its starting point the premise that personality was an effect of pre-social organic capacities—that is, an individual enters the world with certain mental predispositions that form the basis of his or her character. On the other, phrenology held that environmental forces played a role in either amplifying or suppressing the behavioral expression of these characteristics. It is perhaps best understood as flexible biological determinism: one’s innate capacity could be developed by restraining or cultivating specific mental faculties, but there remained an upper limit to improvement. As a psychological theory, phrenology managed to reconcile the formative qualities of both nature and nurture, providing the individual with a unique biological destiny as well as a sense of personal control over it.

Understandably, scholarship examining how Britons applied phrenology to their own lives has focused on how the science worked to naturalize the dominant political, economic, and social interests of the middle class. Phrenology perfectly supported a theory of individualism that could be reconciled with social stability; it was, in the words of Sally Shuttleworth, “reformist rather than revolutionary,” promoting increased economic and social opportunities for the middle class through self-regulation (*Charlotte Brontë* 64). This aspect of the science was similar to the central message of Samuel Smiles’s *Self Help*, except for the fact that the starting point for improving one’s position in life lay in a physiological assessment of organic talents and deficiencies. The system

of applied phrenology was primarily created by, and marketed to, men of the working and middle classes, and it emphatically and repeatedly told these men that they were all unique individuals with natural gifts that destined them for specific professions through which they would find personal fulfillment, success, and happiness.

Phrenology's uses were more nefarious when the subject being assessed was not a normative British individual, but an "other," whether racial, pathological, or criminal. Studies on phrenology's use in classifying specific social and racial types have understandably focused on the science's biological determinism, which came to the fore when the science was used to promote proto-eugenic aims, to justify imperialism, or to identify criminal "types." As one historian puts it, "Phrenology was in essence innatist and typological, believing that human behaviour was the outcome of structures and functions of the mind that were fixed by heredity. From there it was not difficult to see human groups as differently endowed . . . and thereby destined for different roles in the history of human society" (Stepan 23). The existing range of perspectives on phrenology characterize the science and its uses as anything but subversive, and these accounts are certainly not wrong for the demographics they address. However, these broader histories—of scientific professionalism, middle-class labor, and British rule abroad—center on the experiences and interests of men, and simply do not account for the science's uses by women.

Unlike colonial subjects or imprisoned criminals, women were able to access phrenology and deploy its discourse for themselves. As Lucy Hartley has shown, part of the appeal of phrenology was that it did not require a great deal of specialized knowledge and could be practiced by amateurs in the comfort of their own homes, completely "outside the confines of the university or the asylum, the laboratory or the operating theatre" (73). Although women were barred from conducting research in these spaces, they could study and practice phrenology within the domestic sphere. Also, because women could not apply the phrenological knowledge they received about the professions for which they were most fit, they could not benefit from phrenology in the way that men ostensibly could—that is, to improve their own socioeconomic status. For this reason, women's insight into their own innate capabilities and mental capacities revealed the injustice of sexual inequality on biological grounds and thus made phrenology, in their hands, a tool of subversion.

To account for this context, the first chapter of *Equal Natures* establishes how women used this popular brain science to contradict

and counteract the intensifying claims about women's intellectual inferiority by evolutionary biologists and anthropologists. In response to the Woman Question, scientists including such luminaries as Charles Darwin, Paul Broca, Thomas Henry Huxley, and Carl Vogt argued that to countenance women's equal access to educational and professional opportunities was a waste of resources because women had evolved to be childlike domestic helpmates. While they based their arguments on the more accepted science of craniometry, which held that the overall size of the skull was an index of intellectual power, women's rights supporters used phrenology to undermine the claim that the mind had a sex. This chapter makes the case that there were three key reasons why female phrenologists appropriated phrenology for progressive purposes. First, unlike most anatomical sciences of the day, phrenology was accessible to women and thus enabled them to study their own bodies for themselves. Whereas male scientists saw in female skulls evidence of the male sex's superiority, female phrenologists found evidence of women's equality. Second, because phrenology posited a theory of innate identity not based on sexual difference, it implicitly (if accidentally) contradicted the separate spheres ideology based on the biological theory of sexual complementarity. Because no structural difference was observed in male and female brains, the organ could not be directly connected to other aspects of sexual identity tied to reproductive function—a lack of distinction women's rights advocates were keen to point out. Finally, and perhaps most importantly, because phrenologists never established a separate methodology for assessing women, and because phrenological paraphernalia were designed with men's unique natures in mind, once women assessed themselves with the same tools, the readings had the collateral effect of revealing that women were biologically qualified for professional roles barred to them. The brain's materiality disclosed that women were not "types" defined by their relation to men but psychologically complex individuals with untapped talents and capabilities that ached to be expressed. Thus, to deny women the opportunity to outwardly exercise their internal identities was not only a failure of justice but also a crime against nature.

While feminist phrenologists found in the science a rationale for challenging their access to the same resources as men, women authors saw that such an understanding of the brain could radically challenge traditionally held views across a range of social domains. If cerebral organization determines what makes a person a unique individual, then



all social and cultural interpretations based on the efficacy of environmental influence could be called into question on a scientific basis. What happens if a woman's cerebral organization reveals her to be a genius, but the only roles available to her are as a wife and mother? If character is largely fixed at birth, then how can women's much-vaunted moral influence be either effective or important? How can a materialist view of mind possibly be reconciled with the central tenets of Christian theology and free will? In asking such questions, Victorian women writers used the idea of an innate identity to put pressure on beliefs and practices that seemed to them dangerous, inequitable, or immoral.

The women writers addressed in this book were well versed in phrenological theory and terminology, and most had personal relationships with some of the foremost champions of the science. George Combe was an early mentor of George Eliot and corresponded with Harriet Martineau; Charles Bray, the so-called philosopher phrenologist of Coventry, was close friends with both Mary Elizabeth Braddon and George Eliot; Martineau bequeathed her skull and brain to her close friend Henry George Atkinson, an avid phrenologist and mesmerist. Evidence also suggests that Charlotte Brontë, Martineau, Eliot, and Braddon received phrenological readings on one or more occasions, and Eliot even had a cast made of her skull.

Despite the pervasiveness of this popular science and the degree to which it penetrated the lives of these important authors, there have been no book-length studies on the relationship between phrenology and Victorian literature, with the notable exception of Sally Shuttleworth's *Charlotte Brontë and Victorian Psychology*. Using a Foucauldian framework, Shuttleworth convincingly argues that Charlotte Brontë's application of phrenological theory in her fiction aligns with the dominant ideology of the upwardly mobile middle class. Thus, Charlotte Brontë's use of physiological psychology ultimately reinforces the values of self-discipline and self-regulation that characterize a capitalistic society. In the wake of Shuttleworth's book, Charlotte Brontë has become the most widely recognized literary representative of phrenology in Victorian literature.<sup>21</sup> Charlotte Brontë's use of the science is far from subversive and completely in lockstep with the dominant use of the science by her male contemporaries—but her application is also completely atypical of its use by other notable women writers of the period. In viewing Charlotte Brontë as *the* literary representative of phrenology, we miss seeing the more progressive use of popular brain science by other notable women writers in the Victorian age.

The second chapter makes this pivot by clarifying the distinctions between Anne and Charlotte Brontë's use of phrenology in similar contexts. Whereas Charlotte's references to innate mental capacities in *Jane Eyre* naturalize the meritocratic values of an upwardly mobile middle class, Anne's use of biological determinism undermines and critiques the myth of feminine domestic influence—a belief that perniciously reinforced the separate spheres ideology by rendering legal rights and protections unnecessary for virtuous women. Because a key argument for phrenology's utility was spousal selection, the science's treatment of marriage strongly emphasized the inflexibility of character. By the same logic, however, no recourse existed for those who had entered into marriage while ignorant of their partner's congenital predispositions, leaving women with no legal protection against innate depravity. In *The Tenant of Wildfell Hall*, Anne Brontë dramatizes the infelicitous consequences of such biological incompatibility to morally justify a wife's natural right to leave her husband and retain custody of her child.

Much like Anne Brontë, Harriet Martineau recognized how a physiological approach to human psychology could destabilize the foundational premises of long-established institutions. Moving from marriage to religion, the third chapter examines Martineau's use of popular brain science to justify her belief in materialism and atheism. Her first public rejection of theism appeared in *The Letters on the Laws of Man's Nature and Development*, which she co-wrote with the phrenologist Henry George Atkinson. *The Letters* argue that human consciousness is the product of cerebral localization and therefore has no basis in soul. Although the work has long been dismissed for its frequent references to phrenology and mesmerism, Martineau considered it to be one of her most important and personally significant works. The chapter argues that throughout the *Letters*, Martineau self-consciously appropriates the rhetorical conventions of the confessional narrative form to publicly perform a secular conversion. Her use of the confessional mode mirrors the structure of phrenological conversion narratives, in which the newly awakened devotee recalls a revelatory moment of self-discovery through an illuminating personal reading. In addition to already being popularly linked to a form of secular conversion, phrenology was also at the center of an ongoing debate about the atheism implicit in a materialist approach to mind. By aligning herself with the radical school of materialist phrenologists and adopting a posture of antagonistic provocation, Martineau strove to envision and instigate a radical break with theism through an embrace

of biological science. In doing so, she sought to wrest the concept of an essential identity away from a spiritual context and locate it, instead, in the physiological basis of mind.

In the same way the mind's materiality revealed a disjunction between religious doctrine and biological fact, it also made clear the potential misalignment between one's socially ascribed role and innate mental capacities. Chapter four demonstrates that this gap between one's publicly legible identity and biologically fixed psychology was a central concern in Mary Elizabeth Braddon's early fiction. Her first novel, *The Trail of the Serpent*, opens with a head reading of a universally beloved young man named Jabez North whom an itinerant phrenologist reveals to have the skull of a craven murderer. Although the community vehemently rejects the diagnosis, the narrative soon confirms it as North murders a child and states his intent to engage in a series of premeditated crimes. This sensation novel maintains its suspense through the ironic distance it maintains between the physiologically informed but powerless characters who are aware of North's true identity and the institutions that dismiss physiological evidence. Braddon uses the same structure more subversively in *The Doctor's Wife* to cultivate sympathy for a female protagonist whose skull attests to her tremendous intellectual ability that is wasted in tedium when she becomes a middle-class housewife. The narrative trajectory works to close the gap between physiological identity and its external recognition, finally achieved through the *deus ex machina* of her husband's death and an implausible inheritance that frees her to use her innate talents with agency rarely accorded to her sex. In both novels, innate psychology operates as the primary mechanism through which Braddon foregrounds the blind spots of ideological misprision in existing social relations.

Whereas the women writers in the aforementioned chapters valued phrenology for its potential usefulness in promoting progressive ends, George Eliot became increasingly critical of the science. Nevertheless, she remained committed to the foundational principle that both popular and mainstream brain science shared: that the brain is the organ of mind and cerebral organization shapes individual identity. The final chapter charts Eliot's evolving consideration of the role biology plays in determining an individual's future and in envisioning collective destiny. In her early story "The Lifted Veil," she uses an accurate phrenological reading to dramatize the negative psychological effects of being made prematurely aware of one's intellectual capabilities and limitations, ultimately leading to abject

passivity and fatalism. Turning from the individual to the species, she satirizes a phrenological reformer in her 1865 poem “A Minor Prophet,” whose utopian schemes only thinly conceal proto-eugenic implications. Both works illustrate the ways in which visual signs and tactile measurements of the body tend to delimit future possibilities in troubling ways. Returning to the intersection of the body’s materiality and future knowledge in *Daniel Deronda*, Eliot promotes an alternative approach to physiological foreknowledge through Mordecai’s visual identification of Deronda in the service of strategically counteracting the coercive effects of racist imagery. Deronda’s conspicuous and prepossessing visual presence allows Mordecai to posit him as an emblematic instantiation of essential Jewish identity imbued with the power to unify a people and inspire a future besides either assimilation or subjugation. Although the novel endorses this strategy in a racial context, the narrative treats its application to gender politics more skeptically, revealing the limitations of essentialist appeals for sexual equality within a cultural identity founded on patriarchal practices. Nevertheless, in Deronda’s final encounter with his mother, the novel upholds the legitimacy of her radical claim for freedom from sexual bondage on essentialist grounds, rehearsing the same arguments of biological intellectual equality made by the feminist phrenologists discussed in the first chapter of this book.

Undeniably, biological essentialism has been a forceful tool in the hands of the politically and professionally privileged, and more often than not, it has been used to efface the socially constructed origin of inequality by coding it as “natural.” Yet, in the Victorian period, women recognized the epistemological force of biological science and appropriated it for their own purposes. As Diana Fuss has observed, essentialism is in itself “neither good nor bad, progressive nor reactionary, beneficial nor dangerous,” and thus only the way it is deployed can be ethically assessed (xi). Examining why and how women used brain science to scrutinize and overturn longstanding cultural assumptions about the origin and nature of human psychology and intellectual capabilities recovers an important gambit for power by the disenfranchised. What all the women writers in this book believed is that if social inscription is the tool of oppression and obfuscation, then the best thing to countermand its mark is nature. A poststructural inheritance has long taught us to be wary of foundational claims “centered” on a premise that organizes the system that the premise itself escapes. But long before the deconstructive turn in feminist theory, women used popular understandings of the