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Strange Science

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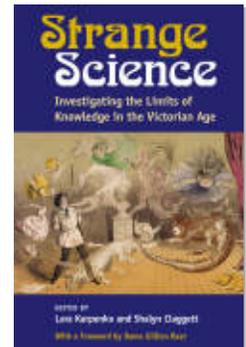
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Introduction

Lara Karpenko and Shalyn Claggett



In an 1872 letter to the *London Times*, Henry Dircks, renowned engineer and self-described “worker in the sciences,” gently chastises the editor for suggesting “that the time has arrived when scientific men should examine . . . Spiritualism.”¹ Confidently proclaiming that “no really scientific man believes in spiritualism,” Dircks derides the practice as a mere “pseudo-science” and seems to exclude almost any experimental or innovative practice from valid scientific endeavor.² But by the end of this letter that began with so much bravado, Dircks surprisingly speculates that one-tenth of spiritualist séances may, in fact, reveal scientific truths and rhapsodizes that “science is beset with . . . great wonders.”³ Far from drawing hard disciplinary boundaries around scientific practice, Dircks ultimately advances a notion of science that may be consistent and factual but is also aesthetic, poetic, and as magical as it is mathematical. To some extent, Dircks’s career showcases the same disciplinary fluidity as his letter to the *Times*. Though his name may now be forgotten, Dircks’s scientific work can still be seen today at places like Disneyland’s “Haunted Mansion Ride,” which features the translucent stage apparition popularly known as “Pepper’s Ghost.”⁴ Created through manipulations of lighting and mirrored surfaces, “Pepper’s Ghost” was at once the product of scientific advancement and the subject of popular spectacle. Though Dircks proudly defined himself as a “worker in the sciences,”

the very fact that he dedicated his talents to creating a ghostly mirage suggests he was little interested in a scientific career narrowly conceived. Dircks's stage career and his letter to the *Times* both indicate that for Victorian audiences, thinkers, and scientists, the category of the scientific—even for those who claimed otherwise—was remarkably if not jubilantly unstable and existed in a disorderly space marked by heterodox methods of inquiry.

It is within this disorderly space that we situate this volume. The essays in *Strange Science* investigate the epistemological and aesthetic imaginings that occurred in the hazy region between what we would now term “legitimate” and “illegitimate” scientific practice in nineteenth-century Britain. By examining these strange subjects and modes of inquiry, taking them not as foolhardy moments epitomizing the ignorance of a bygone era, but as serious investigations at the limits of knowledge, these essays offer fresh and inventive readings of sciences, texts, and practices that have often been overlooked or forgotten. *Strange Science* reveals, to use Mary Poovey's phrase, a “messy history” of scientific practice more fluidly defined, and the volume builds on Poovey's examination of what she terms the “modern fact.”⁵ As Poovey traces the origins of this abstract yet everyday “epistemological unit,” her work puts pressure on the notion that “numbers . . . guarantee value-free description,” suggesting instead that even our “most commonplace ideas” have a history (xxv, xiv). The essays in this volume similarly complicate the notion that objectivity, falsifiability, numerical analysis, and scientific endeavor are somehow natural partners. Poovey ends her study in the 1830s when, as she argues, facts effectively came to signal “theory-free representation” (xxv). This volume explores the chronological moment immediately following that of *The History of the Modern Fact*, investigating an elastic cultural moment: one in which the “fact” existed as a “value neutral and context-independent” concept, but also one in which the “fact” so conceived did not necessarily define scientific pursuits.⁶ While the essays provide a posthistory to Poovey's study, they also provide a prehistory to Mel Y. Chen's twentieth- and twenty-first-century-focused investigation of what she intriguingly refers to as “animacy”—or the “richly affective territory of mediation between life and death, positivity and negativity, impulse and substance.”⁷ For Chen, animacy is a “rangy, somewhat unruly construct” that “trouble[s] and undo[es] stubborn binary systems of difference, including dynamism/stasis, life/death, subject/object, speech/nonspeech, human/animal, natural body/cyborg.”⁸ The essays in *Strange Science* offer explorations of similarly “rangy” and “unruly” sub-

jects, such as atomic theory, entropy, and the afterlife, ultimately gesturing toward a marked fluidity in Victorian conceptions of the relations between human and nonhuman, life and nonlife, and the normative and the nonnormative. In doing so, *Strange Science* places a wide variety of seemingly disparate fields in conversation with one another. Though it may seem surprising (if not strange) that we group botany, mesmerism, physics, yogic practice, and psychophysical research in one volume, these essays suggest that these disciplines and practices were often informed by a similar cultural logic—one that embraced modes of inquiry that were intuitive, extrasensory, and fueled by a common desire to subject the most fantastic flights of fancy to the hard scrutiny of science.

We use the phrase “strange science” to characterize the diverse subjects addressed in this volume in order to evoke a sense of the curious felt from two different perspectives: that which was strange for the Victorians, and that which may seem strange to us. For the Victorians, the phrase “strange science” was frequently used to describe the astonishment and awe that the possibilities of science inspired. To list just two examples: a reviewer for *All The Year Round* termed chemistry “that strange science which changes and transmutes substances,” and the physician Charles Neidhard suggested that homeopathy was a “wonderful and strange science” that could unravel “the laws of nature.”⁹ As Neidhard’s almost rapturous usage indicates, far from being an adjective of derision, the term “strange” was often invoked to express a feeling of wonder and an embrace of liminality. For members of a twenty-first-century audience, however, the scientific subjects discussed in this volume may seem “strange” because the nature of the inquiry is so unlike the highly professionalized science of today. Since the nineteenth century, the increasingly specialized language of science, the removed and highly controlled space of the laboratory, and the technological sophistication of instruments have contributed to making the work of science seem removed from the social world. Although the field of science studies has emerged to bridge this gap, it has paradoxically raised the stakes of the division by seeming to deny the reality of the external world which scientists attempt to establish and explain. Yet, as Bruno Latour argues in a section of *Pandora’s Hope* titled “The Strange Invention of an ‘Outside’ World,” it is the assumed division between a scientifically accessible objective reality and a separate social world that is truly “strange”: “We do not need a social world to break the back of objective reality, nor an objective reality to silence the mob. It is quite simple, even though it may sound incredible in these times of the science wars: we are *not* at war.”¹⁰

Even if this tension between the ahistorical, objective world of science and the social, subjective world of historical reality is an illusion, the division is nevertheless one we tend to assume—but one that the Victorian thinkers discussed in this volume did not.

Strange Science examines the unconventional, fringe, and heterodox in Victorian scientific inquiry at the levels of both methodology and subject. As these essays show, heterodox methods were often employed in conventional scientific fields, and, conversely, rigorously scientific approaches were adopted to study what, by today's standards, were completely unscientific subjects. In investigating this history, *Strange Science* conceptualizes “boundary lines” in ways that are radically different from the professional and political boundaries that characterize recent scholarship in science studies. Groundbreaking work by such scholars as Stephen Shapin, Roy Wallis, and Roger Cooter has demonstrated that conflict over what constitutes scientific legitimacy is frequently motivated by the specific political and social interests of the intellectual groups involved.¹¹ This dynamic, in fact, is so pervasive it has been formalized by the sociologist Thomas Gieryn as “boundary-work,” the “attribution of selected characteristic to the institution of science . . . or purposes of constructing a social boundary that distinguishes some intellectual activities as ‘non-science.’”¹² While such discussions have offered an important contribution to science studies, this approach has become so prevalent that it has become a kind of conceit, typified by scholarly titles that include the words “boundary” and “margin.”¹³ This tendency to scrutinize the way in which professional boundary lines are drawn focuses on sites of institutional and political contest and conflict. Such broader sociological and historical studies, however, necessarily exclude the speculative practice of Victorian scientific thinkers on either side of these emerging boundary lines, for whom the issues of legitimacy and authority were of far less importance than individual interests fueled by the possibilities science inspired.¹⁴ Admittedly, there have been discrete histories of Victorian pseudosciences, such as Alison Winter's *Mesmerized* and Roger Luckhurst's *The Invention of Telepathy*, which focus on a single science from its popular emergence to the point of its near extinction. *Strange Science*, however, places a range of unconventional forms Victorian science in dialogue with one another and thus foregrounds how seemingly unrelated approaches were often informed by a similar belief in science's ability to reach beyond the apparent limits of empirical knowledge.¹⁵

By reorienting the perspective on the Victorian scientific context into

one of possibility rather than conflict, these essays reveal that the relationship between orthodox and heterodox science is often far more complex than any binary distinction might suggest. Alison Winter has argued that often seemingly controversial forms of scientific practice were supported by a surprisingly large portion of the scientific establishment. As Winter explains, “fine-grained social histories” sometimes reveal that it was “often impossible for Victorians to agree on what counted as illicit or pseudoscience or medial quackery in specific instances,” and further, that “within those undefined areas, researchers used their scientific work itself to develop the basic principles that would underpin that practice.”¹⁶ The essays in this volume employ just such a “fine-grained” approach and show that many Victorian thinkers embraced, and were even inspired by, the uncertainty and instability that characterized heterogeneous forms of scientific inquiry. Certainly, legitimacy was an issue of central concern to many, but it was not the only, or even the most important, concern for individual scientific thinkers. Focusing exclusively on the issue of credibility comes at the expense of excising the profound sense of wonder that pervaded an age of rapid scientific advancement and discovery. Rather than science at the “border” or “margin,” the subjects of interest in these essays are situated at the limits of knowledge—at the very outer bounds of what seemed possible, and possible to be understood, in the natural world. For these men and women, the “boundary-work” of central importance was not intraprofessional, but ontological and even metaphysical, and they embraced many unusual and unconventional methods to enlarge the territory of the known universe.

Examining such scientific subjects and methodologies in the Victorian period is particularly important because it was at this time that the idea of modern science, as we now conceive it, began to take shape. In Britain, the most historically crystalizing moment for “science” understood as the study of the laws of nature (rather than referring to any form of systematic knowledge) was the first meeting of the British Association for the Advancement of Science (BAAS) in 1831. In fact, the word “scientist” did not even exist until 1834, when it was coined by William Whewell in response to Samuel Taylor Coleridge’s objection to members of the BAAS referring to themselves as philosophers.¹⁷ Even within the BAAS (to say nothing of the constellation of other scientific societies that preceded or developed in opposition to it), the inclusion, exclusion, and reshuffling of fields was a matter of constant discussion: phrenology was fiercely debated, “tideology” was enthusiastically embraced, and medicine was begrudgingly accepted and then marginalized.¹⁸ As

these debates suggest, the very idea of science and the constitution of its disciplinary categories were ambiguous at this time. By examining instances of scientific thinking that straddled emergent definitions and boundaries, this collection brings to light the exciting interconnections such instability made possible.

Even though the move toward formalizing the disciplinary distinction of the sciences began to take hold in the 1830s, the Victorian period was nevertheless a time of free and open exchange between science and culture. This was due in part to the accessible language used by scientific writers, whose work was being published in popular periodicals beside essays on politics, philosophy, and literature.¹⁹ As Jay Clayton has argued, the intellectual landscape of the early nineteenth century was characterized by an “undisciplined culture” precisely because the sciences had yet to establish themselves as discrete disciplines, with such features as dedicated journals, conferences, and credentialing practices.²⁰ Similarly, Gillian Beer has offered the metaphor of “open fields” to describe the fluid nature of epistemological exchange between science and culture, and Laura Otis has pointed out that Victorian scientists established their credibility throughout the Victorian period through frequent references to the Western literary canon, which secured their authority as educated and cultured intellectuals.²¹ “Open,” “undisciplined,” and dynamic, this period was marked by the interpenetration of literary, religious, scientific, philosophical, and artistic ideas, and this volume aims to demonstrate the extraordinary degree to which this exchange generated new speculations about the nature of the physical world.

As we point to the disciplinary and procedural fluidity at the heart of Victorian scientific practice, we simultaneously suggest that the objects of Victorian scientific inquiry themselves—plants, bodies, energies—often lacked stable definitions. Though Cary Wolfe rightly points to Donna Haraway’s 1985 “Cyborg Manifesto” as “probably the locus classicus” of twentieth-century critical conceptions of the cyborg, our volume suggests that Victorian science, with its interest in matters such as visible speech or stimulated physiology, also laid the groundwork for expanding the limits of what we consider a human body; in other words, Victorian scientists anticipated, if not helped to invent, the notion of the “posthuman.”²² In this sense, our collection engages with Deborah Denenholz Morse and Martin Danahay’s *Animals Dreams*, which in part explores the “subversion of the possibility of a human/animal distinction.”²³ Whereas *Animal Dreams* focuses on Victorian interactions with animals—beings that we all define as sentient—*Strange Science* enlarges upon this discus-

sion in order to illuminate Victorian conceptions of entities that we most often define as *nonsentient*. As our opening section on botany suggests, plants loomed large in the Victorian scientific imagination and were often endowed with moralizing, erotic, or murderous capacities; so even discourse that is radically posthuman, such as Forianne Koechlin's "The Dignity of Plants" (a passionate plea for "the moral consideration of plants for their own sake") arguably found its genesis in Victorian thought.²⁴

Of course, this volume is not arguing that Victorian thinkers and scientists participated in a radically postmodern project of eradicating all categories of identification or classification. Certainly, as science became increasingly professionalized, it often helped consolidate Western, masculine, upper- and middle-class agendas, as the common phrase "gentlemen of science" suggests. Critics like Jim Endersby and Alison Winter have examined how the professionalization and masculinization of the sciences often gave rise to intense cultural debates about which scientific subjects were appropriate for university study or for middle-class men to consider suitable as a profession: *Strange Science* participates in this rich critical conversation and invites readers to consider heterodox scientific inquiry in light of these gender constructions.²⁵ Along these lines, our collection also extends upon Evelyn Fox Keller and Helen E. Longino's landmark volume *Feminism and Science*, which argues that "scientific research and science-based technologies [participated] in the continuing subordination of women."²⁶ Following this observation, essays in our volume explore the tension between orthodox masculinist scientific discourses and feminized heterodox scientific investigation, suggesting that fringe sciences often provided women with an opportunity to create new knowledge within a field that would have otherwise been closed to them. As the essays in *Strange Science* examine the interplay between nonnormative scientific endeavors and gender construction, they also (sometimes simultaneously) comment upon Victorian discourses of empire and nationalism. Our investigation of these fringe and heterodox scientific endeavors also reveals that both actual and imagined contact zones (to use the language of Mary Louise Pratt) could sometimes be located in invisible, delicate, or surprising spaces: inside the atom, for example, atop the petals of an orchid, or deep within the intimate recesses of the human body.²⁷

The collection is organized into three parts, each addressing a different object of scientific inquiry: plants, bodies, and energies. The essays in *Strange Science* thus dynamically investigate concepts that were

and are inherently unstable, and the essays within each section provide a thickly textured analysis of the object of inquiry. As the range of essays within each section shows, the ways in which these scientific topics were addressed by Victorian scientists, artists, and fiction writers alike confound the marginal/mainstream divide in provocative and generative ways. In some cases, although the goal of inquiry was a more scientifically accurate understanding of the natural world, the motivating concerns were primarily spiritual or aesthetic. In others, a scientific idea, whether controversial or established, often served as the catalyst for speculations about the far-reaching implications of scientific discoveries, whether ethical or philosophical. Taken together, these essays demonstrate that, far from existing in a closed system of the pure empiricism, Victorian scientific practice was as affected by imaginative and fantastic possibilities as the fictional works it inspired.

In the first part, “Strange Plants: New Frontiers in the Natural World,” the essays explore the complex status of plants in relation to scientific thought and practice in the nineteenth century. Lynn Voskuil opens the collection by examining the unique interspecies discourses that developed surrounding orchids across various scientific, cultural, and colonial contexts. While accounting for orchidology’s complicity with British imperialism, she also demonstrates that it offers evidence of a horticultural paradigm that embraced the ontological permeability between the categories of “plant” and “human.” She argues that the tendency of Victorian botanists and horticulturalists to perceive orchids as “almost bestial, even human,” reveals how Victorian scientists, collectors, and enthusiasts conceived of and construed themselves in relation to the environment. Accordingly, the Victorian fascination with the orchid offers an early instantiation of a trans-species sensibility that would later come to characterize ecological ethics.

Looking at botany in an entirely different context, Meegan Kennedy examines the intellectual and institutional implications of botany’s role in a medical education. She uses Edward Forbes’s *An Inaugural Lecture on Botany* to illuminate the shifting value of botany as a science at midcentury. Contextualizing Forbes’s work within a larger tradition that resisted botany’s scientific value due to its cultural associations with sexuality, popular science, and feminine domestic pursuits, she shows how Forbes made a case for botany’s practicality as a source of ethical instruction for medical students. Kennedy’s essay illuminates the uneven history of scientific virtue by examining an argument for

botany's legitimacy that embraced both the morality inherent in an older model of natural theology and an emergent paradigm that privileged pragmatism in medical practice.

Narin Hassan's essay reads the archive of botanical work by Marianne North as an alternate form of scientific practice—one that valued the subjective, sensory experience of the observer over more systematic and institutionalized forms of botanic observation. At a time when botany was increasingly associated with masculine and imperialist agendas, Hassan shows that North's paintings and life writing, which often focus on aesthetic pleasure, offered a significant counterpoint to the dominant discourse of modern science and demonstrated an early sensitivity to environmental ethics in the pursuit of scientific knowledge. Ultimately, Hassan reveals that North resists easy classification across a range of nineteenth-century domains, whether related to gender, travel, science, or empire, thereby challenging the definitional logic underlying these categories.

Taking a sharp turn away from the aesthetic, Elizabeth Chang explores an extraordinary range of late nineteenth-century genre fiction on the subject of killer plants. Reading these fictional accounts of murderous trees, human-absorbing fungus, and alien weeds alongside scientific and philosophic writing about intentionality in plants, she argues that both types of writing were addressing the same complex issue: the possibility of plant consciousness, and how such a phenomenon could be detected or represented. Her essay demonstrates that when writers of all stripes tried to close the gap between the thinking plant and the human, the attempt gave rise to entirely new ontological categories of consciousness that could only be represented at the limits of narrative form.

The second part, "Strange Bodies: Rethinking Physiology," addresses considerations of the human body and its biological functions. Each of these essays examines how bodies could be made to perform in unusual and spectacular ways through science. Danielle Coriale's piece examines Francis Galton's use of psychophysics, the empirical study of the connection between the mind and body by measuring degrees of sensation. Coriale's work brings to light an overlooked aspect of Galton's science, one that recontextualizes and complicates his interest in eugenics. As she shows, in the 1890s, Galton's deafness spurred him to examine how the imagination might supplement stimuli that acted on nerves that otherwise failed to produce sensation; he supported his investigations with examples of auditory imagery taken from nineteenth-century poetry. In addition to examining how scientific thinking can emerge at the

intersection of personal and aesthetic experience, Coriale's work offers an early instance of the body being posited as an entity that could be extended past its material limits.

Similarly focusing on bodily communication, James Emmott traces the emergence of what he terms "phonographic physiology," the way in which the human body was, even before the invention of the phonograph, being understood as a biological mechanism that records and replays sound. Emmott begins with an examination of Alexander Melville Bell's development of Visible Speech, a system of writing that records sound through the actions and positions of the mouth. He goes on to trace the conceptual history of the body as a "read-write device" through developments in physiological psychology, vocal pedagogy, and the emergence of "phonographic culture" in the late nineteenth century. His examination culminates in reading George Bernard Shaw's *Pygmalion* as a work that reflects and critiques the disturbing implications of scientific agendas that sought to "civilize" human subjects through physiological reprogramming.

Lara Karpenko examines the relationship between mesmeric influence and the infectious popularity of the sensation novel. Focusing on the distinctly physical aspects of mesmerism (through touch) and sensation fiction (through bodily response), Karpenko contends that both science and literature participated in a shared discourse of sympathy that radically posited the possibility of collapsing the boundary between self and other, not despite of, but through, the body. Karpenko goes on to explore how these two strands of sympathy are conflated in Charles Adams's *Notting Hill Mystery*, a work that both replicates and critiques aspects of the sensation novel in its depiction of a series of murders accomplished through mesmeric control. Far from reading it as a sentimental Victorian concept, Karpenko reveals that sympathy was often imagined as a potentially destructive force.

Moving from the body's relationship with the external world to its internal biological functions, Suzanne Raitt contextualizes Oscar Wilde's *The Picture of Dorian Gray* within the scientific discourse on the operations of cell metabolism and division that repairs the waste of the body's natural processes. By foregrounding the novel's considerable engagement with science, Raitt shows how the novel operates as a dark fantasy about the possibility of art substituting for the natural limits of biological processes, and, like those processes, inevitably failing. The picture, then, is not only an aesthetic image of moral repression, but even more universally the literalization of the inexorable biological progress toward death.

The third and final part, “Strange Energies: Reconceptualizing the Physical Universe,” moves the volume’s focus from an observational study of the natural world to the abstract field of theoretical physics and unseen phenomena. Long before the technological developments of electron microscopes and particle accelerators, the Victorians were tackling the problem of how to detect and demonstrate the structure of unseen forces. Barri Gold identifies one such method as “nonlinear reasoning,” a way of thinking about apparently random natural systems. In her reading of “chaotic fictions” by such writers as Alfred Tennyson, Herbert Spencer, James Prescott Joule, and Charles Dickens, she identifies structures that uncannily anticipate key ideas in twentieth-century chaos theory, such as fractals, butterfly effects, and sensitive dependence on initial conditions.

In a similar way, albeit on a subatomic scale, Sumangala Bhattacharya examines the prescient insights of speculative scientific inquiry in her essay on Annie Besant, a controversial freethinker and feminist who, informed by Indian yogic practice, experimentally employed clairvoyant meditation to determine atomic structure. Although the results of Besant’s experiments anticipate later discoveries about the nature and structure of subatomic particles, Bhattacharya argues that the more significant value of Besant’s work rests in its “critique of the *politics* of scientific authority”—particularly when considering the gendered and colonial implications that underlie such authority. Bhattacharya reads Besant’s work as a symptomatic reaction to the institutional barriers to knowledge represented by a masculine, Western scientific establishment. In the context of recent postcolonial and feminist theoretical interventions in science studies, this essay’s examination and contextualization of Besant’s work explores an early and politically important instance of resistance to the patriarchal, Eurocentric, and anthropocentric discourse of modern science.

Moving from the realm of the atomic to the realm of the literary, Anna Jones’s piece examines Edward Bulwer-Lytton’s work at the intersection of postmodern theory, Baconian induction, and the occult. In doing so, her chapter challenges the still prevalent tendency in literary studies to discount the value of Bulwer-Lytton’s work and his connection to marginal science, despite the fact that both Bulwer-Lytton and these popular sciences had a mass appeal for Victorian audiences. Beyond returning Bulwer-Lytton to his proper intellectual context, Jones even more provocatively shows that his “suggestive system” of intellectual transmission anticipates poststructural literary theory, which similarly

takes its point of departure from the decoupling of author and text to determine meaning.

Much has already been said about spiritualism in the Victorian period, but L. Anne Delgado's essay moves away from table-rapping and séances to look at the use of massive data collection by the Society for Psychical Research, a project that aimed to transform the ghost into a fact that might be empirically defined. Her reading of the SPR's *Phantasms of the Living*, a fourteen-hundred-page taxonomic collection of supernatural occurrences, reveals a distinct historical shift in both cultural and scientific registers: culturally, she highlights a turn from popular conceptions of the ghost as a familiar, ancestral presence to one tied to psychological complexity; scientifically, her study emphasizes the Victorian desire to render all aspects of experience, including the otherworldly, statistically knowable. Further, she traces the copious evidence supplied in the compendium to popular literary versions of spiritual phenomena, revealing the ways in which scientific analysis of data transmitted by human interlocutors is always embedded in culture—in this case revealing, perhaps more significantly than any proof of ghosts, a “metaphor for the modern self.”

As the volume's subtitle suggests, our essays address Victorian science at the “limits of knowledge,” and Tamara Ketabgian's essay approaches this subject at the very outer limit of the knowable universe. She examines the popular and controversial treatise *The Unseen Universe* by the Victorian physicists Balfour Stewart and Peter Guthrie Tait, a work that claimed the second law of thermodynamics provided evidence of another universe being fueled by the entropic waste of our own. Ketabgian argues that this work updated and recast the tropes of natural theology in order to critique science's growing association with secular materialism, thereby mounting an important critique of the way science was conceptualized. She claims that by recasting scientific laws as generalizations, and hypotheses as acts of imagination, Stewart and Tait showed that science as practice is always, in some sense, a heuristic fiction.

Highlighting the epistemological continuum that exists between the nineteenth and twenty-first centuries, Ketabgian's essay functions as a fitting conclusion to our volume. Although *Strange Science* focuses on the nineteenth century, we want to emphasize that such strange and scientific explorations continue today in a number of surprising projects. For example, Nick Bostrom's 2003 “Are You Living in a Computer Simulation?” has given rise to lively and speculative discussions in theoretical physics, while Professor Emeritus William Tiller of Stanford University's Department of Material Sciences has turned his focus entirely to

researching psychoenergetics—a field that posits that the human psyche can affect material reality.²⁸ And, of course, popular debates surrounding global warming and vaccination all hinge on the issue of scientific legitimacy. So while *Strange Science* explores issues and topics that are undoubtedly Victorian, the volume also prompts a reconsideration of twenty-first-century perspectives on scientific thinking and the scientific imagination. At a time when some are questioning the relative value of humanities scholarship and STEM²⁹ research, *Strange Science* points to the important areas of intersection between scientific, humanistic, and artistic endeavors, intimating fresh ways of aligning the categories of knowledge that organize the academy today. Moreover, and perhaps even more poignantly, our collection reveals the permeability between the mundane and the extraordinary, suggesting that the “strange” always tantalizingly remakes our everyday reality.

Notes

1. Henry Dircks, “Science versus Spiritualism,” *The Times*, December 27, 1872.
2. *Ibid.*, emphasis added.
3. *Ibid.* It is worth noting that Dircks does not quite acknowledge that one-tenth of spiritualist séances may be scientific; rather, he asserts “that nine-tenths of the séances” are antiscientific. Still, he does seem to allow for some portion of séances to qualify as scientific practice.
4. The “ghost” is named after fellow scientist and coinventor John Henry Pepper. James Secord, “Quick and Magical Shaper of Science,” *Science* 297 (2002): 1648.
5. Mary Poovey, *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society* (Chicago: University of Chicago Press, 1998). Page numbers for subsequent citations will be given parenthetically in the text.
6. Evelyn Fox Keller and Helen E. Longino, introduction to *Feminism and Science*, ed. Evelyn Fox Keller and Helen E. Longino (Oxford: Oxford University Press, 1996), 1.
7. Mel Y. Chen, *Animacies: Biopolitics, Racial Othering, and Queer Affect* (Durham, NC: Duke University Press, 2012), 4.
8. *Ibid.*, 3.
9. “Paraffine,” *All The Year Round* 1 (1868): 58; Charles Neidhard, “Review: On Certain Medical Delusion,” *Homeopathic Examiner* 3, no. 2 (1842): 352.
10. Bruno Latour, *Pandora’s Hope: Essays on the Reality of Science Studies* (Cambridge: Harvard University Press, 1999), 15.
11. See, for instance, Steven Shapin, “Phrenological Knowledge and the Social Structure of Early Nineteenth-Century Edinburgh,” *Annals of Science* 32, no. 2 (1975): 219–43; Roy Wallis, ed., *On the Margins of Science: The Social Construction of Rejected Knowledge*, Sociological Review Monograph 27 (Keele: University of Keele, 1979); and Roger Cooter, *The Cultural Meaning of Popular Science: Phrenology and the Organization of*

Consent in Nineteenth-Century Britain (Cambridge: Cambridge University Press, 2005).

12. Thomas Gieryn, "Boundary-Work and the Demarcation of Science from Non-science: Strains and Interests in Professional Ideologies of Scientists," *American Sociological Review* 48, no. 6 (1983): 782.

13. Some representative titles: Wallis, *Margins of Science*; W. F. Bynum and R. S. Porter's *Medical Fringe and Medical Orthodoxy, 1750-1850* (London: Croom Helm, 1987); Martin Fichman, "Biology and Politics: Defining the Boundaries," in *Victorian Science in Context*, ed. Bernard Lightman (Chicago: University of Chicago Press, 1997), 94-118; Evelleen Richards, "Redrawing the Boundaries: Darwinian Science and Victorian Women Intellectuals," in Lightman, *Victorian Science in Context*, 119-42; Roy Wallis and Peter Morley, eds., *Marginal Medicine* (New York: Free Press, 1976); Thomas Gieryn, *Cultural Boundaries of Science: Credibility on the Line* (Chicago: University of Chicago Press, 1999); Alex Warwick, "Margins and Centres," in *Repositioning Victorian Sciences: Shifting Centers in 19th Century Thinking*, ed. David Clifford, Elisabeth Wadge, Alex Warwick, and Martin Willis (London: Anthem Press, 2006), 1-16.

14. Roger Luckhurst, *The Invention of Telepathy* (Oxford: Oxford University Press, 2002); Alison Winter's *Mesmerized: Powers of Mind in Victorian Britain* (Chicago: University of Chicago Press, 1998).

15. While *Pseudo-science and Society in Nineteenth-Century America*, ed. Arthur Wrobel (Lexington: University Press of Kentucky, 1987) addresses a range of marginal sciences without focusing on the construction of legitimacy, it does so only in the U.S. context, concentrating on how these sciences supported the emergence of a uniquely American national identity.

16. Alison Winter, "Construction of Orthodoxies and Heterodoxies in the Early Victorian Life Science" in Lightman, *Victorian Science in Context*, 31.

17. Jack Morrell and Arnold Thackeray, *Gentlemen of Science: Early Years of the British Association for the Advancement of Science* (Oxford: Clarendon Press, 1981), 20.

18. *Ibid.*, 276-80, 287-91, 515.

19. As Susan Cannon has famously argued, in the early Victorian period, science and culture cooperated in developing and supporting a singular "Truth Complex," a scientific worldview largely endorsed by theologians, philosophers, and literary figures alike. *Science in Culture: The Early Victorian Period* (New York: Science History Publications, 1978).

20. Jay Clayton, *Charles Dickens in Cyberspace: The Afterlife of the Nineteenth Century in Postmodern Culture* (Oxford: Oxford University Press), 82-83.

21. Laura Otis, introduction to *Literature and Science in the Nineteenth Century: An Anthology*, ed. Laura Otis (Oxford: Oxford University Press), xix.

22. Cary Wolfe, *What Is Posthumanism?* (Minneapolis: University of Minnesota Press, 2010), xii.

23. Deborah Denenholz Morse and Martin Danahay, introduction to *Victorian Animal Dreams: Representation of Animals in Victorian Literature and Culture*, ed. Deborah Denenholz Morse and Martin Danahay (Aldershot: Ashgate, 2007), 3-4.

24. Forianne Koechlin, "The Dignity of Plants," *Plant Signaling and Behavior* 4, no. 1 (2009): 78.

25. Jim Endersby, "Sympathetic Science: Charles Darwin, Joseph Hooker, and the Passions of Victorian Naturalists," *Victorian Studies* 51, no. 2 (2009): 299-320; Winter, *Mesmerized*.

26. Keller and Longino, *Feminism and Science*, 1.

27. Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation*, 2nd ed. (New York: Routledge, 2008).

28. Nick Bostrom, "Are You Living in a Computer Simulation?" *Philosophical Quarterly* 53, no. 211 (2003): 243–55. For more on the scientific response to Bostrom's work, see Silas R. Beane, Zohreh Davoudi, and Martin J. Savage, "Constraints on the Universe as a Numerical Simulation," *European Physical Journal A* 50, no. 9 (2014): 1–9. For more on Tiller's work on psychoenergetics, see William A. Tiller and Walter E. Dibble, "A Brief Introduction to Intention-Host Device Research," 2009, William A. Tiller Institute for Psychoenergetic Science, accessed April 12, 2015, <http://tiller-institute.com/pdf/White%20Paper%20I.pdf>. In this article, Tiller claims that he and his colleagues have been able to alter the acid/alkaline balance of water "by creating an intention to do so" (2).

29. STEM (science, technology, engineering, and mathematics).

