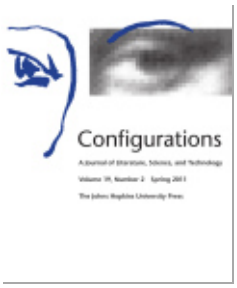
Stimulating Music: The Pleasures and Dangers of "Electric Music," 1750–1900



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Stimulating Music: The Pleasures and Dangers of "Electric Music," 1750–1900

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ABSTRACT: Far from being a purely modern idea, the notion of "electric music" was already common in the eighteenth and nineteenth centuries. The shift in thinking about music from cosmic harmony to nervous stimulation made metaphors and speculative theories relating music and electricity irresistible. This essay considers the development of the idea of electric music, looking at its associations with a sexual "body electric." It will then examine how this conception of music went from being the subject of sympathy to becoming part of a medical critique of music as a dangerous stimulant, with echoes in music criticism and beyond.

Since the beginning of the twentieth century the idea of "electric music" has been dominated by the objective, machine-like aesthetic of the Futurists and modern popular music, but comparisons between music and electricity go back much further than that. As this essay demonstrates, metaphors and speculative theories linking music and electricity have in fact been common since the eighteenth century, when they provided a language to express a new, more materialist view of music as a form of physical stimulation that challenged older Pythagorean traditions of music as a matter of universal order. Especially in the nineteenth century, the association of electricity with the human nervous system and its sensual pleasures meant that it had very different associations from today. From the Enlightenment to the wave of technological advances in around 1900, comparisons with electricity linked music not to bloodless

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machines but to the sexual "body electric."[1] Many observers expressed profound ambivalence about the medical and moral effects of such thrills. In the context of the eighteenth-century cult of sensibility, music's effect on the nerves and its *Wahlverwandschaft* with electricity were largely regarded as benign. Music, as the "galvanic fluid of harmony," was quickly incorporated into much of the medicine of the period as a potential source of the energy-giving erotic life force. On the other hand, from the 1790s onward the idea of electric music increasingly became a central part of a medical critique of music as a danger to health and morals that reflected deep anxieties about sensuality. By the nineteenth century, the principal result of this discourse was that music's "electrical" effects on the nerves were viewed as illegitimate, superficial, and potentially pathological.

Looking at a wide range of sources from mainstream and speculative medicine to music criticism, literature, and etiquette books from throughout Europe, this essay will analyze the shift from cosmology to physiology and pathology in discussions of electric music. First, it will look at the development of the idea of music as a matter of nerve stimulation and the debate about whether those nerves were electrical in character. It will then consider the way that electricity and music were widely portrayed as related forms of a sexualized life force, and the role this understanding of music's effect on the nerves played in therapeutic uses of music, especially in the late Enlightenment medicine of the likes of Franz Anton Mesmer and James Graham. This conception of music as quasi-electrical sexual stimulation, as the following section will show, eventually became the basis of a thorough medical attack on music, giving longstanding moral qualms about music's physicality a medical veneer. Finally, I will consider how this pathological understanding of electric music was incorporated into music criticism, with increasingly negative connotations of sensuality, banality, and empty virtuosity.

Nerves, Music, and Electricity in the Enlightenment

The idea that music is like electricity was based on the materialist understanding of sound as a nerve stimulant that emerged as music was disenchanted in the early modern period and came to be understood as part of "brute nature" rather than an aspect of cosmic harmony.[2] In what Penelope Gouk has described as a Foucauldian epistemological shift, natural philosophers like Galileo began to

1. See H. Aspiz, "The Body Electric: Science, Sex and Metaphor," *Walt Whitman Review* 24:4 (1978): 137–142.

2. See Penelope Gouk, "Raising Spirits and Restoring Souls: Early Modern Medical Explanations for Music's Effects," in *Hearing Cultures: Essays on Sound, Listening, and Mo-*

ground thinking on acoustics and musical tuning on the senses and the observation of nature rather than on abstract reason.[3] At the same time, the physical mechanism by which it affected the body came to have much more importance and was similarly disenchanted. The listening human body became less a microcosm of universal order and more a matter of nervous stimulation. Although there was no consensus about just how the nerves functioned, by the eighteenth century most observers took a view of the effects of music that largely eschewed metaphysical speculation in favor of an implicit acceptance of the mechanistic attitude, as one sees in the work of the period's most significant music theorists, Johann Mattheson and Jean-Philippe Rameau.[4]

The nervous system represented a more materialist way of not just understanding music, but also subjectivity and the body.[5] The Oxford physician Thomas Willis's pioneering work in neurology provided the basis for the influential English sensationalist epistemology of his student John Locke, which portrayed the mind as essentially a question of the irritation of the nerves.[6] French Enlightenment *philosophes,* most famously Julien Offray de la Mettrie in his 1748 book *L'homme Machine,* provided even more mechanical conceptions of man as a kind of "nerve machine."[7] The stimulation

dernity, ed. V. Erlmann (Oxford: Berg, 2004), pp. 87–105; and Gouk, "Music, Melancholy and Medical Spirits in Early Modern Thought," in *Music as Medicine: A History of Music Therapy since Antiquity*, ed. P. Horden (Farnham, UK: Ashgate Publishing, 2000), pp. 173–194.

3. Penelope Gouk, *Music, Science, and Natural Magic in Seventeenth-Century England* (New Haven, CT: Yale University Press, 1999), pp. 14–15; Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Vintage, 1973).

4. See Sabine Ehrmann-Herfort, "Das Vornehmste . . . in der Musik ist eine gute, fliessende, bewegliche Melodie: Johann Mattheson und die Empfindsamkeit," in *Aspekte der Musik des Barocks: Aufführungspraxis und Stil: Bericht über die Symposien der internationalen Händel-Akademie Karlsruhe, 2001–2004*, ed. Siegfried Schmalzriedt (Karlsruhe: Laaber-Verlag, 2006), pp. 227–250.

5. Carl Zimmer, *Soul Made Flesh* (New York: Free Press, 2004).

6. G. S. Rousseau, "Science and the Discovery of the Imagination in Enlightened England," *Eighteenth-Century Studies* 3:1 (1969): 108–135.

7. Julien Offray de la Mettrie, *L'homme Machine* (Leiden, 1748); Jörn Steigerwald, "Vom Reiz der Imagination. Theorie und Praxis der Einbildungskraft im Feld der Sexologie: das Beispiel La Mettrie," in *Reiz, Imagination, Aufmerksamkeit: Erregung und Steuerung von Einbildungskraft im klassischen Zeitalter (1680–1830)*, ed. Jörn Steigerwald and Daniela Watzke (Würzburg: Königshausen & Neumann, 2003), pp. 105–126. For more on automata, nerves, and gender, see Julie Park, "Pains and Pleasures of the Automaton: Frances Burney's Mechanics of Abjection," *Eighteenth-Century Studies* 40:1 (2006): 23–49; and Alex Wetmore, "Sympathy Machines: Men of Feeling and the Automaton," *Eighteenth-Century Studies* 43:1 (2009): 37–54.

of the human nerves seemed to many observers to be analogous to the mechanism of an automaton, or, fascinatingly, the striking of keys on a keyboard. For instance, in "D'Alembert's Dream," Denis Diderot wrote of humans as "instruments": "Our senses are merely keys that are struck by the natural world around us, keys that often strike themselves—and this, according to my way of thinking, is all that would take place in a harpsichord organized as you and I are organized."[8] The debate on the "electrical" effects of music was based on precisely this kind of materialist conception of sensation that could depict music as a form of stimulation of the human keyboard.

The move to a "nerve paradigm" in models of hearing was also reflected in thinking about music and medicine—for example, in Richard Browne's *Medicina Musica* of 1729. As Gouk has noted, Browne and his contemporary Richard Brocklesby both assumed that music's impact on the emotions is experimentally verifiable, that the body works on Newtonian principles, and that the nerves (described as the flow of animal spirits) are responsible for music's emotional effect.[9] As Browne put it:

> Sounds then may be supposed to rise from small Vibrations, or tremulous Motions of the Air, and to be propagated in Undulations; and these being collected by the external Ear, are from thence carry'd through the auditory passage to the Drum, on which beating, the four little Bones that are thereby mov'd and they move the internal Air, which, according to Degree of Motion, makes an Impression of the Auditory Nerves in the Labyrinth and Cochlea, so that according to the various Refractions of the external Air, the internal Air makes various Impressions upon the Auditory Nerve, the immediate Organ of Hearing, and these different Impressions represent to the Mind different sorts of Sound.[10]

This neatly summarizes what became the standard view of how music functions, leaving little room for abstract ratio or cosmic harmony. However, it still left many questions open about the nature of those nerves and their relationship to the mind.

8. Denis Diderot, "D'Alembert's Dream," in *Rameau's Nephew and Other Works*, trans. Jacques Barzun and Ralph H. Bowen (Indianapolis: Hackett Publishing Company, 2001), pp. 92–176, quote on p. 101. See Thomas Christensen, "Bemetzrieder's Dream: Diderot and the Pathology of Tonal Sensibility in the *Lecons de clavecin*," in *Music, Sensation, and Sensuality*, ed. Linda Phyllis Austern (New York: Routledge, 2002), pp. 39–56; and Veit Erlmann, *Reason and Resonance: A History of Modern Aurality* (Brooklyn, NY: Zone Books, 2010).

9. Gouk, "Raising Spirits and Restoring Souls" (above, n. 2), p. 92. Brocklesby was Dr. Johnson's physician.

10. Richard Browne, *Medicina Musica; or a Mechanical Essay on the Effects of Singing Music, and Dancing on Human Bodies* (London: J. Cooke, 1729), p. 33.

On the one side, there were aestheticians and physicians such as Johann Joseph Kausch who suggested that music influenced the mind via the imagination, applying Lockean theories of the association of ideas.[11] According to this approach, nerves are the means by which sensation reaches the imagination, but music remains a matter of the mind and the passions rather than of the body. Others took a more mechanistic view, arguing that music had a direct effect on the nerves, not necessarily mediated by the listening subject or the passions.[12] Unlike novels, it was argued, music did not just stimulate the nerves via the imagination; its effect was direct and more like electricity. This is the view one finds in the work of the Irish writer Daniel Webb, who argued that "[w]e are then to take it for granted, that the mind, under particular affections, excites certain vibrations in the nerves, and impresses certain movements on the animal spirits. I shall suppose that it is in the nature of music to excite similar vibrations, to communicate similar movements to the nerves and spirits."[13] That is to say, that music affects the nerves directly in a way that is parallel to the control of the mind over the nerves. The Swiss aesthetician Johann Georg Sulzer's description of music as "shocks delivered to the nerves of the body" made the character of music as a physical stimulant even more explicit.[14] Combined with a materialist view of subjectivity, this direct conception of music's effects was to become the basis for a whole discourse of electric music.

However, the actual way those nerves functioned and what role electricity might play remained controversial.[15] While some, like the

11. Johann Joseph Kausch, *Psychologische Abhandlung über den Einfluß der Töne und ins besondere der Musik auf die Seele; nebst einem Anhang über den unmittelbaren Zweck der schönen Künste* (Breslau: Johann Friedrich Korn, 1782).

12. There is an extraordinary level of continuity from older traditions here. As Penelope Gouk points out, the idea of sympathy between music and the body predates the nerve paradigm; see Gouk, "Music, Melancholy and Medical Spirits in Early Modern Thought" (above, n. 2).

13. Daniel Webb, *Observations on the Correspondence between Poetry and Music* (London: J. Dodsley, 1769), p. 6.

14. Matthew Riley, *Musical Listening in the German Enlightenment* (Farnham, UK: Ashgate Publishing, 2004), p. 72.

15. J. D. Spillane, *The Doctrine of the Nerves* (Oxford: Oxford University Press, 1981); John Lesch, *Science and Medicine in France: The Emergence of Experimental Physiology, 1790–1855* (Cambridge, MA: Harvard University Press, 1984); K. Rothschuh, *History of Physiology* (New York: Krieger, 1973); J. L. Heilbron, *Electricity in the Seventeenth and Eighteenth Centuries: A Study of Early Modern Physics* (Berkeley: University of California Press, 1979); Albrecht von Haller, *A Dissertation on the Sensible and Irritable Parts of Animals* (Baltimore: Johns Hopkins University Press, 1936); Hubert Steinke, *Irritating Ex-*

Scottish physician George Cheyne, followed Hippocrates in arguing that nerves were fine tubes containing a "subtle fluid," others promoted the idea of "sympathetic vibration" between music and literally vibrating nerves.[16] Nerves had been compared to the strings of a musical instrument at least as far back as Galen, and Isaac Newton's explanation of the vibration of musical strings made it a fashionable concept in the following decades, even though many, including Albrecht von Haller, pointed out the flaws in the argument.[17] For example, the Italian anatomist Antonio Maria Valsalva, who made a particular study of the ear, accounted for the effect of sounds by the vibrations of the nerves. More systematically, the English philosopher David Hartley's 1749 book *Observations on Man* attempted an early form of neuropsychology with his Newtonian and Lockean "doctrine of vibration."[18] Others, such as Edmund Burke, suggested that the nerves were indeed strings, but ones that were tightened or loosened rather than vibrating.[19] Similarly, in his 1745 work on music therapy, the German physician Ernst Anton Nicolai talked about the tone of the body's fibres as being literally "like a tightened string on a musical instrument," the state of which, the tension in the strings, would determine health.[20]

The idea that the nervous system was electric had been raised in the early eighteenth century by the likes of Isaac Newton and Stephen Hales.[21] Already in 1730, Stephen Gray had shown that the

periments: Haller's Concept and the European Controversy on Irritability and Sensibility, 1750–90 (Amsterdam: Editions Rodopi B. V., 2005); H.-J. Möller, *Die Begriffe 'Reizbarkeit' und 'Reiz'* (Stuttgart: Gustav Fischer Verlag, 1975).

16. Caroline Welsh, "'Töne sind Tasten höherer Sayten in uns'—Denkfiguren des Übergangs zwischen Körper und Seele," in *Romantische Wissenspoetik um 1800*, ed. Gabriele Brandstetter and Gerhard Neumann (Würzburg: Königshausen & Neuman, 2004), pp. 73–90.

17. Benjamin Stillingfleet, *Principles and Power of Harmony* (1771; reprint, Bristol, UK: Thoemmes Press, 2003), pp. 138–140.

18. David Hartley, *Observations on Man, his Frame, his Duty, and his Expectations* (1749; reprint, London: Thomas Tegg, 1834), p. 5.

19. See Aris Sarafianos, "The Contractility of Burke's Sublime and Heterodoxies in Medicine and Art," *Journal of the History of Ideas* 69:1 (2008): 23–48.

20. "Ich bilde mir so gar ein, das der Mensche gesund sey, wenn alle Fäserchen eine ihrer Dicke und Länge dargestalt proportionierte Spannung besitzen, daß sich ihre Tone wie die Consonantien in der Musik verhalten, und kranck, wenn sie sich wie die Dissonantien verhalten." He meant this quite literally, arguing that sensation and life itself could not occur without such a vibration. See Ernst Anton Nicolai, *Die Verbindung der Musik mit der Arzneygelahrheit* (Halle: Carl Hermann Hemmerde, 1745), pp. viii–x.

21. See K. E. Rothschuh, "Von der Idee bis zum Nachweis der tierischen Elektrizität," *Sudhoffs Archiv* 44:1 (1960): 25–44, esp. pp. 26–27; Rothschuh, *Physiologie im Werden*

human body conducted electricity and that electric polarity could be induced with suspended objects in his "flying boy experiment." In 1748, Jean Jallabert had proved that muscles react to electricity, and in 1781, Abbé Bertholon de Saint-Lazare enjoyed huge success with his *L'électricité du corps humain,* arguing that illness is due to a lack of electricity.[22] Drawing on these antecedents, Luigi Galvani's work on animal electricity, especially his famous experiment with frogs' legs, did much to make animal spirits, vibrating strings and fluid models of nervous function redundant, and ensured that from the 1790s until the establishment of modern electrophysiology in the 1840s, nerves were principally understood in the context of galvanic animal electricity. The widespread use of terms like "galvanic fluid" well into the nineteenth century gives a sense of the level of continuity and interaction between the competing theories of neurophysiology. Nevertheless, the belief that stimulants like sound could have a literally galvanizing effect on the body reinforced the sense that music was a direct and powerful physical agent.

Music and Electricity as Erotic/Therapeutic Stimulants in the Enlightenment

The strengthened association between electricity and the nerves brought with it a certain erotic charge, since, as Paola Bertucci has demonstrated, sexuality and electricity were seen as natural bedfellows.[23] As early as 1643, the Jesuit polymath Athanasius Kircher had speculated on the connection between sex and "Erotomagnetism." Mystical and occult elements of this kind continued to be important, but eighteenth-century speculation on the relationship between the two was increasingly based on materialist models of nervous stimulation.[24] The dominant tone in Enlightenment discussions of erotic electricity is indulgent sympathy, often in the context of entertainment, in sharp contrast to the medical fears on the topic in the nineteenth century. Georg Matthias Bose, professor of physics

(Stuttgart: Gustav Fischer Verlag, 1969), pp. 111–138; Walter Reese, *A History of Neurology* (New York, 1959), pp. 53–54; and Michael Hagner, "Die elektrische Erregbarkeit des Gehirns: Zur Konjunktur eines Experiments," in *Die Experimentalisierung des Lebens: Experimentalsysteme in den biologischen Wissenschaften, 1850–1950,* ed. Hans-Jörg Rheinsberger and Michael Hagner (Berlin: Akademie Verlag, 1993), pp. 97–115.

22. See Geoffrey Sutton, *Science for a Polite Society: Gender, Culture, and the Demonstration of Enlightenment* (Boulder, CO: Westview Press, 1995).

23. Paola Bertucci, "Sparks in the Dark: The Attraction of Electricity in the Eighteenth Century," *Endeavour* 31:3 (2007): 88–93.

24. Ernst Benz, *Franz Anton Mesmer und die philosophischen Grundlagen des 'animalischen Magnetismus'* (Wiesbaden: Franz Steiner Verlag, 1977), pp. 14–15.

at Wittenberg, for example, distinguished between male and female "electrical fire" and promoted the "Venus Kiss," in which pretty girls gave men electric shocks when they kissed them.[25] Similarly, the Mozart/Da Ponte opera *Cosi fan tutte* and Elizabeth Inchbald's farce *Animal Magnetism* both make fun of the connection among love, eroticism, and mesmeric electricity.[26] In conversation with his amanuensis Eckermann, Goethe spoke of an erotic "electrica attractio" in very positive terms, using an electrical parallel to the chemical language of his Elective Affinities.[27]

Music, as a kind of nervous stimulation, was caught up in these Romantic speculations about a sexualized electrical life force. The idea of music and electricity as two forms of the same essence or force reached an apogee in the decades around 1800, with many, especially those associated with *Naturphilosophie,* believing that "electric music" was no mere metaphor. Traditions of thinking of hearing as the nerves vibrating in sympathy with the music were mixed with mystical "correspondences" and galvanic animal electricity to create a discourse of electric music that was caught between science, the occult, and music criticism. For example, the Romantic physicist Johann Wilhelm Ritter suggested in 1810 that, "every sound is electrical, and every electrical figure is a sound."[28] Likewise, in 1815, the prominent Czech physiologist Georg Prochaska described music as "analogous to the vibration of the electric tension of the processes of life," and the well-known German physician and religious thinker Gotthilf Heinrich von Schubert called it "a higher or rather a differ-

25. Being of a rather poetical bent, Bose wrote of his experimental trick: "I kissed Venus, standing on pitch / It pained me to the quick. My lips trembled / My mouth quivered, my teeth almost broke." See Julie Wosk, *Women and the Machine: Representations from the Spinning Wheel to the Electronic Age* (Baltimore: Johns Hopkins University Press, 2001), p. 68.

26. Elizabeth Inchbald, *Animal Magnetism, a Farce* (London: P. Byron, 1789).

27. Goethe wrote that "[w]e are have something of an electrical and magnetic power in us and have, like magnets themselves, a power of attraction and repulsion, depending on whether we come into contact with similar or dissimilar things. . . . This magnetic force is especially strong between lovers and even works over distances." See J. P. Eckermann, *Gespräche mit Goethe in den letzten Jahren seines Lebens (1823–1832)*, 3 vols. (Leipzig: F. A. Broch, 1868), p. 1:137.

28. Johann Wilhelm Ritter, *Fragmente aus dem Nachlasse eines jungen Physikers* (Heidelberg, 1810), addendum, p. 229. See also Gordon Birrell, "St. Cecilia and the Power of Electricity," *German Quarterly* 62:1 (1989): 72–84; and Thomas Straessle, "'Das Hören ist ein Sehen von und durch innen': Johann Wilhelm Ritter und the Aesthetics of Music," in *Music and Literature in German Romanticism*, ed. Siobhán Donovan and Robin Elliott (Rochester, NY: Camden House, 2004), pp. 27–42.

ently modified electricity."[29] Nor was this idea just a fad. A figure as mainstream as the composer and music critic Hector Berlioz, who as a conductor introduced the electric metronome, also regarded music as electrical, explicitly comparing the "musical fluid" to the "electrical fluid."[30] Likewise, as late as 1846, Hector Chomet (alias Antoine Joseph Chomet), in his *The Influence of Music on Health and Life*, was still speculating that "sonorous" and "electrical fluids" "might well be called varied modifications of the same fluid," using Galvani's terms. He even suggested that electro-musical stimulation could explain the power of some singers to break glass with their voices.[31]

The sexualized character of much of this speculative thinking about the relationship between music and electricity is apparent in the discourse on the subject of Mesmer, the popular and controversial "discoverer" of animal magnetism.[32] He employed music in his therapeutic work, using the glass harmonica in his sessions and arguing that music could ease the flow of animal magnetism into the sick person's body.[33] There are many accounts of mesmeric cures achieved with the aid of electric music, musical hallucinations

29. "Mit den Schwingungen der elektrischen Spannung der Lebensprozesse analog sein"; see Georg Prochoska, *Versuch einer empirischen Darstellung des polarischen Naturgesetzes* (Vienna: Camesina, 1815), p. 61. "Eine höhere Elektrizität oder vielmehr eine anders modificierte"; Gotthilf Heinrich von Schubert, *Ahndungen einer allgemeinen Geschichte des Lebens* (Leipzig, 1806), p. 1:330.

30. Hector Berlioz, *The Art of Music and Other Essays*, trans. and ed. Elizabeth Csicsery-Rónay (Bloomington: Indiana University Press, 1994), pp. 60–67.

31. Hector Chomet, *The Influence of Music on Health and Life* (New York: G. P. Putnam's Sons, 1875), pp. 238, 175–176.

32. See Robert Darnton, *Mesmerism and the End of the Enlightenment* (Cambridge, MA: Harvard University Press, 1968); and Alison Winter, *Mesmerized: Powers of Mind in Victorian Britain* (Chicago: University of Chicago Press, 1998). For more on Mesmer's debt to Kircher and others, see Benz, *Franz Anton Mesmer* (above, n. 24); and Heather Hadlock, *Mad Loves: Women and Music in Offenbach's* Les Contes d'Hoffmann (Princeton, NJ: Princeton University Press, 2000), pp. 42–66. Mesmer's career was closely connected to music in many ways. He came to public notice after curing the pianist Marie Paradis of her blindness, at the price, it seems, of ruining both her nerves and piano technique. Mesmer is principally known in musical circles because of his links to the Mozart family and the satirical portrayal of animal magnetism in *Cosi fan tutte*. See A. Steptoe, "Mesmer and *Cosi fan tutte*," *Music and Letters* 67:3 (1986): 248–255; P. Polzonenetti, "'Mesmerizing Adultery': *Cosi fan tutte* and the Kormann Scandal," *Cambridge Opera Journal* 14:3 (2002): 263–296; and Frank Pattie, *Mesmer and Animal Magnetism* (Edmonton, AB: Hamilton, 1994), pp. 11, 30–33.

33. P. J. Schneider, "Ueber Mesmers Persönlichkeit," *Morgenblatt für gebildete Leser* 383 (1820): 1133–1134; David A. Gallo and Stanley Finger, "The Power of a Musical Instrument: Franklin, the Mozarts, Mesmer, and the Glass Armonica," *History of Psychology* 3:4 (2000): 326–343, esp. p. 337.

experienced by mesmerized patients, and tales of tone-deaf patients developing miraculous musical talents while mesmerized.[34] For many mesmerists, music and electric animal magnetism were really just different forms of "sympathetic vibration," or an invisible "subtle fluid," as the Italian mesmerist Luigi Magrini suggested in 1842.[35] In this context, both music and electricity were often portrayed as therapeutic and erotic stimulants, especially in relation to female sexuality. Already in 1784, the French Royal Commission on Mesmerism had compared the mesmeric "crisis" to a female orgasm.[36] In 1818, Carl Alexander Ferdinand Kluge, who attempted to combine mesmerism with developments in neurophysiology and who was very interested in musical stimulation, was still linking animal magnetism to female reproduction. He suggested not only that women were more sensitive to mesmerism than men, but also that this was particularly the case if they were about to menstruate, or, for some reason, if they were blonde.[37]

34. J. U. Wirth, *Theorie des Somnabulismus oder des thierischen Magnetismus* (Leipzig: Scheible, 1836), p. 180; Dr. Kretschmar, "Geschichte eines mit merkwürdigen Erscheinungen verbundenden Idiosomnambulismus," *Archiv für den thierischen Magnetismus* 12:1 (1824): 1–58, esp. pp. 41–42; Spiritus, "Beobachtungen uber die Heilkraft des animalischen Magnetismus," *Archiv für den thierischen Magnetismus* 5:3 (1819): 73–107.

35. Luigi Magrini, *Sulla musica e sul magnetismo animale* (Milan: Giovanni Resnati, 1842), p. 30. The relationship between music and the electric effects of animal magnetism was portrayed in a variety of different contexts by mesmerists, reflecting the divisions between practitioners who longed for scientific respectability and those who were more open to the more occult aspects of mesmerism. An example of the latter related to music was provided by Georg Kieser in 1822, when he suggested that minor chords, along with moonlight, garlic, incense, and mirrors, was good for encouraging the function of animal magnetism; see Kieser, *System des Tellurismus oder thierischen Magnetismus. Ein Handbuch für Naturforscher und Aerzte*, 2 vols. (Leipzig: Herbig, 1822), pp. 1:448–478.

36. "Women are always magnetized by men . . . the last stage, which terminates the sweetest emotions, is often a convulsion"; cited in Alfred Binet and Charles Féré, *Animal Magnetism* (London: Kegan and Paul, 1887), pp. 19–20.

37. Carl Alexander Ferdinand Kluge, *Versuch einer Darstellung des animalischen Magnetismus als Heilmittel* (Berlin: Realschulbuchhandlung, 1818), p. 304. With rhetoric like this, it is not surprising that, along with the music teacher, the mesmerist became a stock character in social fears about the seduction of innocent, respectable ladies. In 1790, waggish Scottish physician James Makittrick Adair wrote a satire on mesmerism that mocked what he saw as its lasciviousness and hypocrisy. He has his mesmerist explain that "magnetical influence was conveyed chiefly by two organs of sense, the sight and the touch. Hence in public magnetical cures, the former was chiefly employed; but that, in private practice the latter was more successful: and hence it was that matrons were less subject to hysterics than widows or maidens, who in consequence of matrimonial connexion with proper subjects, often experienced, if not the cure, at least a mitigation of their distress." He accounted for this difference in the

Male sexuality was also linked to electricity in this context. In 1822, a German medical journal linked the electric powers of the mesmerist to the spermatic economy, going as far as to argue that "[i]f the doctor, the so-called magnetist, wants to affect others, has his complete manly strength and has not shortly before lost any semen, since the animal-electrical material in the spine and in the semen is basically nothing but animal magnetism."[38] The electro-spermetic economy could be managed with bleedings, emetics, and also with music, it was suggested.[39] Nor were such ideas restricted to mesmerist circles. Decades earlier, one of France's leading experimental scientists, Joseph Aignan Sigaud de la Fond, recorded an experiment in 1781 involving passing an electric shock along a group of people. When the shock failed to pass beyond the sixth person in the chain, it was suggested that the young man forming the obstacle was, as the experimenter put it, "not endowed with everything that constitutes the distinctive character of a man." To test the hypothesis, the experiment was repeated with three famous castrati from the royal choir, but they successfully transmitted the shock to their neighbors.[40]

Similar widespread ideas on the sexual power of electricity and music can be seen in the work of the popular medical entrepreneur James Graham, even if some of his views were eccentric.[41] He took

effects on the two senses by observing "that as in mineral, so in animal magnetism, the attraction was strongest at the point of contact." See F. G. (James Makittrick Adair), *Essay on a Non-Descript, or Newly-Invented Disease; Its Nature, Causes, and Means of Relief* (London: J. P. Bateman, 1790), p. 15. To underline this point, Adair wrote an anecdote down in the margins of his own copy of the book: "Not many months ago a certain Baronet detected his Lady's magnetizing Doctor in the act of administering to her Ladyship in a mode not strictly professional. He made his escape from the house, followed by the enraged Baronet, whom he outstripped in the race and left the cuckold to have recourse to legal vengeance" (ibid., p. 14). Handwritten note in author's own copy in the Royal College of Physicians Edinburgh Library (catalog no. TL M5.5).

38. N.a., "Entwicklungskrankheiten," *Journal für Geburtshilfe, Frauenzimmer- und Kinderkrankheiten* 3 (1822): 160–164, quote on p. 164.

39. See Lindsay Wilson, *Women and Medicine in the French Enlightenment: The Debate over Maladies des Femmes* (Baltimore: Johns Hopkins University Press, 1993), pp. 104–124; and G. J. Barker-Benfield, "The Spermatic Economy: A Nineteenth-Century View of Sexuality," *Feminist Studies* 1:1 (1972): 45–74.

40. Patricia Fara, *An Entertainment for Angels: Electricity in the Enlightenment* (Duxford, UK: Icon Books, 2002), p. 57. See also Joseph Aignan Sigaud de la Fond, *Précis Historique et Expérimental des Phénomènes Électrique* (Paris, 1781), pp. 283–292, quote on p. 285.

41. Graham would end his days promoting "earth bathing" and his own idiosyncratic version of Christianity. See Roy Porter, *Health for Sale* (Manchester: Manchester University Press, 1989), pp. 157–174; and Lydia Syson, *Doctor of Love: James Graham and His Celestial Bed* (Richmond, UK: Alma Books, 2008).

the idea of electrical sexuality beyond metaphor, arguing that "the venereal act itself, at all times, and under every circumstances, is in fact, no other than an electrical operation," one that involved "the discharging, or passage of the balmy, luminous, active principle, from the plus male to the minus female."[42] In 1781, he opened his Temple of Hymen (the goddess of marriage), which promised to aid potency and fertility using a "medico, magnetico, musico, electrical Celestial Bed" with a canopied dome covered by musical automata and issuing oriental fragrances and ethereal gases.[43] Although it was certainly unorthodox, Graham's conception of "sex therapy" was mainstream in using music not as a source of harmony for the passions, as would have been the case with the dietetic regimen of earlier music therapy, but as a stimulant, an expression of what he saw as an erotic electrical life force. However, it was precisely these connotations of sensuality that were becoming the foundation for warnings of the dangers of musical stimulation.

Electric Music as a Pathological Nervous Stimulant

The idea of music as a therapeutic agent has a long history, stretching back to David's harp in the Bible and probably to the shamans of pre-history, but the idea that music can over-stimulate the body and cause real sickness has a much patchier and shorter history. Cheyne's *The English Malady* of 1733 put the nerves at the center of discussions of health and mental hygiene. Drawing on this, and also on Albrecht von Haller's distinction between irritability and sensibility, physicians such as Robert Whytt and William Cullen in Edinburgh and S. A. D. Tissot in Lausanne argued that most sickness was, in a sense, nervous.[44] However, music was rarely included in eighteenth-century medical critiques of over-stimulating modern

42. James Graham, *A Lecture on the Generation, Increase, and Improvement of the Human Species! Interspersed with Precepts for the Preservation and Exaltation of Personal Beauty and Loveliness . . .* (1783). Gale Eighteenth-Century Collections Online. 2010. http://mlr.com/DigitalCollections/products/ecco/.

43. See J. L. Greenway, "'Nervous Disease' and Electric Medicine," in *Pseudo-Science and Society in Nineteenth-Century America*, ed. Arthur Wrobel (Lexington: University Press of Kentucky, 1987), pp. 46–73, quote on p. 50. As Graham explained himself, the music was produced by "a large fine toned organ, with the usual variety of stops. This organ, a couple of clarionettes, a couple of mellifluous German flutes, and one of the sweetest female voices in England, compose my band of medical music." See Graham, *A Sketch; or, a short description of Dr. Graham's medical apparatus, &c, erected at the beginning of the year 1780, in his house, on the Royal Terrace, Adelphi, London* (London: Almon, Becket, Richardson and Urquhart, 1780), p. 48.

44. Spillane, *The Doctrine of the Nerves* (above, n. 15), p. 138.

culture; instead, most Enlightenment observers argued that musical stimulation essentially refined the nerves, seeing it in the context of the cult of sensibility.

It is only during the 1790s that a discourse of pathological music really emerged. One reason for this was the way excessive sensibility was increasingly treated as a medical problem at a time when the French Revolution had made its defense of individual feeling against social convention less palatable to mainstream opinion. As the cult of sensibility had tried to sublimate the physical into mental categories, so these medical critiques of sensibility reduced the ideal and the spiritual to physical and indeed pathological categories. Another crucial factor was the development of galvanism and a more direct electrical link between musical stimulation and the body; if music was a stimulant like electricity, then that had considerable consequences at a time when nerves had come to have a central place in ideas about the etiology of illness. This stimulation model of disease reached its apogee in the work of maverick Edinburgh physician John Brown in the 1780s. "Brunonianism," as his doctrine was called, proved highly influential, partly because his idea of a body's stock of excitability easily fit into the fashion for galvanism, and much of the anxiety about musical over-stimulation was expressed in overtly Brunonian terms.[45]

The view of electricity as an erotic life force meant that anxiety about the potential pathological effects of music generally focused on sexuality. Fears of excessive sexual excitement had been at the heart of a moral critique of music that went back to Plato, but during the nineteenth century this tradition took on an increasingly medical, indeed electrophysiological, guise. Whereas eighteenth-century views of the effects of music tended to assume that it refined the nerves in the context of a regimen of self-control, after 1800 the moral and medical qualms about musical eroticism became more intense. This was, in part, seen in terms of older ideas about "moral physiology"—that is, the notion that music could affect the body by overexciting the mind, but the view of music as a quasi-galvanic erotic charge that stimulated the body directly also affected the debate. As Thomas Anz has observed, by the late eighteenth century "[t]he health movement . . . went as far as to regard immoral behavior

45. John Brown, *Elements of Medicine* (Philadelphia: Webster, 1814); W. F. Bynum and Roy Porter, eds., *Brunonianism in Britain and Europe* (London: Wellcome Institute for the History of Medicine, 1988); Thomas Henkelmann, *Zur Geschichte des pathophysiologischen Denkens: John Brown (1735–88) und sein System der Medizin* (Heidelberg: Springer Verlag, 1981).

an illness. Illness was interpreted morally and immorality was pathologized."[46] This reflected the development of what Foucault called biopolitics, the increasing power of medicine in society, as well as the growing professionalization and prestige of medicine.

Since it was a commonplace of eighteenth- and nineteenth-century medicine that women's nerves were weaker and more vulnerable to stimulation of all kinds than men's, the danger of overstimulating the electric nerves with music was of particular concern in relation to women and female sexuality. The emerging "two spheres" (worldly and domestic) model of gender relations reinforced the assumptions of the differences between male and female nervous systems.[47] Echoing the long-held medical consensus, Prague physician Leopold Raudnitz, in his book on music therapy, wrote in the 1840s that

> [a]s far as sex is concerned, one finds a greater sensitivity for music among women than among men; since men's nerves have a far lower degree of sensitivity than those of women, whose nerves are very mobile and sensitive. Men are not as easily stimulated or excited as women. This is especially true in younger years when they are approaching maturity, when a lively sound, a quick and unexpected transition from one key to another can set women's nerve strength in remarkable motion.[48]

This vulnerability to physical stimulation, whether electrical or musical, meant that women were deemed by many doctors to need protection from electrical music. This was implicitly connected to sexuality, as Raudnitz's slightly coy references to "approaching maturity" and women being "excited" make clear. Erotic stimulation, including that related to music, that could not be legitimately assuaged in marriage was regarded as too much for weak female nerves to stand without potentially serious medical consequences. The etiquette and dietetic books of the early nineteenth century that explained to women how to be healthy and respectable offer innumerable ex-

46. Thomas Anz, *Gesund oder Krank?* (Stuttgart: J. B. Metzlersche Verlag, 1989), p. 6.

47. Robert Martensen, "The Transformation of Eve: Women's Bodies, Medicine and Culture in Early Modern England," in *Sexual Knowledge, Sexual Science: The History of Attitudes to Sexuality*, ed. Roy Porter and Mikuláš Teich (Cambridge: Cambridge University Press, 1994), pp. 107–133. See also Thomas Laqueur, *Making Sex: Body and Gender from the Greeks to Freud* (Cambridge: Cambridge University Press, 1990); Michael Stolberg, "A Woman Down to Her Bones: The Anatomy of Sexual Difference in the Sixteenth and Early Seventeenth Centuries," *Isis* 94:2 (2003): 274–299; and Katharine Park and Robert Nye, "Destiny is Anatomy," *New Republic*, February 18, 1991, 53–57.

48. Leopold Raudnitz, *Die Musik als Heilmittel* (Prague: Gottlieb Haase Söhne, 1840), pp. 40–41.

amples of jeremiads about the dangers of electrical over-stimulation cause by music.

James Johnson, who, as King William IV's personal physician, was a mainstream medical figure, issued a very explicit warning about the quasi-electrical perils of listening to music for the vulnerable nerves of young English ladies. "The galvanic fluid of harmony," he suggested, "vibrates the ear—electrifies the soul—and thrills through every nerve in the body." Such electrification could, it seems, have terrible effects on the mind and body, since it was "likely to inflame the imagination and disorder the nerves." Johnson regarded this electric music as literally fatal: "The mania for music injures the health and even curtails the life of thousands and tens of thousands annually, of the fair sex." And many of his contemporaries agreed, pointing to many cases of such music leading to death, infertility, and brain fever among ladies who over-indulged. For women of the lower orders, the dangers of music were less intense, Johnson suggested. "Factory girls" were only wasting their time with music, but for those "young females whose organization is more delicate," the quasi-electrical stimulation of music could be lethal.[49] Other respectable Britons even regarded the hymns of the Methodists, often viewed by respectable Anglicans as fanatical, as exerting an excessive electric influence that could produce a "morbid sensibility, which soon degenerates into habitual sensuality."[50]

One instrument in particular was regarded as especially electric and therefore dangerous—the glass harmonica.[51] Mesmer viewed the harmonica as an electrical generator, and many of his supporters explicitly discussed electric music in this context.[52] In England, two female virtuosi of the instrument, Marianne and Cecily Davis, felt themselves forced to give it up because of the over-stimulation of their nerves it was causing, and the death of Marianne Kirchgässner,

49. James Johnson, *The Economy of Health* (London: S. Highley, 1837), pp. 32–34.

50. N.a., "Nightingale's Portraiture of Methodism," *The Anti-Jacobin* 33 (1809): 236–253, 361–375, quote on p. 373.

51. Heather Hadlock, "Sonorous Bodies: Women and the Glass Harmonica," *Journal of the American Musicological Society* 53:3 (2000): 507–542; A. Hyatt King, "The Musical Glasses and Glass Harmonica," *Proceedings of the Royal Musical Association* 72 (1945): 97–122.

52. "L'harmonica pouvait avoir plus d'effts sur l'organe de l'puie, en raison de l'electricite, don't le son devenait conducteur . . . j'ai fait communiquer le fort piano avec conducteur de la machine electrique"; see Caullet de Veaumorel, *Aphorisme de M. Mesmer* (Paris, 1785), p. 174. See also Johann Samuel Halle, *Fortgesetzte Magie: oder, die Zauberkraefte der Natur* (Berlin: Joachim Pauli, 1788), p. 328; and M. Schuler, "Musik im Mesmerismus," *Freiburger Universiatätsblätter* 93 (1986): 23–31, esp. p. 25.

who accompanied Mozart, was widely attributed to its nervous strain.[53] Its dangers to women were a commonplace in medical literature in the early decades of the nineteenth century.[54] The Anglo-Prussian dietetic writer Anthony Florian Madinger Willich suggested that "[t]here are other kinds of musical instruments which, in a dietetical view, deserve to be condemned. Such is the harmonica, which, by the rotation of the glasses on the fingers (a kind of *negative electricity*) induces a great degree of nervous weakness."[55] The consequences for women's health of playing the instrument were also the subject of literary treatment at the hands of the likes of E. T. A. Hoffmann.[56]

The electrical dangers for women of playing music were not limited to the threat posed to their aural nerves, for it was also widely believed to over-stimulate the nerves via the fingertips.[57] Willich argued that "the points of the fingers, are the strongest conductors of the supposed nervous fluid." To play the instrument well, he continued,

> requires a more than common sensibility of the nerves, which indeed may be sometime artificially acquired, but to the detriment of health. For it cannot be

53. H. Mendel, *Musikalisches Conservations-Lexicon* (Berlin: R. Oppenheim, 1873), p. 84; Gallo and Finger, "The Power of a Musical Instrument" (above, n. 33), p. 341.

54. See Albert Mathias Vering, *Psychische Heilkunde*, 2 vols. (Leipzig, 1817–1821), p. 1:149; Heinrich Amadeus Bach, *De musices effectu in homine sano et aegroto* (Berlin, 1817), p. 17; Johannes Karl Becker, *De musicae vi salutari* (Berlin, 1821), p. 22; Michael von Lenhossek, *Darstellung des menschlichen Gemueths in seinen Beziehungen zum geistigen und leiblichen Leben* (Vienna, 1834), p. 1:497; and Friedrich A. Steinbeck, *De musices atque poeseos vi salutari operas prodromus* (Berlin, 1826), p. 43. See also James Kennaway, "From Sensibility to Pathology: The Origins of Nervous Music around 1800," *Journal of the History of Medicine and Allied Sciences* 65:3 (2010): 396–426.

55. Anthony Florian Madinger Willich, *Lectures on Diet and Regimen* (London, 1799), pp. 460–461 (emphasis added).

56. E. T. A. Hoffmann, *The Life and Opinion of the Tomcat Murr*, trans. Anthea Bell (Harmondsworth, UK: Penguin, 1999), p. 106; J. Barkhoff, "Töne und Ströme. Zu Technik und Aesthetik der Glasharmonika im Mesmerismus und bei E.T.A. Hoffmann," in *Aesthetische Erfindung der Moderne*, ed. B. Herrmann and B. Thums (Würzburg: Königshausen und Neumann, 2003), pp. 165–191. See also Barkhoff, "Mesmerismus zwischen Wissenschaft und Narration. Pathogenes und curatives Erzählen bei E.T.A. Hoffmann," in *Von Schillers Räubern zu Shelleys Frankenstein: Wissenschaft und Literatur im Dialog um 1800*, ed. D. von Engelhardt and H. Wisskirchen (Stuttgart: Schattauer, 2006), pp. 83–96; Barkhoff, *Magnetische Fiktionen: Literarisierung des Mesmerismus in der Romantik* (Stuttgart: J. B. Metzler, 1995); and Gordon Birrell, "Kleist's *St. Cecilia* and the Power of Electricity," *German Quarterly* 62:1 (1989): 72–84.

57. See Willich, *Lectures on Diet and Regimen* (above, n. 55), pp. 460-461. Stanley Finger and D. A. Gallo, "The Music of Madness: Franklin's Armonica and the Vulnerable Nervous System," in *Neurology of the Arts,* ed. Clifford Rose (London: Imperial College Press, 2004), pp. 207–237.

> doubted, that a local excitement of irritability may be gradually propagated over the whole nervous system; and that, from raising some parts of the body to a preternatural state of sensibility, the common character of those who are called Virtuosi, is generally marked with nervous debility.[58]

The pioneer of acoustics Ernst Chladni was one of several scientists and musicians to design a form of glass harmonica (the euphon) that could be played with a keyboard and thereby save the fingers from such dangerous over-stimulation.[59] Although anxiety about the medical effects on the fingers proved relatively short-lived, the idea that music was a potent and potentially pathological quasi-electrical stimulant for the auditory nerves remained highly influential into the twentieth century.

Electric Music in Music Criticism

Over the first few decades of the nineteenth century, the idea of electric music began to focus less on the harmonica, which was going out of fashion in any case, and started to be used in the context of music criticism. Whereas the eighteenth-century aesthetic of feeling *all* music had been regarded, in a sense, as a question of the nerves, by the early nineteenth century there was a growing dichotomy between electrical music that stimulated the nerves and serious "noumenal" music for the mind. Idealist musical aesthetics endeavored to make serious music a matter of the heroic masculine transcendental subject, leaving music it did not approve of in the inferior, implicitly feminine realm of nervous stimulation. In the work of German critics like A. B. Marx and Ludwig Rellstab, a division developed between serious music that was about form and *Geist* (mind or spirit) and sensual or shallow virtuosic music that merely tickled the nerves.[60] Such music was still within elite culture, but in a marginalized, domesticated, female, and often pathological context.

58. Willich, *Lectures on Diet and Regimen* (above, n. 55), pp. 460–461.

59. W. M. Higgins, *The Philosophy of Sound and History of Music* (London: Bradbury and Evans, 1838), p. 107. An alternative solution was to use medicinal treatments to strengthen the skin on the fingertips to avoid "nervous fevers" by putting sulphate of alumen in tincture of galls and adding sawdust into a glove; see A. F. Crell, *The Family Oracle of Health: Economy, Medicine and Good Living* (London: Knight, 1824), p. 229.

60. A. B Marx, *Ludwig van Beethoven. Leben und Schaffen* (1859; reprint, Hildesheim: Georg Olms, 1979); Ludwig Rellstab, "Die Gestaltung der Oper seit Mozart," *Die Wissenschaften im 19. Jahrhundert* 4:5 (1859): 242–296, esp. p. 272. See also Celia Applegate and Pamela Potter, eds., *Music and German National Identity* (Chicago: University of Chicago Press, 2002).

By the 1840s, electrical metaphors were being incorporated into this understanding of music, and electric music and its attendant medical concerns were increasingly focused on specific styles of music—in particular, the so-called *neudeutsche Schule* of Franz Liszt and Richard Wagner.[61] The thrill of listening to a virtuoso and notorious womanizer like Liszt was often compared to an electric shock, with dubious sexual overtones. For example, when Liszt played to a female mental patient in an asylum, one contemporary wrote that "[t]he passage he played produced a visible effect on her similar to that of an electrical discharge."[62] The poet and critic Heinrich Heine turned to the full panoply of early nineteenth-century medical fads, including electricity in various forms, to explain Liszt's effects as a pianist, again especially on women:

> A physician, whose speciality is female diseases, and whom I asked to explain the magic our Liszt exerted upon his public, smiled in the strangest manner, and at the same time said all sorts of things about magnetism, galvanism, electricity, of the contagion of a closed hall filled with countless wax lights and several hundred perfumed and perspiring human beings, of historical epilepsy, of the phenomenon of tickling, of musical cantherides, and other scabrous things, which, I believe, have reference to the mysteries of the *bona dea*.[63]

In 1844, Heine again compared Liszt to electrical and magnetic overstimulation, suggesting that to understand Liszt one should look "more in the realm of pathology than in aesthetics." Liszt's performances seemed to him a terrifying exhibition of "[t]he electric effect of a demonic nature on the crowd squeezed together, the infectious power of the ecstasy, and perhaps the magnetism of the music itself, that spiritualist sickness of our time that vibrates in almost all of us."[64]

This understanding of electric music in terms of medicalized hostility toward musical sensuality was also reflected in portrayals of

61. James Kennaway, "Singing the Body Electric: Nervous Music in Fin-de-Siècle Literature," in *Neurology and Literature, 1860–1920*, ed. Anne Stiles (Basingstoke, UK: Palgrave Macmillan, 2007); Kennaway, "The Wagner Case: Nietzsche's Use of Psychiatry in His Wagner Books," *New German Review* 20 (2005): 84–95.

62. See Alan Walker, *Franz Liszt*, 2 vols. (Ithaca, NY: Cornell University Press, 1987), p. 1:152; see also A. Williams, *Portrait of Liszt by Himself and His Contemporaries* (Oxford: Clarendon, 1990), pp. 103, 105.

63. O. G. Sonneck and F. H. Martens, eds., "Heinrich Heine's Musical Feuilletons," *Musical Quarterly* 8:3 (1922): 435–468, quote on p. 458.

64. Heinrich Heine, "Musikalische Saison in Paris," *Allgemeine Zeitung*, 25 April 1844, in Heine, *Historisch-kritische Gesamtausgabe der Werke*, vol. 13/1, ed. Volkmar Hansen (Hamburg: Hoffmann und Campe, 1988), p. 126.

the music of Richard Wagner. The *Revue Trimestrielle*, in a cartoon, portrayed Berlioz and Wagner in a mesmerizing competition, trying to defeat each other electrically.[65] Likewise, J. L. Klein, in his 1871 *Geschichte des Dramas,* wrote about female Wagnerians in terms of Galvani's electrocution of frogs' legs to put female listeners firmly in a pathological and sexual context. Wearing his horror of female sexuality upon his sleeve, he suggested that "the blasé hysterical female court parasites who need this galvanic stimulation by massive instrumental treatment to throw their pleasure-weary frogs-legs into violent convulsions."[66] The electrical language used by nineteenth-century critics, just like that of physicians of the period, thus displayed none of the indulgence of sensuality common during the Enlightenment. However, in some circles, skepticism was growing about the whole notion of music as a form of quasi-electrical stimulation. The critic and aesthetician Eduard Hanslick, for instance, was scathing, comparing belief in music's electrical curative powers to Professor Goldberger's galvano-electric rheumatism chains.[67]

By the twentieth century, electricity would be understood in a very different context. Already in the 1880s, the radical recasting of electrical music as machine-like was already beginning, driven on by advances in electrical motors in the wake of Michael Faraday's work earlier in the century. Electrical instruments of various kinds were being invented and joining the rapidly expanding ranks of electrical technology available.[68] In 1881, Wagner's music was played

65. *Revue Trimestrielle*, 9 January 1864; see Peregrine Hordern, ed., *Music as Medicine: The History of Music Therapy since Antiquity* (Farnham, UK: Ashgate Publishing, 2000), p. 328.

66. Nicolas Slonimsky, *Lexicon of Musical Invective* (Seattle: University of Washington Press, 1965), p. 237.

67. Eduard Hanslick, *On the Musically Beautiful* (Indianapolis: Hackett Publishing Company, 1986), p. 53. For a fascinating example of a later discourse on electric music, see Sven Dierig, "Hirngespenste am Klavier: Ueber 'Chopinisierte' Nervensaiten im Berliner Fin de Siècle," in *Ecce Cortex: Beiträge zur Geschichte des modernen Gehirns*, ed. Michael Hagner (Göttingen: Wallstein Verlag, 1999), pp. 50–74; and Felicia McCarren, "The 'Symptomatic Act' circa 1900: Hysteria, Hypnosis, Electricity, Dance," *Critical Inquiry* 24:4 (1995): 748–774.

68. See Robert Donnington, *Music and Its Instruments* (London: Methuen, 1982), pp. 207–208. Electric instruments have a much longer history than one might suppose, dating back at least to Jean-Baptiste de la Borde's clavessin électrique of 1761; see de la Borde, L*e clavessin électrique avec une nouvelle théorie du méchanisme et des phénomenes de l'électricité* (Geneva: Minkoff, 1997). See also Johann Friedrich Gross, *Elektrische Pausen* (Leipzig: Christian Gottlob Hilschern, 1776), p. 5; and Michael B. Schiffer, *Draw the Lightning Down: Benjamin Franklin and Electrical Technology in the Age of Enlightenment* (Berkeley: University of California Press, 2003), p. 245.

down a telephone, and the Swan United Electric Light Company installed electric lights in the London Savoy theater. By 1894, the Guild of Saint Cecilia, a London experimental music-therapy group, was proposing building "a large hall, in which music shall be given throughout all hours of the day and night. This music to be conveyed by telephone attached to certain wards in each of the chief London hospitals."[69] Although the idea of electricity kept many of its erotic associations for several decades (electric girdles for fertility and potency did a roaring trade), the body electric was gradually replaced by the decidedly unerotic electric appliance as the principal context in which electricity was understood.[70] In 1903, Richard Strauss, still regarded as a fire-breathing modernist, was portrayed in a cartoon as electrically executing someone with his opera *Elektra*, alluding to Edison's new electrical chair.[71] Electric music was losing many of its sexual overtones as it was redefined as a way of representing futuristic utopias and alienation in a technological world.

During the eighteenth and nineteenth centuries, however, the meanings attributed to electric music tell us a great deal about the period's assumptions about music, the body, and sexuality. In particular, debate on electric music illuminates the implications of the replacement of the old cosmological view of music by the idea of music as a form of stimulation. The power of music to directly excite the body and the soul, seemingly to bypass the rational mind and tickle the senses, could be both titillating and alarming. Music's power to overwhelm the self-control of listeners had been the subject of a moral critique since Plato. For the emerging bourgeois self-constituting subject, with its culture of restraint and autonomy, the threat of music to the self seemed especially acute. The idea of music as a stimulant, as electric, created the basis for a medical version of this critique, providing a physical basis for hostility to the uncanny effects of music. Along with many other aspects of life, the dangers

69. N.a., "Music as Medicine," *Chamber's Journal of Popular Literature, Science, and Art* 532:6 (1894): 145–146.

70. See Christoph Asendorf, *Batteries of Life: On the History of Things and Their Perception in Modernity* (Berkeley: University of California Press, 1993); Wosk, *Women and the Machine* (above, n. 25); G. Gooday, *Domesticating Electricity: Technology, Uncertainty and Gender, 1880–1914* (London: Pickering and Chatto, 2008); Andreas Killen, *Berlin Electropolis: Shock, Nerves, and German Modernity* (Berkeley: University of California Press, 2006), p. 20; and Christopher Forth, "Neurasthenia and Manhood in Fin-de-Siècle France," in *Cultures of Neurasthenia: From Beard to the First World War,* ed. Marijke Gijswijt-Hofstra and Roy Porter (Amsterdam: Rodopi, 2001), pp. 329–361, esp. p. 351

71. See Karl Storck, *Musik und Musiker in Karikatur und Satire* (Oldenburg: Laaber, 1910), p. 109.

of erotic electric music were thus recast as a concern for the physician rather than for the priest. Later, many of the same fears would be expressed in terms of music's supposed ability to hypnotize or "brainwash" listeners—a panic that has been especially influential during the last thirty years regarding rock music. The language of electric music may have changed its associations since the nineteenth century, but the same anxieties about music's impact on the body and the mind continue to affect discussions of music to this day.