12 Automata, Physiology and Opera in the Nineteenth Century

MYLES W. JACKSON

> Without the heart's activity, the action of the brain would be no more than of a mere automaton; the action of the body's outer members, a mechanical and senseless motion. Through the heart the understanding feels itself allied with the whole body, and the man of mere 'five-senses' mounts upwards to the energy of Reason. (Richard Wagner, 1849)[1]

E. T. A. Hoffmann's eerie tale of 'Der Sandmann' (1816) famously recounts the story of a young college student, Nathanael, who unwittingly falls in love with an android named Olympia, a creation of the professor of physics and renowned *Naturforscher* Spalanzani. After seeing her through a telescope, Nathanael is enchanted by her beauty. Spalanzani invites Nathanael and others to a celebration at his house, where Olympia is to make her grand debut as the professor's daughter. Nathanael proceeds to dance with the automaton all night long. His visits become more frequent, while he remains blissfully unaware of the fact that she is not human. One day Nathanael hears a quarrel between Spalanzani and the mechanician Coppelius in the professor's apartment. Coppelius wrestles Olympia away from Spalanzani and runs away carrying the automaton over his shoulder. Nathanael witnesses Olympia's eyes falling from her head and immediately realizes that she is an android. Enraged, he attempts to kill Spalanzani and is subsequently sent to a madhouse. In 1851, Jacques Offenbach attended a performance of a play at the Odéon, *Les Contes fantastiques d'Hoffmann* by Jules Barbier and Michel Carré. It was based in part on Hoffmann's story.[2] After the performance Offenbach spoke to Barbier and Carré with a view to composing an opera based on the play. Barbier ended up writing the libretto to Offenbach's opera some time before 1878, and it premiered at the Opéra-Comique in Paris on 10 February 1881.

Like a number of such automata of the late eighteenth and early nineteenth century (such as the Turkish Chess Player), deception and profit were key to the story. Act II of Offenbach's opera opens with Spalanzani in mercantile mood, hoping that he will recover through her 'the five hundred ducats which the bankruptcy of the Jew Elias costs me! There remains

[1] Wagner 1895, 110. [2] Kracauer 2002, 378.

Coppelius, whose deceit, in order to get a sum from me, can claim the rights of paternity, the deuce of a man!'[3] Yet where, if at all, did the android's abilities fall short of the human's? As I have argued elsewhere, a number of physiologists and physicians viewed the human body as a machine during the nineteenth century.[4] They attempted to explain the talents of virtuosi such as Niccolò Paganini and Franz Liszt in a mechanical, deterministic fashion. And as discussed below, when attempting to reproduce human facial expressions by applying electricity to certain muscles and nerves, French physicians and physiologists from the 1860s to the 1890s viewed their unfortunate human subjects as helpless automata, being manipulated at the will of the investigator.

While many had argued initially that affectations brought about by music were distinctly human characteristics, mechanicians successfully created androids that replicated such attributes and gestures while performing. Lest one forget, Hoffmann himself finds distinctly expressive qualities in Olympia's singing and he speaks of her 'charming gaze'.[5] The period also witnessed a shift from surgeons and physicians elaborating the anatomical and physiological processes involved in facial expressions to physiologists and neurologists replicating certain emotional expressions in their patients. Some of these patients became rather famous and were depicted in various genres, including opera. Such links between the body and opera have of course been well documented in the secondary literature.[6] This chapter seeks to deepen existing work on medical history by concluding with an exploration of such a possible connection between the work at the renowned Salpêtrière hospital in Paris and Richard Wagner's *Parsifal*.

Music, Emotions and Affectations

Recent work in the history of science and technology has focused on the theme of emotions and affectations with a view to analysing the complex and historically contingent relationship between musical androids and musicians.[7] During the last quarter of the eighteenth century, music

[3] 'Dans les cinq cents ducats que la banquerote / Du juif Élias me coûte! / Reste Coppélius dont la duplicité / Pour avoir de moi quelque somme, / Peut réclamer des droits à la paternité, / Diable d'homme!' (Offenbach 1955, 18–19).

[4] Jackson 2006, 253–66; 2010–11. [5] Dibbern 2002, 62, 65.

[6] See, for example, Hutcheon and Hutcheon 1996, 2000; Davies 2014.

[7] For a brilliant recent study on the topic, see Voskuhl 2013.

theorists such as Johann Georg Sulzer and Heinrich Christoph Koch underscored the importance of affectations in music, or the ability of musicians to elicit certain emotional responses from the audience both by bodily gesticulations and the phrasing of the music. They had dedicated themselves to analysing the ways in which performers could summon forth listeners' emotions. As Koch argued:

> The fine arts in general, and thus also music, possess a unique property which enables them though artistic means to awaken feelings in us. They awaken pleasure through the enjoyment of a good represented through art and fear through an evil brought forth by it. Thus, if the fine arts make use of their special power to have the feelings they arouse inspire noble resolutions, to affect the education and ennoblement of the heart, then they serve their highest purpose and show themselves in their proper worth. If deprived of this noble function, if used to another end, then the fine arts are degraded, they are dishonoured.[8]

In fact, Koch was merely echoing Sulzer's earlier sentiments, which read:

> Just as philosophy and science have knowledge as their ultimate goal, so the fine arts have the goal of sentiment. Their immediate aim is to arouse sentiments in a psychological sense. Their final goal, however, is a moral sentiment by which man can achieve his ethical value.[9]

Sulzer linked art, affect and virtue. His 1771 article on sentiments (*Empfindung*) declared both that they dictate behaviour and that the arts are capable of evoking proper sentiments, such as the love of one's country, virtuousness, freedom and humanity.[10] As Adelheid Voskuhl has demonstrated, the cultivation of sentiments was a critical aspect of the Enlightenment ideal of generating a more equitable and social order, indeed a new civic order. Sentiments enabled the creation of new forms of social interactions, which formed the backbone of a new civic society composed of rational, sensible and equal citizens dedicated to replacing the anachronistic estate and court societies.[11] This European culture of sentiment and sensibility, both in the physiological (i.e. the faculty of sensing) and moral senses of the term, was also present in late eighteenth-century opera, including Giovanni Paisiello's sentimental comedy *Nina, o sia La pazza per amore* and Mozart's *Le Nozze di Figaro*.[12] Crucially, Voskuhl goes on to argue that mechanicians went to great lengths to generate such

[8] Koch 1782–93, 2:1, in Baker and Christiansen 1995, 144.
[9] Sulzer 1771–4, 2: 54, in Baker and Christiansen 1995, 28.
[10] Sulzer 1771–4, 2: 55–7. See also Voskuhl 2013, 156–7. [11] Voskuhl 2013, 7.
[12] *Le Nozze di Figaro* is typically seen as being simultaneously sentimental and anti-sentimental. See Castelvecchi 2013, particularly 125–209.

bodily practices that cultivated sociability and sentimentality in their androids.

Eighteenth-century musicians' performances were not only meant to be heard: they were meant to be seen, as performers strove to communicate affectations and sentiments to their audiences. Likewise, late eighteenth-century automata builders, including Pierre and Henri-Louis Jacquet-Droz, David Roentgen and Pierre Kinzing, strove to have their androids elicit similar emotions among their audiences by mechanically creating affections.[13] These music-playing automata could move their eyes, eyebrows, head, hands, arms, fingers and torso. They could watch the movements of their hands as well as nod, breathe and even bow.[14] As Voskuhl points out, the definition of sentimentality was metamorphosing from the seventeenth- and early eighteenth-century definition of being sensitive to physical impressions (*sensibilité*) to one denoting intellectualism and affectations: 'the faculty of perceiving moral impressions' and 'the sentiment of humanity, piety, and tenderness'.[15] Sentimentality had become a moral issue, as Sulzer's statement makes clear. Popular philosophers argued that teaching the art of emotion (*Gefühlskunst*) was necessary for humans to be capable of moral action. Questions were then raised about the outward representations of those emotions: acting and mimicry were germane. Similarly, these theories were applicable to the spectators who needed to induce the emotion supposedly conveyed by each affect.[16] The flautist and pedagogue Johann Joachim Quantz stressed in 1752 that 'the performer must aim to put himself into those . . . passions that he is meant to express'.[17] Similar experiences of passions thus linked (acting) performer to (perceiving) audience.[18]

Emotions, Art and Physiology in the Eighteenth and Nineteenth Centuries

Musicians and composers were not the only ones interested in human emotions. During the eighteenth and nineteenth centuries, surgeons and physiologists were attempting to provide a more detailed account of the

[13] Voskuhl 2013, 129. For the details of the mechanisms behind how these automata builders and clockmakers were able to produce these effects, see 129–44.
[14] Voskuhl 2013, 128. [15] As quoted in Voskuhl 2013, 148. [16] Voskuhl 2013, 150.
[17] As quoted in Voskuhl 2013, 159.
[18] It should be noted, however, that during this period the tension between subjectivity and appearance often ironised gestures and facial expressions. See Le Guin 2002.

anatomy of human expression. The Dutch physician, surgeon and anatomist Petrus Camper sought to link the science of anatomy with the fine arts of drawing, painting and statuary.[19] Camper's work owed much to Johann Kaspar Lavater's *Physiognomic Fragments on the Promotion of Human Knowledge and Love* (1775–8), the standard text on physiognomy in its explanation of the link between external facial and cranial characteristics and behaviour.[20] The English physician, natural theologian and founder of the Royal Human Society Thomas Cogan, who translated Camper's work into English, called for artists to acquire 'a deeper insight into Nature' with a view, among other things, to observe 'the effects produced by the passions upon the human face'. In particular, Cogan argued that knowledge gleaned by the study of anatomy 'shall enable him to delineate the general situation of the muscles in a placid and inert state, their action in varied positions, and their influence in describing every emotion or passion of the mind'.[21] While previous masters focused their attention only on the workings and positions of the muscles, Cogan encouraged contemporary artists to study osteology and neurology, the latter of which 'is proved to be of high utility in the representation of the emotions of the mind: an attainment confessedly the most difficult, as well as the most interesting and sublime'.[22]

Camper dedicated the first lecture of Book II to the depiction of different passions.[23] He claimed that while the accurate representations of the passion of the mind had been admired since ancient times, artists' depictions throughout history had not been true to nature. Even Giovanni Paulo Lomazzo and Leonardo da Vinci had been more interested in 'the different attitudes of body' than on elaborating upon the 'particular features' of facial expression.[24] Camper praised the work of the seventeenth-century French painter and art theorist Charles Le Brun for his writings on the expressions of the different passions; yet for Camper, Le Brun:

> reasoned metaphysically concerning the operations of the mind, without attending to the physical causes of the changes produced by these operations. But in my opinion, speculations concerning the manner of the soul's working, or concerning the seat of the soul's working, are of no use to the artist. These belong to metaphysicians, who by the way lose themselves in a labyrinth of terms, or words, with no definitive meaning, without having in the least explained the action of this immortal principle upon the corporeal and mortal frame.[25]

[19] Camper 1794. [20] Lavater 1778. [21] Cogan, 'Preface' to Camper 1794, iv.
[22] Cogan, 'Preface' to Camper 1794, vii. [23] Camper 1794, 123–37.
[24] See Lomazzo's *Trattato dell'arte della pittura, scultura et architettura* of 1585 for his brief description of the influences of the passions upon facial muscles. Camper 1794, 126.
[25] Camper 1794, 127–8.

The operations of the mind were only interesting for Camper when they brought about physical manifestations in the body. Or, to put it another way: Camper was not interested in the 'workings of the soul', but rather in 'what changes take place in the body, in consequence of its [the soul's] operations'.[26] Camper underscored the importance of the artist studying the cranial nerves, a conclusion he had drawn after dissecting innumerable human corpses: 'every painter ought to make himself acquainted with the construction and connexion of the nerves productive of these changes' in emotions.[27] He concluded his lecture by discussing the deterministic relationship between the cranial nerves and facial muscle for a myriad of countenances, including expressions of placidity, surprise or wonder, contempt, complacency, friendly greetings, tacit joy, laughter, sorrow, anger and death.[28]

Camper's work was not isolated. In a similar fashion, the Parisian physician Jacques-Louis Moreau de la Sarthe wrote about the structure, use and characteristics of the human face.[29] A collaborator with Lavater, his meticulous physiological treatment of the action and effect of each muscle on facial expression won the praise of numerous physiologists later in the nineteenth century. In 1806, the Edinburgh surgeon, anatomist and theologian Sir Charles Bell published his treatise *The Anatomy and Philosophy of Expression as Connected with the Fine Arts*, demanding that artists study anatomy, or 'that structure by which the mind expresses emotion', since through such a study we become aware 'of the relations and mutual influences which exist between the mind and the body'. Anatomy, specifically the physiology of human facial expression, could 'give the artist a true spirit of observation, [and] teach him to distinguish what is essential to just expression'.[30] Thus, facial expression, as illuminated and captured by the science of anatomy, could be communicated by painters to their audience. His study owed much to Lavater's work on physiognomy and was infused with natural theology. His commitment to understanding God by recourse to nature should come as no surprise as he had collaborated with William Paley on *Natural Theology* of 1803, that seminal work arguing that one can understand God by studying His [sic] creation, Nature. (Charles Darwin would famously rail against *Natural Theology* some fifty-six years later.)

Certainly the claim that artists need to study anatomy was hardly new in the early nineteenth century. Many sixteenth-century artists,

[26] Camper 1794, 128. [27] Camper 1794, 129. [28] Camper 1794, 133–6. [29] Sarthe 1806.
[30] Bell 1865, 213, 14.

including most famously Albrecht Dürer, Leonardo da Vinci and Giambattista della Porte, had studied physiognomy and pathognomy, or the external appearance of the passions.[31] Nor was Bell's the first scientific study of emotions. René Descartes's *The Passions of the Soul* (1649) had offered a physiological account of the expressions of emotions, asserting that they could be understood as the product of physico-chemical interactions.[32]

Bell's treatise was novel in his research on the specific nerves responsible for facial expression in humans and animals. Up until his work, physiologists and surgeons had assumed that all parts of the nervous system shared common properties and functions. In essence, all nerves were seen as possessing the dual function of the power of motion and of sensation to the limbs.[33] Bell was able to demonstrate that nerves instead possess distinct and appropriate functions, which correlate with the parts of the brain and spinal cord. By focusing on nerves of the sense organs, Bell recognised that they were not mere modifications of one common property and that the nerve of one sense organ could not be substituted for the nerve of another. He noted that each nerve is limited to receiving a distinct and relevant impression, i.e. the nerve of sight can only give ideas of light and colour, while the nerve of hearing could only generate impressions of sounds.[34] Hence Bell's observations precede Johannes Müller's famous law of specific sense energies by nearly three decades. The cause of the uniqueness of each nerve was the location of its root in a distinct portion of the brain.

Bell also went on to explain how the spinal nerves with two roots could convey both motor and sensation conjointly. By taking the nerve in the arm and tracing it from the arm back to the spinal column, he noticed that the nerve branched into two parts, i.e. its roots. One root gave rise to motion, while the other gave rise to sensation. In short, he found 'that nerves of Sensation [sensory nerves] are distinct from nerves of Motion [motor nerves]: and that to different parts of the Brain and Spinal Marrow, belong distinct and appropriate endowments'.[35]

On this basis, Bell saw emotional expressions as the links between the mind and body:

[31] Prodger 1998, 150. [32] Descartes 1649. See Prodger 1998, 151.

[33] Shaw 1847, 3. See also Charles Bell, *An Idea of a New Anatomy of the Brain, submitted for the Observation of His Friends* (1811).

[34] Shaw 1847, 5. [35] Shaw 1847, 11.

Since we are dwellers in a material world it is necessary that the spirit should be connected with it by an organised body, without which it could neither feel nor react, nor manifest itself in any way. It is a fundamental law of our nature that the mind shall have its powers developed through the influence of the body; that the organs of the body shall be the links in the chain of relation between it and the material world, through which the immaterial principle within shall be affected.[36]

God created the connection between the mind and external nature, in other words. 'In every intelligent being He has laid the foundation of emotions that point to Him, affections by which we are drawn to Him, and which rest in Him as their object.' Bell chastised those philosophers who were only interested in the workings of the mind for overlooking the relationship between mental operations and the condition of the body: 'as the organs of the five senses serve to furnish ideas of matter, the framework of the body contributes, in certain conditions, to develop various states of the mind'. Emotions, or 'impressions communicated by the external organs of sense', are a product of 'a mutual influence exercised by the mind and frame on each other'. In short, Bell was fundamentally committed to showing how 'the passions of the mind' influenced the muscles of expression by means of the nerves.[37]

Medicine, Emotions and Human Automata

By the second half of the nineteenth century, physicians possessed the tools not only to study the nerves and muscles involved in human emotions, but also the ability to generate those gestures artificially. In 1862, Guillaume-Benjamin-Amand Duchenne de Boulogne published his *Mécanisme de la physionomie humaine*.[38] In this work, Duchenne detailed the use of an electric current to stimulate the facial muscles of his subjects: 'Armed with electrodes, one would be able, like nature herself, to paint the expressive lines of the emotions of the soul on the face of the man. What a source of new observations.'[39] Duchenne's mechanical technique could reproduce qualities that had previously been seen as quintessentially and uniquely belonging to the domain of the human self. A classic example was his reconstruction of feminine aggression typified by Shakespeare's Lady Macbeth, for which he employed the services of one of his female patients

[36] Bell 1865, 83. [37] Bell 1865, 83–4, 90.
[38] Published in English as Duchenne de Boulougne 1990.
[39] Duchenne de Boulougne 1990, 9.

in constructing a series of *tableaux vivants*: 'I tried to represent the expression that Lady Macbeth must have had, when, after assuring herself that Duncan and the guards, whom she drugged, were soundly asleep, and after having given Macbeth the murder signal, she waited while he cut the throat of the king, his host and benefactor.'[40] While not directly addressing musical or operatic performances, he did believe that his experimental techniques could elicit the characteristic signs of human emotions.

Duchenne himself labelled his enterprise 'a new sort of anatomy, to which one can apply the two words by which [Albrecht von] Haller described physiology: it is *animated anatomy*'.[41] The human expressions he was able to generate with electrical current became for him a 'universal and immutable' language and evidence of the Creator's work.[42] The patient did not need to experience the actual emotions: his was a method to produce the superficial signs without the natural cause. Duchenne then linked human expressions, such as attention, reflection, pain, aggression, weeping, joy, laughter (and false laughter), irony, sadness, surprise, doubt contempt, terror and fright, to name just a few, with the muscles and nerves that produced them.[43] Photographs were able to capture the fleeting expressions of his subjects after their electrical stimulation: 'Photographic figures that represent, as in nature, the expressive traits assigned to the muscles that interpret the emotions, teach a thousand times more than extensive written descriptions.'[44] Darwin took the argument one stage further in his *Expression of the Emotions in Man and the Animals* (1872), drawing upon Bell's and Duchenne's enterprises to argue that expression and its recognition were crucial to survival.[45]

Subjects were chosen because of their docility. In one instance, Duchenne was treating with electricity a nearly blind girl who was afflicted with bilateral optic nerve atrophy. He writes: 'she cannot understand the gestures or the poses that I show her, so that I am obliged to position her and dress her *as if she were a mannequin*'.[46] Duchenne was the operator who dictated the responses of his subjects: 'I am careful . . . not to involve my subject's feelings; I rely only on my judgement and on my artistic feeling. Thus I arrange her head in a particular direction, open or shut the eyes and mouth, ask her to smile or laugh, and so on. In this way I obtain the expression that I want, as I feel it.'[47] Perhaps his favourite

[40] Duchenne de Boulougne 1990, 120. See also plate 81. [41] Duchenne de Boulougne 1990, 10.
[42] Duchenne de Boulougne 1990, 19. [43] Duchenne de Boulougne 1990, 26–7.
[44] Duchenne de Boulougne 1990, 37. [45] Gilman 2015, 136.
[46] Duchenne de Boulougne 1990, 105. Emphasis added.
[47] Duchenne de Boulougne 1990, 106.

model was 'the simple old man, who suffered from facial anaesthesia', meaning that the patient could not feel anything done to his face.[48] The old man was, in essence, an empty canvas upon which Duchenne could experiment. The physician seemed to care more about the facial façade than the human behind it. These 'mannequins' were eerily similar to Hoffmann's Olympia. Their bodily responses and indeed their identities were being manufactured and orchestrated by physicians and physiologists.

Duchenne's method of local faradisation, as he called it, was adopted in the Salpêtrière Hospital in Paris, where he spent the later years of his career. He was hired by the young physician and neurologist Jean-Martin Charcot, who had been impressed with Duchenne's work on electrical stimulations of the face. As Charcot's renowned student Sigmund Freud tells us, his mentor was very visually orientated.[49] Indeed, visual representation was critical to Charcot's work on hysteria, as he often took photographs – a technique he learned from Duchenne – of his experimentation on his patients.

Charcot was most famous for his work on hypnosis and hysteria. In 1877 an eighteen-year-old girl, Marie Wittmann, entered the Salpêtrière suffering from convulsions, fainting spells and bouts of paralysis.[50] She would become known as 'Blanche', Charcot's most famous patient and 'a medical diva whose fame spread throughout Europe, where she became known as "the Queen of Hysterics"'. Charcot often chose her to demonstrate the numerous and complex symptoms of hysteria to physicians and medical students alike. She too was considered a mannequin, often photographed, painted, sketched, and even reproduced in sculpture. She was the subject of newspaper articles, plays and novels. As Asti Hustvedt argues, 'If hysteria was not actively "manufactured" at the Salpêtrière, as some claimed, it was most definitely cultivated.' And 'Blanche' was a rather appropriate name, Hustvedt continues, for she was a blank (white) page upon which Charcot could experiment at will.[51] While Duchenne referred to one of his patients as a mannequin, Paul Richer, a physician at the Salpêtrière and professor of artistic anatomy at the École des Beaux-Arts in Paris, went further in speaking of Blanche as 'a mechanical toy' and a 'music box'.

[48] Duchenne de Boulougne 1990, 23. [49] Duchenne de Boulougne 1990, 10.
[50] Hustvedt 2011, 35. For a history of the Salpêtrière, see Micale 1985.
[51] Hustvedt 2011, 35, 49, 43.

This order [of her symptoms] is so invariable . . . that if by ovarian compression one suppresses attack #1 at its onset, attack #2 begins. Allow me a somewhat banal comparison, but one that seems to me to express what happens here: our patient resembles one of those music boxes that play several different tunes, but always in the same order. If we successively stop one, two or three attacks, it is as though we have skipped one, two or three notches in the music box, and if we let the next attack follow its course, it is the following motif, #4, that is carried out. This occurs to such a degree in this patient that we can choose to let one or another of her attacks unfold.[52]

His colleague Joseph Delboeuf concurred. Blanche's passivity, which enabled Charcot's work, reminded Delboeuf of the relationship between piano and pianist: Charcot 'played her as though she were a piano, and . . . he played any tune'.[53] There is an implicit gender dimension here, for musical automata of the period were mostly gendered female.[54] This masculine domination becomes explicit when Charcot hypnotised and moulded Blanche into a woman–machine hybrid. Indeed Gilles de la Tourette and Richer labelled her in this state 'an actual automaton who obeys each and every order given by her magnetizer'.[55] They use the words 'to imprint' to describe the physician's actions, and 'operator' to denote his role. Charcot himself claimed that his woman-machine, 'in her utter simplicity', was an instantiation of the man-machine, as imagined by the materialist philosopher Julien Offray de la Mettrie.[56] Catalepsy, or the nervous condition in which muscles remain rigid regardless of external stimuli, was further described by Tourette and Richer in 1889 as a process that:

transforms the patient into a perfectly docile automaton, without any stiffness, on which one can imprint, with the greatest of ease, the most varied positions. Moreover, these positions are always harmonious, making our automaton something more than a simple mechanism à la Vaucanson. Her expressions harmonize all by themselves with the gestures that are imprinted, and vice versa.[57]

And one of the pioneers of electrotherapy, François-Victor Foveau de Courmelles, also linked the cataleptic hysteric to the automaton: 'Although at first an inert, plastic mass of flesh and bones . . . the cataleptic

[52] Richer 1881, 147, as translated in Hustvedt 2011, 54.
[53] Delboeuf, 1886, 258, as translated in Hustvedt 2011, 54.
[54] Wise 2007; Voskuhl 2007.
[55] Richer and Tourette, as translated in Hustvedt 2011, 68.
[56] Charcot 1886–93, 3:337.
[57] Richer and Tourette 1875, 88–89.

subject allows herself to be molded at the will of the operator. She becomes a soft wax figure on which the most fantastic emotions can be imprinted, she is an automaton capable of being animated.'[58] As Roy Porter pointed out: 'hysteria could be fashioned as a disorder, precisely because the culture-at-large sustained tense and ambiguous relations between representations of mind and body, which were in turn, reproduced in the hierarchical yet interactive ontologies of morality and medicine, and, yet again, reflected by the sociological interplay of clinical encounters'.[59] Audiences began to wonder: was Charcot demonstrating and revealing hysteria as actually reflected by his patients' bodies, or was this a false identity, that is, a fake? Were his patients simply acting, producing a fraudulent display of hysteria? The boundaries among the body, mind, self, and machine were blurred, the more so by the credulity and scepticism exhibited by Charcot's witnesses.

As Robert Brain has demonstrated, automatism played an important role in late nineteenth-century physiology more generally, referring both to organic movements, which could be reduced to automatic, machine-like processes, and to the psychological actions of higher animals, which took place without a mind or will.[60] As the Cambridge physiologist Michael Foster – referring to hydra and amoeba – wrote in 1877: 'the great value of automatic processes in a living body depends on the automatism being affected by external influences, and on the simple effects of stimulation being profoundly modified by automatic action'.[61] So, while the processes involved in automatic impulses are independent of external influences, they are subject to and largely modified by those stimuli.

Hence, from the 1860s to the 1880s, the body of the medical subject was reduced to an automaton, under the total control of the physician. And as Brain has demonstrated, this is precisely what the physiologist Étienne-Jules Marey and his cohort accomplished, starting in the late 1860s and lasting well into the early twentieth century. Physiological instruments 'had in Marey's view acquired a degree of autonomy analogous to self-acting machines capable of doing the bidding of humans with little or no reference to their progenitors. Human subjects fell out of the picture.'[62] The logic was brutal: first standardise the body, rendering it a machine, and then make the body disappear altogether.

[58] Courmelles 1890, 91. [59] Porter 1993, 265.
[60] Brain 2008, 399. See also Brain 2016, 5–36 and 95–149.
[61] Foster 1877, 74–5; as quoted in Brain 2008, 404. [62] Brain 2008, 402.

Epilogue: Wagner's *Parsifal*

Walter Benjamin reminds us that the Salpêtrière, along with Offenbach's cancan, the Eiffel Tower and the giraffes at the zoo, became one of the fashionable sites of belle époque Paris.[63] Tuesday lectures and demonstrations were frequented by the likes of Cardinal Charles Lavigerie, Guy de Maupassant and the lawyer, inventor and politician Louis Lépine. It is not surprising, then, that gestures of hysteria made their way to the theatre stages of Paris.[64] Even opera was influenced by Charcot's work, as 'the greatest divas of opera strove to outdo the now universally famous stars of the Salpêtrière, from Wagnerian Kundry's display of remorse in 1882 to the long vindictive cry in Richard Strauss's *Elektra*'.[65]

The importance of the hysterical body is indeed clearly seen in Wagner's *Parsifal*, and a long scholarly tradition explores their rich interrelation.[66] The period from 1877, when Wagner finished *Parsifal*'s libretto, to the work's premiere in Bayreuth in 1882 is coeval with Charcot's work on hysteria. And in this closing section, I pursue a hypothetical reading of Wagner's final opera in light of the medical discourse given above, expressly with the intention of exploring how far their association can be maintained. We might begin with Friedrich Nietzsche, who, in 1888, famously chastised Wagner for his hysterical depictions on the stage as part of his larger critique of Wagner as an actor:

> I place this perspective at the outset: Wagner's art is sick. The problems he presents on the stage – all of them problems of hysterics – the convulsive nature of his affects, his overexcited sensibility, his taste that required even stronger spices, his instability which he dressed up as principles, not least of all the choices of his heroes and heroines – consider them as psychological types (a pathological gallery)! – all of this taken together represents a profile of sickness that permits no further doubt. *Wagner est une névrose* [Wagner is a neurosis]. Perhaps nothing is better known today, at least nothing has been better studied, than the Protean character of degeneration that here conceals itself in the chrysalis of art and artist. Our physicians and physiologists confront their most interesting case in Wagner, at least a very complete case. Precisely because nothing is more modern than this total sickness, this lateness and overexcitement of the nervous mechanism, Wagner is *the modern artist par excellence*, the Cagliostro of modernity. In his art all that the

[63] Micale 1985, 724. [64] For the spectacle of the Salpêtrière, see Marshall 2008.
[65] Corbin 1990, 4:630. [66] See Hyer 2006 and Bronfen 1996.

modern world requires most urgently is mixed in the most seductive manner: the three great *stimulantia* of the exhausted – the *brutal*, the *artificial*, and the *innocent* (idiotic).[67]

This oft-quoted statement is typically read in the context of discourses of cultural degeneration, of decadence as a wilful corruption of bourgeois health, and of biographical interest in the shifting Nietzsche–Wagner relationship. But the point here is that Nietzsche knew directly of what he spoke: he was very familiar with the goings on at the Salpêtrière; his notes include numerous references to the work of Charles Féré, Charcot's assistant at the Salpêtrière.[68] It is telling, then, that Max Nordau's hyperbolic critique of Wagner's music – 'certainly of a nature to fascinate the hysterical' – later on references the Salpêtrière and Charcot's work directly.[69]

Brian Hyer has suggested in this context that Parsifal's transformation mirrors Charcot's four stages of hysteria, which the French physician documents in 'Description de la grande attaque hystérique' of 1879.[70] First, the 'période épileptoïde' is characterised by severe convulsions and contractions; then the 'période des contorsions et des grands mouvements' follows after an interval of calm. This second phase witnesses extreme physical contortions inevitably ending with the body assuming a stiffened concave pose whereby the spine curves backward. During the third period, one of 'passionate attitudes', the patient hallucinates, and the body assumes a familiar pose, while she acts out scenes depicting dramatic experiences from her life.[71] And in the final period, the patient calms down and becomes melancholic, after which time she regains consciousness.

Parsifal's extended arioso of the second scene of Act II, which lasts an exhausting eight minutes, parallels Charcot's description of the *grande attaque*.[72] In the first stage, *période épileptoïde*, Parsifal experiences 'a fearful change' and 'gestures in horror' after he embraces Kundry and they kiss. He cries out in pain, 'Amfortas! The wounds! The wounds!' And so starts the seizure.[73] The second stage, or the *période des contorsions*

[67] Nietzsche 1968. See also M. Smith 2007, 11.

[68] Kennaway 2012b. See also Herrmann 2007, 87–9.

[69] Nordau 1895, 210.

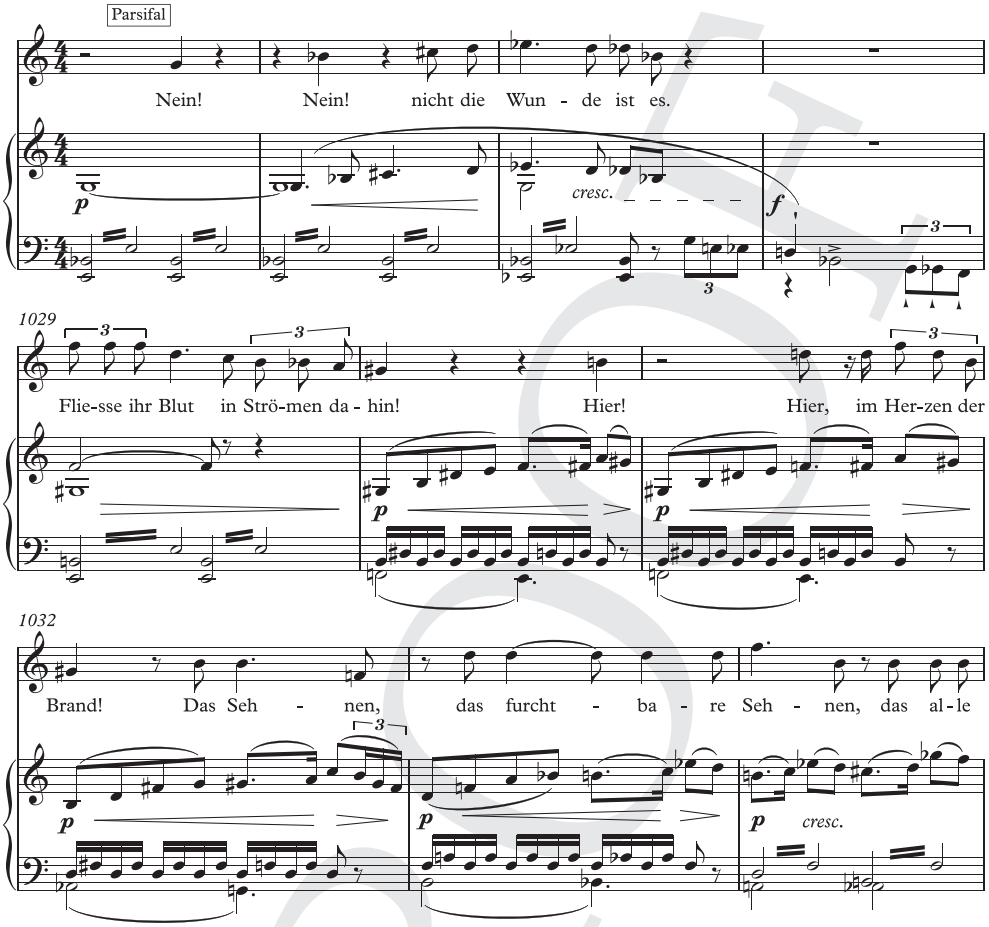
[70] *Période épileptoïde, période des contorsions et des grands mouvements* (*Clownisme*), *période des attitudes passionnelles* and *période terminale*. See Hyer 2006, 282–309. The next few paragraphs offer a summary of Hyer's argument. For the original article, see Charcot 1879.

[71] While hysteria affected men and women, Charcot and others argued that women were more affected by the ailment.

[72] On this point, see also Bronfen 1998, 180–2.

[73] Hyer 2006, 288.

Example 12.1 Klingsor's 'Zaubermotiv' ('magic motif') from Richard Wagner, *Parsifal*, Act II scene 2, bb. 1025–1034



et des grands mouvements, is signalled by the music's rigid return to the opening themes followed by one-bar iterations of the chromatic 'magic' motif (*Zaubermotiv*) symbolising short, fast muscular contractions when Parsifal realises his wounds are emotional, not physical (see Example 12.1). This phase resolves itself into the string accompaniment to Parsifal's laboured breathing and irregular heartbeat. During the third period of the '*attitudes passionnelles*', Parsifal falls into a trance and hallucinates, and three brief *tableaux vivants*, reminiscent of Duchenne's *tableaux vivants* mentioned above, ensue. In the first, Parsifal gazes at the sacred blood glowing from the grail. Despair is the theme of the second tableau, as Christ cries out to Parsifal from the cross. In the final tableau, Parsifal addresses

the saviour as himself begging for atonement of his sins. The *période des attitudes passionelles* ends with an exhausted and vulnerable Parsifal. The terminal stage commences with Kundry's plea to be Parsifal's saviour, and he enters into a hallucination. As Hyer points out, hysteria 'is pantomime, all mimesis' – and Kundry stages the pantomime with 'anatomical precision'.[74]

Wagner's Kundry is a complex and multivalent character. She connects Parsifal and Amfortas through acts of seemingly irresistible seduction; the former withstands her only by identification with the latter's suffering, an act that frees her from the cycle of Schopenhauerean enslavement to sexual desire. Wagner himself referred to her 'sphinx-like' regard of Parsifal as the 'pure fool' as she witnesses Amfortas's torturous wound opening. Among these identities, she is also a hysteric to the extent that her characteristic mode of utterance is laughter. While normative readings of the role speak of Kundry's redemption from her condition, and – outwardly – from Klingsor, one reading sees Wagner close the opera by wishing to cure the hysteria by means of hypnosis and electricity, just as Charcot did to his patients. In the premiere of *Parsifal*, both electricity and elements of hypnosis were used when Parsifal held up the Grail, which was illuminated by electric lighting, and which glimmers entrancingly.[75]

Hysterics fascinated audiences because of the violence of their body language and because their symptoms are artificial. Just as Duchenne's work was the artificial creation of human expressions not based on the experiencing of emotions, the body language generated by the hysterics 'ha[s] no organic lesions'.[76] Thus, Kundry is famously described as a wild animal in the stage directions for Act I scene 1:

> Kundry rushes in, almost staggering. She is in wild garb, her shirts tucked up by a snakeskin girdle with long hanging cords; her black hair is loose and dishevelled, her complexion deep ruddy-brown, her eyes dark and piercing, sometimes flashing wildly, more often lifeless and staring.[77]

She does not listen when summoned by Gurnemanz to stand up. Later the third squire compares her to 'a wild beast'.[78] And she informs the squires that 'I never help', asserting her own will to resist.[79]

[74] Hyer 2006, 306. [75] M. Smith 2007, 13.

[76] Bronfen 1998, 225. See also Nietzsche's critique of Wagner's use of hysteria, which he labels as 'artificial'.

[77] '*Kundry stürzt hastig, fast taumelnd herein. Wilde Kleidung, hoch geschürzt; Gürtel von Schlangenhäuten lang herabhängend; schwarzes, in losen Zöpfen flatterndes Haar; tief braunrötliche Gesichtsfarbe; stechende schwarze Augen, zuweilen wild aufblitzend, öfters wie todesstarr und unbeweglich.*' Wagner 1882, Act I.

[78] '[E]in wildes Tier.' Wagner 1882, Act I. [79] 'Ich helfe nie.' Wagner 1882, Act I.

In the opening of Act II scene 1, Klingsor warns Kundry that she will succumb to his will: 'Are you waking? Ha! To my power you fall again today, at the right time.'[80] While she served the saintly knights, she tries in vain to resist Klingsor, whose power arguably resembles that of the hypnotist:

KUNDRY : I . . . will not! . . . Oh! . . . Oh!
KLINGSOR : You will, because you must.
KUNDRY : You . . . cannot . . . force me.[81]

Later in the scene she 'breaks into hysterical laughter, which turns to a convulsive cry of woe', reminiscent of Charcot's patients.[82]

By Act III, she has metamorphosed. She is now depicted as 'a body without will, speaking of the desires of those who animate her'.[83] She now exists to serve: she seems to have no self-will:

[Gurnemanz] drags Kundry, quite stiff and lifeless, out of the bushes and carries her to a nearby grassy mound. He does his utmost to restore Kundry's numb circulation. Gradually life seems to return to her. When at last she opens her eyes, she utters a cry. Kundry is in the coarse robe of a penitent, similar to that in Act One, but her face is paler and the wildness has vanished from her looks and behaviour. – She gazes long at Gurnemanz. Then she rises, arranges her clothing and hair and at once sets to work like a serving-maid.[84]

Her only words in Act III plead to Gurnemanz, 'Let me serve . . . serve!'[85] He registers her transformation immediately: 'How differently she moves from before.' Later in the act, Parsifal orders her to 'wash my feet, now bathe my

[80] 'Erwachst du? Ha! / Meinem Banne wieder / verfallen heut du zur rechten Zeit.' Wagner 1882, Act II.

[81] '[Kundry:] Ich will nicht! Oh... Oh!… [Klingsor:] Wohl willst du, denn du musst. [Kundry:] Du… Kannst mich… Nicht... Halten.' Wagner 1882, Act II.

[82] '*Kundry gerät in unheimliches ekstatisches Lachen bis zu krampfhaftem Wehegeschrei*.' Wagner 1882, Act II.

[83] Bronfen 1998, 233.

[84] '*Er zieht Kundry, ganz erstarrt und leblos, aus dem Gebüsche hervor, trägt sie auf einen nahen Rasenhügel, reibt ihr stark die Hände und Schläfe, haucht sie an und bemüht sich in allem, um die Erstarrung von ihr weichen zu machen. Endlich scheint das Leben in ihr zu erwachen. Sie erwacht völlig: als sie die Augen öffnet, stösst sie einen Schrei aus. Kundry ist in rauhem Büssergewande, ähnlich wie im ersten Aufzuge; nur ist ihre Gesichtsfarbe bleicher; aus Miene und Haltung ist die Wildheit verschwunden. - Sie starrt lange Gurnemanz an. Dann erhebt sie sich, ordnet sich Kleidung und Haar und lässt sich sofort wie eine Magd zur Bedienung an*.' Wagner 1882, Act III.

[85] 'Dienen… Dienen.' Wagner 1882, Act III.

head',[86] and we are reminded of Wagner's statement from *The Artwork of the Future* (1849), cited in the opening quotation of the chapter: 'Without the heart's activity, the action of the brain would be no more than of a mere automaton.'

Both Offenbach and Wagner, then, were caught up in their different ways in the eternal enquiry into human identities. Hoffmann provided Offenbach with a perfect resource to question his own identity, as a German Jew in nineteenth-century France, a fractured identity that distantly mirrors Olympia being literally torn apart at the end of the first scene of Act II of *Les Contes d'Hoffmann*. Wagner's portrayal of a hysteric mirrored Charcot's demonstrations at the Salpêtrière. In short, theories of the mind, body, self and identity were intricately and inextricably linked with nineteenth-century physiology. Physicians blurred the boundary between human and android by treating their patients as automata, manipulated by their will. The tension generated by the transgression of this boundary was grist to operatic composers' mills. A cultural history of science, medicine and music can begin to illustrate how these critical notions of the body, mind and self were constructed and depicted for audiences of the late eighteenth and nineteenth centuries.

[86] 'Wie anders schreitet sie als sonst! … Du wuschest mir die Füsse, nun netze mir das Haupt!' Wagner 1882, Act III.