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*Visualizing Pain:*

*A History of Representations of Suffering in Medical Texts*

in Nike Jung (ed), *Rhetoric of Pain* (London: Routledge, early 2018)

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Pain is a phantom, a spectre that haunts clinical encounters. Physical suffering is the chief symptom impelling people to seek medical help, yet its subjective nature and invisibility routinely thwart diagnostic and curative processes. The fact that pain can be felt only by the person-in-pain means that sufferers are required to communicate their subjective sensations through language. This creates formidable problems. Many sentient beings (including infants, the comatose or unconscious, and some physically and mentally impaired people) lack the ability to put their thoughts or sensations into words. Even people-in-pain who possess sophisticated cognitive skills often seek silence and seclusion. Their linguistic creativity is impaired. Sufferers feel alienated from themselves, complaining of a disconnection between “me” and “my body-in-pain”. Like physicians and other caregivers, they may also be haunted by the invisibility of their own pain. This is the phantom that pain surgeon René Leriche was referring to in his classic text *The Surgery of Pain* (1939). He admitted to feeling

intensely “distressed” at being “powerless to understand” the other person’s suffering. He portrayed surgeons like himself reaching out to help their patients, even sympathetically touching the “region of pain”, only to be “surprised that you can feel nothing, and yet at times, by your touch, even exciting dreadful recurrent spasms of pain”. There was simply “nothing to be seen”, he lamented.<sup>1</sup>

Leriche was an exceptionally empathetic surgeon. Although he lamented the invisibility of the other person’s pain, he was aware that physicians could appreciate something of the nature of their patients’ suffering by observing their facial and bodily gestures. For example, Leriche described a consultation with a man suffering from trigeminal neuralgia, an agonizing nerve disorder of the face. He instructed physicians to “Look at him: while you are speaking to him”. At first, the patient seemed to be “listening to you, calm, normal, perhaps a little preoccupied”. But, then,

Of a sudden, he becomes rigid: the pain is there. His face becomes screwed up. There is depicted in it a terrible expression of pain, of grievous pain. His eyes are closed, his face is drawn, his features distorted. And immediately he lays his hand on his cheek, presses it against his nose, sometimes rubbing it vigorously; or, more frequently,

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<sup>1</sup> René Leriche, *The Surgery of Pain*, trans. Archibald Young (London: Ballière, Tindall and Cox, 1939), 27 and 29.

he remains rigid in his pain, which appears to bring everything in him to a stop.<sup>2</sup>

Physicians, therefore, could identify the inarticulate, yet unmistakable, facial and gestural language of distress. These renderings of suffering rendered pain tangible.

Leriche's meditations on the nature of pain – its invisibility yet the ability of observers to witness at least some components of its nature and intensity through visual observation – are the themes of this chapter. In recent decades, there has been a growing literature on visual representations of pain in the modern period. Historians have analyzed the art of pain in broadsheets, cartoons, and periodicals such as *Punch*.<sup>3</sup> The portraits of suffering painted by great artists such as Charles Le Brun have been

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<sup>2</sup> René Leriche, *The Surgery of Pain*, trans. Archibald Young (London: Ballière, Tindall and Cox, 1939), 30-1.

<sup>3</sup> For example, see Roy Porter and G. S. Rousseau, *Gout. The Patrician Malady* (New Haven: Yale University Press, 1998); Danny Rees, "Down in the Mouth: Faces of Pain", in Rob Boddice (ed.), *Pain and Emotion in Modern History* (Basingstoke: Palgrave Macmillan, 2014), 164-186; Suzannah Biernoff, "Picturing Pain", in Anne Whitehead, Angela Woods, Sarah Atkinson, Jane Macnaughton and Jennifer Richards (eds.), *The Edinburgh Companion to the Critical Medical Humanities* (Edinburgh: Edinburgh University Press, 2016), 163-85.

meticulously examined.<sup>4</sup> Not only is there a growing philosophical literature on “representationism” with regards painful sensations,<sup>5</sup> but attention has also been paid to the ways people-in-pain themselves have sought to represent their sensations visually.<sup>6</sup> There are also eloquent writings on artist-surgeons (such as Henry Tonks, pioneer plastic surgeon during the First World War) who sketched or painted their patients, but whose art was kept separate from their clinical practice.<sup>7</sup>

In contrast, in this chapter I explore the way physicians have represented pain visually in mainstream medical texts. In my book *The Story of Pain* (2014), I argued that *linguistic* representations of pain within medical texts became progressively

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<sup>4</sup> Danny Rees, “Down in the Mouth: Faces of Pain”, in Rob Boddice (ed.), *Pain and Emotion in Modern History* (Basingstoke: Palgrave Macmillan, 2014), 164-186; Javier Moscoso, *Pain: A Cultural History* (Basingstoke: Palgrave Macmillan, 2012).

<sup>5</sup> For an example, see Murat Aydede (ed.), *Pain: New Essays on Its Nature and the Methodology of Its Study* (Cambridge, Mass.: The MIT Press, 2005).

<sup>6</sup> For example, Deborah Padfield, *Perceptions of Pain* (Stockport: Dewi Lewis Publishing, 2003).

<sup>7</sup> See Samuel J. M. M. Alberti (ed.), *War, Art, and Surgery. The Work of Henry Tonks and Julia Midgley* (London: The Royal College of Surgeons of England, 2015); Suzannah Biernoff, *Portraits of Violence: War and the Aesthetics of Disfigurement* (Ann Arbor: University of Michigan Press, 2017); Suzannah Biernoff, “Flesh Poems: Henry Tonks and the Art of Surgery”, *Visual Culture in Britain*, 11.1 (Mar. 2010), 25-47.

“thin” through the nineteenth and twentieth centuries.<sup>8</sup> During this period, authors of medical books and articles gradually stripped their prose of rich metaphors and metonyms, increasingly favouring the much more austere language of the biological sciences. Nineteenth-century physicians, who prided themselves as “men of feeling”, reinvented themselves as “men of science”, with empathetic *detachment* being seen as the most appropriate comportment of physicians vis-a-vis their patients.

This chapter explores a similar shift in the way pain was represented *visually* in Anglo-American medical and surgical texts in the century from the early nineteenth century to the late twentieth century. I will be arguing that, in the earlier period, visual representations of pain were welcomed because they served to bolster arguments about gestures and facial expressions as a “natural language” that served to ripen the “manly sensibility” of surgeons. Anesthetics and other technologies disrupted this aesthetics. Gestures and facial expressions were dulled, as dismembering took place on insensible bodies, whose cries and movements (if, indeed, there were any) were automatic reflexes. It was in the nineteenth century that body and mind, pain and suffering, were sheared apart; the surgeon’s expertise concentrating on the body with its ghostly, inscrutable signs.

There is one notable exception to this argument, however. As I will show, the metaphorically thin visual representation of pain in medical commentary from the

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<sup>8</sup> Joanna Bourke, *The Story of Pain. From Prayer to Painkillers* (Oxford: Oxford University Press, 2014).

mid-twentieth century was disrupted when surgeons turned to phantom limbs. From the 1950s, representation of phantom limb pain encourage a re-turning towards the visual. In the context of phantom pain, elaborate metaphorical commentaries reappeared, supplemented with imagery that not only stylized the body (almost always male) but even attempted to represent what pain *feels like*. Put another way, the absent bodily-part that *still feels* (because the amputee continued to visualize and impart sensation to it) encouraged surgeons to also visualize and impart sensation to absence.

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At the outset, it is important to acknowledge that medical texts only rarely provided visual representations of pain. This is the case throughout the period explored here. There are proliferations of images of lesions, encrustations, and diseased tissues and organs – with their *implicit* acknowledgement of painfulness – but *explicit* visual commentaries on pain-as-such are uncommon. Nevertheless, where pain imagery *did* exist, it was significantly more common in earlier texts.

No account of visual representations of pain in the nineteenth century can fail to acknowledge the greatest surgeon-illustrator of that period: Charles Bell. He published lavishly illustrated medical texts, designed not only to enlighten artists about the nature of the human body (including skeletal structures, muscle groups, and the location of fat deposits) but also to instruct surgeons in their craft.

His most famous work was *Illustrations of the Great Operations of Surgery, Trepan, Hernia, Amputation, Aneurism, and Lithotomy*, published in 1821. This book was notable for Bell's drawings and engravings of men whose facial expressions were contorted in obvious agony. Bell believed that "when the demonstration" of surgery "is presented to the eye, that knowledge is most easily conveyed". There was "much professional knowledge, which he [the surgeon] cannot easily attain by any other means." In other words, interpreting the patient's facial expressions was more reliable than employing the senses of touch, smell, and sound; it was even more effective than listening to a patient's verbal descriptions.<sup>9</sup> Being able to "read" facial expressions of pain were essential because Bell viewed pain as important in its own right, as opposed to a sign of something else (which, as we shall see, preoccupied latter physicians). As Bell put it in *The Anatomy and Philosophy of Expression as Connected with the Fine Arts* (1844),

Pain is affirmed to be unqualified evil; yet pain is necessary to our existence; at birth, it rouses the dormant faculties, and gives us consciousness. To imagine the absence of pain, is not only to imagine a new state of being, but a change in the earth and all upon it....

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<sup>9</sup> Charles Bell, *Illustrations of the Great Operations of Surgery, Trepan, Hernia, Amputation, Aneurism, and Lithotomy* (London: Longman, 1821), iii-iv.



Sensitivity to pain is destined to be the protection; it is the safeguard of the body.<sup>10</sup>

From this perspective, pain expressions communicated God's will.

Bell's interpretation of pain and pain-expressions were fundamentally affected by his experiences on the battlefield. Many of his representations of pain were based on the time he spent tending to the wounded after the Battle of Waterloo in 1815. It had been an emotionally fraught experience in which (as Bell wrote in a letter to the politician Francis Horner) the "decencies of performing surgical operations were soon neglected". The cries of the wounded "all beseeching to be taken next" (that is, operated on) was traumatic. Before long, his clothes were "stiff with blood" and his "arms powerless with the exertion of using the knife!" It was this horror that led Bell to muse on the nature of surgical sympathy. He marveled that it was "more extraordinary still" to find that his mind remained "calm amidst such variety of suffering". After all, he concluded, to give these desperate patients "access to your feelings was to allow yourself to be unmanned for the performance of a duty". He believed that it was "less painful to look upon the whole than to contemplate one

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<sup>10</sup> Charles Bell, *The Anatomy and Philosophy of Expression as Connected with the Fine Arts* (London: John Murray, 1844), 156. Also see Charles Bell, *The Hand; Its Mechanism and Vital Endowments, As Evincing Design* (London: John Murray, 1852),

object”.<sup>11</sup> His use of the word “unmanned” is important. For Bell, manliness was a subject for both surgeons and patients. He illustrated this dynamic in a sketch entitled “Amputation Below the Knee”.<sup>12</sup> **[INSERT FIGURE 1 HERE]** In the top third of the sketch (see illustration 1), Bell portrayed the surgeon as a manly figure who wielded his knife (as he put it) “more like a sabre, than a Surgeon’s scalpel”.<sup>13</sup> Bell was clear about the *masculine* gendering of the surgeon’s sensibilities. He insisted that it was a “vulgar error” to imply that the surgeon had to be “diverted of the common feeling of Humanity” in order to “do his duty”. This error was typically made by women, Bell claimed. In his words,

Let my lady’s maid still suppose, that he must be a brute whose occupation soils his hands with blood. It is not supposed that she can have very accurate notions of the difference of his service who inflicts the wound, and of his who closes it; but for a reasonable man, and

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<sup>11</sup> Letter from Charles Bell to Francis Horner in July 1815, in Bell, *Letters of Sir Charles Bell selected from his Correspondence with his Brother, George Joseph Bell* (London: George Murray, 1870), 246-47.

<sup>12</sup> Charles Bell, “Amputation Below the Knee”, in Bell, *Illustrations of the Great Operations of Surgery, Trepan, Hernia, Amputation, Aneurism, and Lithotomy* (London: Longman, 1821), permission thanks to the Wellcome Library, image L0072193.

<sup>13</sup> Charles Bell, *Illustrations of the Great Operations of Surgery, Trepan, Hernia, Amputation, Aneurism, and Lithotomy* (London: Longman, 1821), 74.

most of all, for one educated to Surgery, it is very ridiculous to assign as a reason for not doing his duty, that his feelings prevent him.

The surgeon should not “stand[] like the foolish maid, who holds her apron betwixt her pretty eyes and the object of her horror”. Neither should the surgeon “boast of feelings” since

Any thing [sic] like a flourish on such an occasion, does not merely betray vanity, but a lamentable want of just feeling. It is as if a man said – Look at me now – see how unconcerned I am, while the patient is suffering under my hand!

Rather, the surgeon must “forget himself, in the desire to give aid to another”. His maxim?: “think only of your patient”.<sup>14</sup> Manliness was also required of patients. **[INSERT FIGURE 2 HERE]** In “Operation at the Shoulder Joint to Amputate the Arm” (see illustration 2),<sup>15</sup> Bell portrays the facial expression of a soldier undergoing

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<sup>14</sup> Charles Bell, *Illustrations of the Great Operations of Surgery, Trepan, Hernia, Amputation, Aneurism, and Lithotomy* (London: Longman, 1821), vii.

<sup>15</sup> Charles Bell, “Operation at the Shoulder Joint to Amputate the Arm”, in Bell, *Illustrations of the Great Operations of Surgery, Trepan, Hernia, Amputation, Aneurism, and Lithotomy* (London: Longman, 1821), permission thanks to the Wellcome Library, image L0072203.

an amputation. Only when the pain was unbearable – at the dislocation of the joint – would such a man, with his “strong manly features”, swoon away.<sup>16</sup>

Bell believed that his sketches would serve to educate surgeons in their task. However, they were also explicitly intended to be aesthetic representations of the expressions. At the time Bell drew these sketches, he was meeting with the German physician Johann Gaspar Spurzheim, renowned proponent of phrenological thought, which claimed to be able to determine personality, intelligence, emotions, and a host of other characteristics by the analysis of facial architecture.<sup>17</sup> Combined with Bell’s deeply held religious beliefs – most famously set out in *The Hand: Its Mechanism and Vital Endowments as Evincing Design* (1833) – Bell regarded facial expressions and gestures as a “natural language”.<sup>18</sup> Indeed, if we are to understand Bell’s combination of surgical instruction with visual representations of suffering, it is crucial to

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<sup>16</sup> Letter from Charles Bell in July 1815, in Bell, *Letters of Sir Charles Bell selected from his Correspondence with his Brother, George Joseph Bell* (London: George Murray, 1870), 241-42.

<sup>17</sup> Letter from Charles Bell in July 1814, in Bell, *Letters of Sir Charles Bell selected from his Correspondence with his Brother, George Joseph Bell* (London: George Murray, 1870), 217 and 220.

<sup>18</sup> Charles Bell, *The Hand; Its Mechanism and Vital Endowments, As Evincing Design* (London: John Murray, 1852), 211. Also see Charles Bell, *The Anatomy and Philosophy of Expression as Connected with the Fine Arts* (London: John Murray, 1844), 156.

recognize the popularity of phrenology and physiognomy within medical circles. As Samson Davis explained in *Principles of Physiognomy and Natural Language*,

The corporal gestures constituting Natural Language, are not merely the expressive vocabulary of the passions and sentiments; they also at the same time... serve to accomplish, or to assist in the fulfillment of their aims.

In other words, the expressions of pain served the purpose of “*gratifying* the mental affections they portray” by “their physical effects on the body, putting it in a suitable condition to fulfil their object, and by their irresistible moral influence over the minds of spectators, through the amazing power of sympathy”.<sup>19</sup> In such schemas, a special role assigned to *sight*. Again, Davis explained that the “language of the passions and affections” are “naturally affected and called into activity by certain peculiar objects”. When a person sees these “passions and affections”, their response is “as necessarily awakened into action as vision is on the presentation of light to the eye”. In other words,

whenever we witness the expression of any feeling, no matter how expressed, we irresistibly experience the corresponding feeling.... This is Sympathy, or fellow-feeling; and a wide and a beautiful ordination it

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<sup>19</sup> Samson Davis, *Principles of Physiognomy and Natural Language* (London: Simpkin and Marshall, 1843), 27-8. Emphasis in original.

is! – the source of all the finer joys and the charities of life, and a necessary constituent in the character of a fully-sentient being!<sup>20</sup>

This was Bell’s purpose in drawing images of suffering. While the public were viewing Waterloo in terms of “enterprise and valour”, Bell admitted to a friend that he believed that visual representations of pain would remind people of “the most shocking sights of woe... accents of entreaty, outcry from the manly breast, interrupted forcible expressions of the dying, and *noisome smells*.”<sup>21</sup> In other words, there was a moral message in his sketches. There was also a clinical message: the expressions of agony were an integral part of the healing process for three reasons: they prepared the fractured-body for the trial ahead; they equipped the surgeon for his act of “forget[ing] himself, in the desire to give aid to another”; and they primed the public for their act of sympathy.

Bell was undoubtedly exceptional, but other physicians during the first half of the nineteenth century also sought to represent suffering through facial expressions and gestures in medical or surgical texts. For example, in *The Physiognomy of Diseases* (1849), George Corfe explicitly attempted to educate physicians in the “look

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<sup>20</sup> Samson Davis, *Principles of Physiognomy and Natural Language* (London: Simpkin and Marshall, 1843), 34-5.

<sup>21</sup> Letter from Charles Bell to Francis Horner in July 1815, in Bell, *Letters of Sir Charles Bell Selected from his Correspondence with his Brother, George Joseph Bell* (London: George Murray, 1870), 248.

of pain”. Corfe was the resident Medical Officer at Middlesex Hospital London, where he had worked for 18 years. He considered the individuality of each and every patient to be paramount. In his words, “I consider God alone The One who kills and who makes alive, who wounds and who heals”. This explained why a patient might suffer “the same form of disease” as another patient and be “of the same sex and age, with symptoms closely similar, with the same care bestowed by the same accomplished physician”, nevertheless, one might die and the other live.<sup>22</sup> Because of the deity’s ultimate power, it was misleading to generalize from large numbers of sick-people. Rather, physicians had to judge each patient on their own merits or – more appropriately – on their own “face”. Corfe emphasized the “great importance of the study of disease through the index of the countenance”.<sup>23</sup> He encouraged physicians to pay attention to each and every aspect of a person’s face. They should gaze into their patient’s eyes, for example, with their

variations, the shadows, the languor, the lethargy, the imploring look for help, the impatience, the terror, the anxiety, the havoc which disease is making, and the stamp of which is pictured in the eye, its brows, and its lid.... Then we view the brow, that wonderful appendage of expression in a human face: this, too, has its silent language; it may be overhanging, corrugated, raised, or depressed,

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<sup>22</sup> George Corfe, *The Physiognomy of Diseases* (London: James Nisbet and Co., 1849), 2.

<sup>23</sup> George Corfe, *The Physiognomy of Diseases* (London: James Nisbet and Co., 1849), 2.

whilst the lid exhibits its alternations of puffiness or hollowness, of smoothness or unevenness, of darkness or paleness, of sallow or brown, of white or purple.<sup>24</sup>

The physician, too, needed to have an acute visual sense. The physician's eye was a "wonderfully penetrating organ", he exclaimed: it was "the grand instrument employed in primarily searching out the patient's real state". Through a careful study of facial expressions, the physician would learn "to recognize the disease of the patient, before he interrogates him as to his sufferings, ailments, or the history of his illness".<sup>25</sup> Astute witnessing took precedence over patient-narratives. Corfe professed to being in awe of physicians who, "upon physiognomical presentation" alone, could "survey the features of a patient who has some hidden disease" and be able to "immediately detect and declare it".<sup>26</sup> Faced with a patient, the doctor should "first run his eye over the face, and get that by heart, so to speak" – in other words, by gazing on the face of the person-in-pain, the physician could not only diagnose the ailment but also act with his heart swollen with sympathy.<sup>27</sup>

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<sup>24</sup> George Corfe, *The Physiognomy of Diseases* (London: James Nisbet and Co., 1849), 10.

<sup>25</sup> George Corfe, *The Physiognomy of Diseases* (London: James Nisbet and Co., 1849), 9.

<sup>26</sup> George Corfe, *The Physiognomy of Diseases* (London: James Nisbet and Co., 1849), 2.

<sup>27</sup> George Corfe, *The Physiognomy of Diseases* (London: James Nisbet and Co., 1849), 10.



Like the majority of physicians of this period, Corfe was influenced by Johann Kaspar Lavater, a Swiss poet, Protestant pastor, and physiognomist. By the time Lavater died in 1801, his *Essays on Physiognomy: Designed to Promote the Knowledge and the Love of Mankind* (1775-78) had been published in more than fourteen cheap as well as expensive editions in English.<sup>28</sup> Lavater's theory of the face paid attention to pathognomy and craniological approaches to facial interpretation. Both the gestural features of a person's face, or those expressive movements of the facial muscles that were in flux depending upon a person's emotional state or passions, as well as their innate features were crucial in judging a person's essential nature. As Corfe recognized, it was a theory that proved useful in diagnosing illness. Corfe was highly respectful of Lavater, going so far as to quote him as advising physicians that the "physiognomy of the patient frequently instructs him [the physician] better than all the verbal information he can receive". It is "astonishing how far physicians have carried their sagacity in this respect".<sup>29</sup>

Another example of a surgeon who paid close attention to facial and gestural languages of suffering was Joseph Sampson Gamgee, prominent surgeon from the

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<sup>28</sup> John Graham, "Lavater's Physiognomy in England", *Journal of the History of Ideas*, 22 (1961), 562.

<sup>29</sup> George Corfe, *The Physiognomy of Diseases* (London: James Nisbet and Co., 1849), 5, quoting Johan Kaspar Lavater, *Essays on Physiognomy: Designed to Promote the Knowledge and the Love of Mankind*, trans. H. Hunter, vol. I (S.I.: J. Stockdale, 1910), 1798.

Queen's Hospital, Birmingham. In 1865, he published *History of a Successful Case of Amputation at the Hip Joint (The Limb 48 Inches in Circumference, 99 Pounds Weight)* (1865).<sup>30</sup> Although his text was intended to be read only by surgeons (it provided detailed surgical analyses of an intricate operation), Gamgee also included before-during-and-after photographs. [INSERT FIGURE 3 HERE] These photographs provided visual evidence of his patient's Christian resignation to fate before the operation, followed by his agonized visage during the trial of the amputation (see illustration 3), and finally the surgical triumph in its aftermath. Similar to Bell's narrative, it was important to Gamgee that his patient displayed "calm courage". Like Corfe (but not their successors later in the century), Gamgee paid considerable attention to the specificities of his patient's life as well as his countenance and "constitutional soundness". Readers are told the man's name (Joseph Bramwell) and given extensive information about his family and working life. This specificity was important because Gamgee (like Bell and Corfe) believed that it was dangerous to generalize: all patients were unique. In his words,

So varied are the conditions of life, so numerous and decided the peculiarities of individuals, especially in disease, that it is reasonable to expect that in therapeutics, however powerful the aid afforded by

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<sup>30</sup> J. Sampson Gamgee, *History of a Successful Case of Amputation at the Hip Joint (The Limb 48 Inches in Circumference, 99 Pounds Weight)* (London: John Churchill and Sons, 1865).

the guidance of general principles and indications, practice must in great measure be empirical in particular cases.<sup>31</sup>

Gamgee also shared a vision of operative surgery as one that “makes the greatest call upon the highest and most varied faculties of our nature”. Surgeons were required to possess

a judicial mind to elicit evidence from nature – ever eloquent and varied, but, in our domain, in great part speechless.... In surgical action resource cannot be too fertile, enthusiastic love of the art too ardent; the hand cannot be too cunning or too bold; but equally necessary is extended erudition, power of mental grasp, patience and accuracy in the minutest details, and delicacy of touch.

For such surgeons, he believed that there was little need to include linguistic descriptions of pain because the “natural language” of facial expressions and gestures were eloquent enough – indeed (*apropos* the Tower of Babel), they could even be a *superior* language to words. This helps to explain why, in Gamgee’s *On the Treatment of Wounds and Fractures: Clinical Lectures* (1883), the patients portrayed in his wooden engravings are given facial expressions. Indeed, Gamgee depicts faces

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<sup>31</sup> J. Sampson Gamgee, *History of a Successful Case of Amputation at the Hip Joint (The Limb 48 Inches in Circumference, 99 Pounds Weight)* (London: John Churchill and Sons, 1865), 6-7 and 21.

even when the injuries or pathologies being shown are a long way from their face (for example, a leg fracture).<sup>32</sup>

The final medical influence in this period that drew attention to the importance of facial expression was that of French neurologist Guillaume Benjamin Amand Duchenne de Boulogne. In a series of experiments, Duchenne used the adept application of electric currents to cause an old man's facial muscles to contract in ways that would accurately mirror human emotional expressions. For Duchenne, the individual's "spirit" was "the source of expression" and by activating the muscles, he was able to "make the facial muscles contract to *speak* the language of the emotions". His chief text, *The Mechanism of Human Facial Expression* (1862), was accompanied by 100 photographic prints – the first series of published physiological experiments to be illustrated in this way. Indeed, photography was crucial to Duchenne's pioneering work. Not only were emotions too fleeting to be accurately captured by a painter but, he believed, photography was "as true as a mirror". For Duchenne, the surface was the story: technological manipulation of the face revealed all there was to know about the emotions.

Like Bell, however, Duchenne's experiments also had a fierce religious purpose. For Duchenne, there was Divine purpose behind every muscle in the body. On the rare occasions where he failed to find such a purpose, Duchenne expressed

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<sup>32</sup> For faces displaying "pain", see J. Sampson Gamgee, *On the Treatment of Wounds and Fractures: Clinical Lectures* (London: J & A Churchill, 1883), pp. 27, 28, 95, 177, 212, 237, 324, and 329.

“genuine chagrin”, although he claimed never to have doubted his initial premise.<sup>33</sup> In Duchenne’s words:

In the face, our Creator was not concerned with mechanical necessity. He was able, in his wisdom, or – please pardon this manner of speaking – in pursuing a divine fantasy, to put any particular muscles into action, one alone or several muscles together, when he wished the characteristic signs of the emotions, even the most fleeting, to be written briefly on man’s face. Once this language of facial expressions was created, it sufficed for him to give all human beings the instinctive faculty of always expressing their sentiments by contracting the same muscles.

This was important, since it meant that facial expressions were a “language universal and immutable”. Pain, therefore, involved the movement of the muscle “corrugator supercilii”. Furthermore, this pain muscle was a superior one since it was one of the “independent muscles that express diverse passions or states of the spirit, by their

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<sup>33</sup> Emanuel B. Kaplan, in Dr. G. B. Duchenne, *Physiology of Motion Demonstrated by Means of Electrical Stimulation and Clinical Observation and Applied to the Study of Paralysis and Deformities*, translated and edited by Emanuel B. Kaplan (Philadelphia: Lippincott, 1949), xiii.

isolated contraction, in a most complete way.<sup>34</sup> **[INSERT FIGURE 4 HERE]** (See illustration 4). Duchenne reproduced the “pain expression” in his clinical publications. Like Bell, Corfe, and Gamgee, in his clinical lectures, Duchenne also gave his patients facial expressions even when the face was a long way for the pathology being discussed. See Illustration 5, for example, in which Duchenne depicts a woman with curvature of the spine (lordosis), who is portrayed with a pained expression.<sup>35</sup> **[INSERT FIGURE 5 HERE]**

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From the mid-nineteenth century onwards, however, surgical and other medical journals paid progressively less attention to facial expressions and gestures. In part, this was due to the professionalization of medicine which rendered the emotional lives of patients of less relevance to surgeons and other physicians. The introduction of diagnostic classification systems and changing medical technologies rendered patients’ descriptions of pain more peripheral to the healing process. Hospital medicine focused not on individual peculiarities but generalizations based on

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<sup>34</sup> G. B. Duchenne de Boulogne, *The Mechanism of Human Facial Expression*, edited and translated by R. Andrew Cuthberton (Cambridge: Cambridge University Press, 1990), 24. See the discussion of the “pain muscle” on pp. 60-8.

<sup>35</sup> Duchenne de Boulogne, *Selections from the Clinical Works of Dr. Duchenne (de Boulogne)*, translated and edited by G. V. Poore (London: The Sydenham Society, 1883). For images with pained faces, see 49, 52, 49, and 93. The image reproduced here is from p. 93.

large numbers of people. The growth of laboratory medicine enabled physicians to bypass patient-narratives in their search for an “objective diagnosis” based on knowledge taken from microbiology, chemistry, and physiology. The invention and employment of anesthetics reduced the emotional investment of surgeons to the tortuous suffering they were inflicting on their patients. Rather than writhing in pain, their patients were now unconscious bodies capable of being manipulated in relative silence. In the words of one surgeon, writing only eight years after the invention of chloroform, the “shrieks of sufferers... were all hushed”. With the new anesthetic, the

surgeon’s nerve was now all strung: calmly, deliberately, he could do his work among human tissue. Unimpeded by muscular contractions – unembarrassed by the sufferer’s violent contortions – unharassed in his mind by the sensitive cries of woe, he pursued his manipulations as on breathless, lifeless forms.<sup>36</sup>

Bell’s lamentations in *Illustrations of the Great Operations of Surgery* about the wounded soldier who was “miserably racked with pain and spasms” while his arm was excised at the joint was no longer necessary. The surgeon did not need to be reminded not to “boast of feelings”; he was not required to convince the “lady’s maid” that he was not “a brute whose occupation soils his hands with blood”. As

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<sup>36</sup> Walter Blundell, *Painless Tooth-Extraction Without Chloroform. With Observations of Local Anæsthesia by Congelation in General Surgery* (London: John Churchill, 1854), 2-3.

surgeon David Cheever put it bluntly in 1897: as a result of anaesthetics, the surgeon “need not hurry; he need not sympathize; he need not worry; he can calmly dissect, as on a dead body.”<sup>37</sup> This was a world away from Bell’s surgical practice. The expressive face and contorted body was no longer thought to provide physiological respite, nor was it assumed to incite manly sympathy in the breast of the physician.

As a result, the sentient body was increasingly excised from texts. Instead of dramatically expressive, individualized faces, textbooks simply reproduced schematic bodies, with the pathological “site” simply shaded in. On the rare occasion when the patient’s face *was* visible, it was expressionless. **[INSERT FIGURE 6 HERE]** For example, the photograph in illustration 6 was published in 1895 in *Brain. A Journal of Neurology* and shows the image of a man suffering from chest pain.<sup>38</sup> There was no attempt to represent a pained facial expression. Rather, the painful parts of this patient’s body were literally written upon his body. Given how rare it is to see a face or indeed a photograph of a person-in-pain in medical journals of this period, it is hard to avoid speculating that this image was published primarily because of interest in the sailor’s tattoo.

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<sup>37</sup> David W. Cheever, “What has Anaesthesia Done for Surgery?”, *The Semi-Centennial of Anæsthesia* (Boston: Massachusetts General Hospital, 1897), 42.

<sup>38</sup> T. K. Monro, “A Case of Sympathetic Pain: Pain in Front of the Chest Induced by Friction of the Forearm”, *Brain. A Journal of Neurology*, 18.4 (1895), 566.



In contrast to the highly expressive faces and gestures of the earlier period, pain was increasingly represented on the surface of the body, typically conceived of in geographical terms as “pain maps” or what Leriche called the “regions of pain”. The emphasis placed on the localization of pain in these images is not coincidental. By the late nineteenth century, it was widely accepted in medical circles that the sensation of pain was caused by some bodily pathology that should be able to be “localizable to a discrete, specific part of area within the inner body”, as historian Daniel Goldberg has explained. Therefore, “if the patient experiences pain, then such a lesion must perforce exist, even if medical techniques of the time simply did not permit discernment of the lesion itself”.<sup>39</sup> The specificity theory of pain focused on the way pain travels (the geographical metaphor is important) from the skin to a pain centre in the brain. That theory – effectively a reiteration of Rene Descartes’ image of pain, in which filaments and animal spirits were replaced by nociceptive impulses and endorphins – was perfectly in line with geographical visualizations of pain. Neurologists might concede that they were not always able to identify the precise location, but insisted that there was a lesion somewhere – they just hadn’t found it yet.<sup>40</sup> It was a short step from such a view of pain to the idea that it was always manifested as a visible pathology located within material structures and tissues inside the patient’s body. “Invisible” pain could be discounted.

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<sup>39</sup> Daniel Goldberg, *The Bioethics of Pain Management: Beyond Opioids* (New York: Routledge, 2014), 38 and 40.

<sup>40</sup> Andrew Hodgkiss, *From Lesion to Metaphor. Chronic Pain in British, French, and German Medical Writings, 1800-1914* (Amsterdam: Rodopi, 200) and Daniel Goldberg, *The Bioethics of Pain Management: Beyond Opioids* (New York: Routledge, 2014), 38-43.

Given this location-based understanding of pain, it is interesting to observe that visual representations of pain appeared most frequently when physicians wanted to illustrate a particular *kind* of pain, that is, “referred pain”, or pain that did *not* straightforwardly relate to the site of lesion or disorder. Referred pain is a well-known clinical phenomenon: hip disease can cause pain in the knee, tongue cancer is felt as ear-ache, gall bladder disease appears as shoulder pain, angina pectoris leads to achy arms, and so on. In other words, physicians turned to images most frequently when they needed to illustrate the “location of pain” that was not at the “correct location”. In this way, referred pain was a phantom, lurking where it oughtn’t be and, therefore, potentially misleading patients and physicians alike. “Pain maps” were intended to provide the key: if the patient pointed to her knee, the pathology was likely to reside in her hip; if she pointed to her shoulder, the physician needed to check her gall bladder or heart. There was no attempt to represent either patients’ outward *responses* to pain (as Bell was doing, with the aim of eliciting a reaction from witnesses) nor their subjective *feeling* of pain (which could be gauged by the extremity of facial contortions). Rather, the representations were concerned simply with the location of pain on the surface of the body.

These images took a number of forms. Occasionally, they involved images of patients in classical poses. For example, in Glentworth Reeve Butler’s *The Diagnostics of Internal Medicine* (1901), referred pain was posed by the classical

figure of Diana, an erotic image which contained no implication that her “pain” was particularly “painful” (see illustration 7).<sup>41</sup> [INSERT FIGURE 7 HERE]

More typically, the authors of these textbooks provide their readers with schematic images, all expressionless. Some are shown with heads; others, without. Some even have heads floating above the torso.<sup>42</sup> Gender is also largely excised, unlike the relentless emphasis on manliness in earlier representations. Over 90% of such schematic images are male or of indistinguishable sex, even if the patient being discussed is identified as a woman.<sup>43</sup>

This emphasis on location (as opposed to expressive displays of subjective feelings) was consolidated from the 1940s when diagrammatic representations were put to further diagnostic use by the introduction of “pain maps” (sometimes called “pain charts”). These were discussed in 1947 by Prague-based neurologist Rudolf

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<sup>41</sup> Glentworth Reeve Butler, *The Diagnostics of Internal Medicine* (London: Henry Kimpton, 1901), 39.

<sup>42</sup> Henry Head, “On Disturbances of Sensation with Especial Reference to the Pain of Visceral Disease”, *Brain. A Journal of Neurology* (1896) and Henry Head, “An Address on Certain Aspects of Pain Delivered Before the Sheffield Medico-Chirurgical Society, December 8<sup>th</sup>, 1921”, *The British Medical Journal* (7 January 1922).

<sup>43</sup> Allan Walters, “Psychogenic Regional Pain Alias Hysterical Pain”, *Brain. A Journal of Neurology*, 84.1 (March 1961), 3.

Cerný during an international conference of physicians held in London. In an article that was subsequently published in the *Journal of Neurosurgery*, Cerný coined the term “autodermography”, a clinical practice that involved patients drawing their pain onto their own skin. Cerný had conceived of autodermography while working with leprosy patients in Africa. He noticed that his patients would often “demonstrate the painful areas by making scratches with their nails on the skin”. He decided that it would be useful in his practice to ask patients to use a dermatographic pencil to “draw on his skin... his own area of pain or rather projection of pain”. To his delight, he found that “one obtains, in a short time, accurate pictures of pain distribution, dys- or paraesthesia, made without influence of the examiner, and providing accurate clues to diagnosis and localization”. He concluded that “this subjective method surpasses the well known so-called ‘objective’ method”.<sup>44</sup>

**[INSERT FIGURE 8 HERE]** Cerný’s cumbersome neologism “autodermography” never became popular but, two years later, New Zealand physician Harold Palmer published an article entitled “Pain Charts” (see illustration 8).<sup>45</sup> His idea was simple: instead of patients being invited to draw on their own skin, they would be given a large piece of paper, on which was printed a schematic image

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<sup>44</sup> Rudolf Cerný, “Autodermography: A New and Simple Method of Demonstrating the Propagation of Pain and Disorders of Surface Sensibility”, *Journal of Neurosurgery*, 4.2 (March 1947), 188.

<sup>45</sup> Harold Palmer, “Pain Charts. A Description of a Technique Whereby Functional Pain May Be Diagnosed from Organic Pain”, *New Zealand Medical Journal*, xlviii (1949), 187-213.

of the front and back of a body, and asked to “mark in on the charts” the location of their pains.<sup>46</sup> Different colours were used for different types (“feels”) of pain, and patients were asked which of the pains would he or she most want to be removed. Palmer’s idea was favourably reviewed in the *Lancet*. The editors of that journal observed that the map was useful because pain was “the most difficult to symptoms to interpret”. Not only were there a “great variation in patients’ reactions to it”, but also “many people find it hard to describe its location and other characteristics”.<sup>47</sup> Pain maps were the solution.

There was, perhaps, another reason why Palmer’s pain maps proved appealing. The clue is in the subtitle of his article: “A Description of a Technique Whereby Functional Pain May Be Diagnosed from Organic Pain”. In other words, “pain maps” were intended to allow physicians to distinguish between pain that was the result of “an organic lesion of the tissues” and pain that was due to a “functional nervous disorder”.<sup>48</sup> This was a crucial difference since organic lesions were of considerable higher status than functional disorders, which were always accompanied by suspicion about whether they were “real” pain. In interpreting their patient’s “pain

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<sup>46</sup> Harold Palmer, “Pain Charts. A Description of a Technique Whereby Functional Pain May Be Diagnosed from Organic Pain”, *New Zealand Medical Journal*, xlviii (1949), 187.

<sup>47</sup> “Mapping of Pain”, *The Lancet* (2 July 1949), 20.

<sup>48</sup> Harold Palmer, “Pain Charts. A Description of a Technique Whereby Functional Pain May Be Diagnosed from Organic Pain”, *New Zealand Medical Journal*, xlviii (1949), 187.

maps”, physicians were taught that patients who sketched non-symmetry regions of pain were likely to be suffering “real” pain; those who shaded in symmetrical regions of sensitivity or ill-ease should be suspected of functional nervous disorders. Palmer even marveled over the fact that “this symmetry is sometimes depicted with almost artistic fidelity” – a decidedly suspicious attribute.<sup>49</sup> Again, this was a long way from the earlier physicians discussed in this chapter, for whom the greater the suffering, the more extreme would be its facial and gestural manifestations.

In this way, “pain maps” echoed wider clinical opinions that the more elaborate or “artistic” representations of pain, the greater the likelihood of hysteria or feigning. This was summed up succinctly by George Engel, the psychiatrist who formulated the highly influential biopsychosocial model of illness. In 1959, Engel advised clinicians that elaborate patient descriptions of pain increased the chance that they were “reflections of the degree to which the pain is entering in psychic function in a more complicated fashion, now serving purposes far beyond the simple nociceptive function”.<sup>50</sup>

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<sup>49</sup> Harold Palmer, “Pain Charts. A Description of a Technique Whereby Functional Pain May Be Diagnosed from Organic Pain”, *New Zealand Medical Journal*, xlviii (1949), 188.

<sup>50</sup> George L. Engel, “‘Psychogenic’ Pain and the Pain-Prone Patient”, *American Journal of Medicine*, 26 (June 1959), 9034. A very similar argument was made by E. Guttmann and W. Mayor-Gross, “The Psychology of Pain”, *The Lancet* (20 February 1943), 225. For a more lengthy discussion, see my book *The Story of Pain: From Prayer to Painkillers* (Oxford: Oxford University Press, 2014).

The strongly normative component of the “pain maps” was typical of the geographical model of pain representations more generally. In the words of Allan Walters, the President of the Canadian Neurological Society, writing in 1961, psychogenic pains could be identified because they “travel in quite unanatomical directions; may stab or shoot through; may flit about; or may be felt all over”. In cases of psychogenic pains, he observed that the “boundaries of a region in pain are as independent of the physical innervation of those parts as a London fog is indifferent to borough boundaries or traffic routes”.<sup>51</sup> Such pains were not only less “real”, they were unruly as well.

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In the 1970s, however, medical texts began, once again, to show an interest in facial expressions, although not in gestures (which earlier generations of physicians had paid attention to). This was driven in part by evolutionary debates, including the renewed interest in Charles Darwin’s 1872 classic *The Expression of the Emotions in Man and Animals* (which reproduced some of Duchenne’s photographs).<sup>52</sup> It was also influenced by new psychological research claiming that facial expressions of the

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<sup>51</sup> Allan Walters, “Psychogenic Regional Pain Alias Hysterical Pain”, *Brain. A Journal of Neurology*, 84.1 (March 1961), 6-7.

<sup>52</sup> Charles Darwin, *The Expression of the Emotions in Man and Animals* (New York: D. Appleton and Co., 1899).

“core emotions” were universal. Particularly influential were psychologist Paul Ekman and his collaborators who, from the 1970s, photographed and analysed emotional expressions from all over the world. These photographs were eventually used to develop the Facial Action Coding System (FACS). FACS allowed any facial expression to be described in terms of the 46 unique actions the face is capable of making.<sup>53</sup> According to Ekman, facial expressions were universal, although there were variations based on culturally-diverse display rules.<sup>54</sup> The research concluded that the core expressions of pain involved brow lowering, eye closure, orbit tightening (that is, narrowing of the eyelids and raising the cheeks), and levator contraction (that is, upper-lip raising and perhaps wrinkles at the side of the nose).<sup>55</sup>

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<sup>53</sup> Paul Ekman, *The Facial Action Coding System: Investigator's Guide* (Palo Alto: Consulting Psychologists Press, 1978).

<sup>54</sup> Paul Ekman, Wallace V. Friesen, and Silvan S. Tomkins, “Facial Affect Scoring Technique: A First Validity Study”, *Semiotica*, 3.1 (1971), 37-58; Paul Ekman, “Duchenne and Facial Expression of Emotion”, in G. B. Duchenne de Boulogne, *The Mechanism of Human Facial Expression*, edited and translated by R. Andrew Cuthberton (Cambridge, 1990), 282; Paul Ekman and Wallace V. Friesen, “Constants Across Cultures in the Face and Emotion”, in Henry Clay Lindgren (ed.), *Contemporary Research in Social Psychology. A Book of Readings*, second edition (New York, 1973), 336-47.

<sup>55</sup> Miriam Kunz, Kenneth Prkachin, and Stefan Lautenbacher, “The Smile of Pain”, *Pain*, 145 (2009), 274.



Widespread adoption of such views reignited interest in “reading” pained faces. This was seen as particularly pressing in the context of infants, comatose or unconscious patients, the physically and mentally impaired, and nonhuman animals. As with the “pain maps”, these visual representations of pain were quickly used to adjudicate on the reality of verbal declarations of pain.<sup>56</sup> Importantly, while Bell had assumed that facial expression of pain encouraged sympathy, these physicians argued the opposite. In “Expressing Pain: The Communication and Interpretation of Facial Pain Signals”, published in the *Journal of Nonverbal Behavior* in 1995, Kenneth M. Prkachin and Kenneth D. Craig cited research that purported to show that pained faces were counterproductive in clinical encounters. Work by F. J. Keefe and J. Dunsmore suggested that “conscious efforts to communicate pain through guarded movements, facial expressions, or extreme ratings of pain” actually “upset and even enrage clinicians”.<sup>57</sup> Prkachin and Craig observed that

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<sup>56</sup> Marilyn L. Hill and Kenneth D. Craig, “Detecting Deception in Pain Expressions: The Structure of Genuine and Deceptive Facial Displays”, *Pain*, 98 (2002), 136 and 141 and Kenneth M. Prkachin and Kenneth D. Craig, “Expressing Pain: The Communication and Interpretation of Facial Pain Signals”, *Journal of Nonverbal Behavior*, 19.4 (winter 1995), 198-99.

<sup>57</sup> Kenneth M. Prkachin and Kenneth D. Craig, “Expressing Pain: The Communication and Interpretation of Facial Pain Signals”, *Journal of Nonverbal Behavior*, 19.4 (winter 1995), 202. They were citing the work of F. J. Keefe and J. Dunsmore, “Pain Behavior: Concepts and Controversies”, *APS Journal*, 1 (1992), 97.

Clinicians, adjudicators, insurance investigators, and family members often propose that the financial or social consequences of pain displays, rather than the experience of suffering, represent their true source.

This was why clinicians should be aware of “nonverbal leakage” in pained facial expressions or the “display of signals that betray the true underlying state”.<sup>58</sup>

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So far in this chapter, I have argued that from the nineteenth century to the late twentieth century, visual representations of pain became less common in medical texts. Unlike the lavish attention paid by surgeons like Bell to facial expressions, later authors tended to use schematic images of bodies where, if they did include faces, were almost always expressionless. When facial expressions did return to medical textbooks in the 1970s, they were primarily used to “see” the pain of speechless human and nonhuman animals. They also contained an element of suspicion about the veracity of patient’s complaints.

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<sup>58</sup> Kenneth M. Prkachin and Kenneth D. Craig, “Expressing Pain: The Communication and Interpretation of Facial Pain Signals”, *Journal of Nonverbal Behavior*, 19.4 (winter 1995), 195.

There is one major exception to this history of visualization of pain, however, and that is when physicians turned their analysis to phantom pain. Unlike other forms of pain, when physicians represented phantom limb pain, they not only cited rich metaphoric descriptions by patients and reproduced complex localization images, but they also included stylized attempts to visually depict “what pain actually *feels* like”.

In some aspects, visual depictions of phantom pain conformed to those used to visualize other forms of pain. Physicians drew “pain maps” of phantom pain, following the tradition of localization, with the painful areas shaded in.<sup>59</sup> Medical journals also reproduce photographs of sufferers of phantom pain, largely inexpressive: the diagnostic label of “phantom limb” was itself intended to “stand in” for suffering.<sup>60</sup> There were also images evoking Leonardo da Vinci’s Vitruvian Man, with discussions about equilibrium.<sup>61</sup>

However, in addition to these visualizations, there are images that are not present in other artistic/clinical representations of pain, that is, medical writers also attempt to visualize *what this kind of pain actually feels like*. In other words, the only

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<sup>59</sup> For example, see Ed Lee and Kevin Donovan, “Reactivation of Phantom Limb Pain After Combined Interscalene Brachial Plexus Block and General Anesthesia: Successful Treatment with Intravenous Lidocaine”, *Anesthesiology*, 82 (1995), 296.

<sup>60</sup> For example, see Julius Hoffman, “Facial Phantom Phenomenon”, *Journal of Nervous and Mental Disease*, 122.2 (August 1955), 144.

<sup>61</sup> Leon Gillis, “Pain in Phantom Limb”, *British Medical Journal* (5 June 1948), 1108.

times physicians visually reproduce what pain *feels* like is when the body is absent altogether, that is, with phantom limb pain.

There are some striking things to observe when looking at these visualizations of phantom limbs. Most importantly, these visualizations are about *pain*. In other words, they are not representations of responses to pain (as in facial expressions) but are metaphors for pain as an agent in its own right. The earliest twentieth-century example I have found is in the 1955 edition of the journal *Artificial Limbs*, where Verne T. Inman and Howard D. Eberhart provide a lengthy study of lower limb amputations. Not only do they record patient descriptions of phantom limb pain, but they also reproduce them. Visually, there are images of “telescoping” (that is, a sensation as if the foot was close to the upper thigh), toes growing out of the stump, and ants walking over the absent limb. The images also show the absent limb being stabbed with a red hot poker, rudely prodded with a finger, and hit with a hammer. (See Illustration 9) **[INSERT FIGURE 9 HERE]** As Inman and Eberhart noted, amputees routinely used “language akin to that of the torture chamber” and they speculated that since “the tearing and squeezing sensations are felt in a part of the body known to be missing”, this meant that “the suffering is heightened”. In other words, the amputee’s “imagery” was actually “made *more* vivid by the ghostly character of the phantom”.<sup>62</sup>

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<sup>62</sup> Verne T. Inman and Howard D. Eberhart, “The Lower-Extremity Clinical Study – Its Background and Objectives”, *Artificial Limbs*, 2.1 (1955), 15-20. Emphasis added.

In 1989, Richard A. Sherman used similar metaphors for the pain of phantom limbs. Like Inman and Eberhart, Sherman had considerable experience working with patients suffering from phantom limb pain: he was the head of the Psychophysiology and Biostatistics Service at the Fitzsimmons Army Medical Center in Aurora (Colorado). They drew on influential theories about phantom limbs that explain the phenomenon as arising out of attempts by the brain to “maintain the body image and scheme gestalt” of the “whole” body (as Julius Hoffman put it as early as 1955),<sup>63</sup> Sherman pictured a homunculus in the brain, representing visually on a scale model the relative space that the bodily limbs and other parts occupy on the somatosensory cortex and motor cortex. His illustrations also made explicit reference to the Gate Control Theory of pain. This theory was introduced by Ronald Melzack and Patrick Wall in 1965 and postulated that there was a “gating mechanism” in the dorsal horns of the spinal cord that allowed the perception of pain to be modified.<sup>64</sup> Crucially, the Gate Control Theory insisted that sensory, cognitive, affective, and motivational processes influenced people’s experience of pain. In Sherman’s visual depictions of phantom pain, then, he sketched in the sensory Homunculus which was influenced by “Interpretation” (attention, beliefs, attitudes), “Magnification” (anxiety, stress, depression), and finally to the lightning rod of painful “Intensification”. Crucially, though, Sherman visualized the feeling of pain itself as a knife that stabs, a fire that burns, an electrical current or lightning that shocks, and a vice that is too tight. (See

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<sup>63</sup> Julius Hoffman, “Facial Phantom Phenomenon”, *Journal of Nervous and Mental Disease*, 122.2 (August 1955), 147.

<sup>64</sup> Ronald Melzack and Patrick Wall, “Pain Mechanisms: A New Theory”, *Science*, 150.3699 (19 November 1965), 971-79.

Illustration 10). [INSERT FIGURE 10 HERE] These are graphic metaphors, but the depiction of the patient lacks facial expressions or even gestures: the young man sits placidly, obediently.<sup>65</sup>

Part of the reason for the willingness of physicians dealing with phantom pain to attempt to visualize sensation is because this kind of pain issued a severe challenge to the mind/body split. Phantom limbs could not be understood outside of the realm of a whole person, rather than an experience divided into pain/body and suffering/mind components.

The timing of this shift is significant. Visualizations of phantom pain can only be understood in relation to the longstanding debates about the nature of pain. When Charles Bell was publishing his sketches, humoral conceptions of the body were still dominant. Indeed, Bell was influential in the shift from conceiving of the body-in-pain as one in which pain was fluid, moving in the hollow spaces of the body to one which focused on the way specific nerve fibers responded to noxious stimuli. Bell was the first scientist to identify the difference between sensory and motor nerves, making him the founder of clinical neurology. This also meant that his ideas were to

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<sup>65</sup> Richard A. Sherman, "Stump and Phantom Limb Pain", *Neurologic Clinics*, 7.2 (May 1989), 249-64. In his notes, readers are told that the figure was originally drawn by Lianne Ruppel of the Eisenhower Army Medical Center based on sketches by the author and modified for this article by Karen Wyatt of Fitzsimmons Army Medical Center. Attempts were made to contact these people but we received no reply.

become important about debates about the localization of pain, which was crucial for the specificity theory of pain.

Phantom limb pain cut through such ideas and proved a perfect case study for Ronald Melzack's and Patrick Wall's 1965 Gate Control Theory of pain, which postulated that there was a gate-like mechanism capable of modulating pain signals prior to perception. Pain was sensory, affective, and cognitive. Indeed, as Ronald Malzack put it in his 1989 article entitled "Phantom Limbs, the Self, and the Brain",

The phantom represents the normal experience of the body. It is not a pathological entity due to a psychological aberration, or due to an abnormal functioning of the brain. It is the body we always feel.... It is evident that our experience of the body can occur without a body at all. We don't need a body to feel a body.<sup>66</sup>

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To conclude: pain is the phantom, haunting medical textbooks. Despite the fact that pain is of intense anxiety, even terror, for most people who see physicians, it is remarkable how little attention is paid to it in clinical writings. Visual

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<sup>66</sup> Ronald Melzack, "Phantom Limbs, the Self, and the Brain", *Canadian Psychology*, 30 (1989), 4.

representations of pain are even rarer. They were relatively more common in the nineteenth century, however, becoming increasingly rare during the move from personal medicine, to hospital and then laboratory medicine. In the modern period, the one exception to this “thinning” of visual representations of pain is when physicians turned to phantom limb pain. This kind of suffering issued a challenge to mind/body dichotomies. There *was no* material object capable of reacting either to Charles Bell’s scalpel or to Rene Leriche’s hand. As Leriche put it, there was simply “nothing to be seen”. Faced with the phantom whose presence couldn’t be doubted, the kinesthetic and synesthetic powers of physicians were awakened; the phantom had to be visualized, and tamed.