

# The strange case of Phineas Gage

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## ABSTRACT

The 19th-century story of Phineas Gage is much quoted in neuroscientific literature as the first recorded case in which personality change (from polite and sociable to psychopathic) occurred after damage to the brain. In this article I contest this interpretation. From a close examination of the story of Gage I have come to conclude that first of all there was nothing psychopathic in Gage's behavior and that changes in his life are more coherently explained by seeing them as his way of dealing with disfigurement that he suffered after the accident. This is not just a matter of reinterpreting a case. The way Gage has been presented and discussed in neuroscientific literature suggests that the new paradigm of neuroscientifically oriented psychiatry may lead to an erosion of clinical knowledge.

*Key words* brain damage, clinical experience, disfigurement, neurosciences

## INTRODUCTION

In 1861 the second edition of Wilhelm Griesinger's immensely influential *Mental Pathology and Therapeutics* appeared. Within a few years it was translated into French and English and it became one of the most read psychiatric texts for decades (Griesinger, 1867). In this work, Griesinger expounded his doctrine of mental illness as an illness of the brain. It became taken for granted that the exploration of the brain would give answers to the mystery

of mental illness and the following few decades saw a vast neuropathological hunt for brain lesions or abnormalities that would be responsible for the onset of madness; it drew a blank. At the turn of the century, Emil Kraepelin's classification of mental illness and his clinical approach supplanted Griesinger's brain doctrine, first in Germany and then throughout Europe (although not with equal speed and not without resistance), and studies on the link between brain and mental illness declined. However, recent theoretical developments in the neurosciences and new advances in neuroimaging techniques have revived interest in the old doctrine and a great deal of research is being carried out. But clear-cut evidence linking some detectable brain states with mental symptoms remains desperately elusive. Another plank of the 'mental illness is an illness of the brain' argument rests on observations of people with brain damage. In recent years the most frequently quoted is the 19th-century case of Phineas Gage, the first in which, it is argued, we can see how damage to the brain led to changes in the personality.

The story of Phineas Gage, a man who survived apparently intact after a massive iron rod pierced his head, has been discussed intermittently ever since the terrible accident in 1848. The first report on the case before a medical audience was published three months after it took place. It was prepared by John Harlow, the doctor who aided Gage's recovery. The second report was prepared by Henry Bigelow, a Harvard surgeon who had Gage under his care for purposes of observation over a period of two months, a little over a year later. The third report, again by John Harlow, was prepared seven years after Gage's death. In it, he included all the material from the first report and recounted Gage's subsequent life. Harlow based his account on information that he had obtained from Gage's family. Harlow's second account is the most quoted; the crucial three paragraphs of 831 words (see Appendix) describe Gage's behaviour immediately after the injury and tell us how Gage's life subsequently unfolded. These 831 words are not the only material permitting speculation on Gage's condition, for Bigelow's account also contains information relevant to an understanding of the case.<sup>1</sup>

These three reports are the only ones that are based on first-hand dealings with Gage. However, they were buried in professional journals, and most of the subsequent descriptions of Gage were based on hearsay. Some of them were quite florid; Gage was portrayed as having fits of temper when not getting his own way, as being disinclined to work, as having a reduced libido, as being an aimless drifter and so on. A typical description of him would say that before the accident Gage had been a diligent, reliable, polite and socially adept person; after his accident, he subsequently became uncaring, profane and socially inappropriate in his conduct. However, after examining closely the accounts of Phineas Gage as given by the doctors who knew him, Harlow and Bigelow, one must conclude that the supposed psychopathic traits are not evident. Here are some of the salient features of the case.

## PHINEAS GAGE: THE STORY (1)

The fateful day was 13 September 1848. Phineas Gage was a 25-year-old man working for a rail-building company; he was foreman of a gang of men employed in blowing away rock to clear the way for a new stretch of rail. On that day, he was laying explosives for another blast. But things went wrong. While he was tamping it with the blunt end of a sharply pointed iron bar, he got distracted and the explosive went off. The 13¼-pound iron (5.9 kg), over 3½ feet (1.05 m) long and 1¼ inch (44.45 mm) in diameter, pierced Gage's head. It entered beneath his left cheek, passed behind the eye, pierced the base of the skull, went through the front of the brain, and fell on the ground over 100 feet (30.4 m) away, covered in blood and brains.

Most extraordinarily, Gage did not even lose consciousness. He 'was thrown upon his back', exhibited 'a few convulsive motions of the extremities' (Macmillan, 2002: 415) and within a few minutes spoke. This does not seem very different from a boxer recovering after a heavy knockout. He was taken by cart to the local town. During the journey he sat erect and on arrival got out of the cart himself, with just a little assistance from his workmates. On meeting the doctor who was to attend to him, he is supposed to have said, 'Doctor, here is business enough for you', which surely rates as one of the great understatements of all time. And while the gaping wound was being dressed ('the pulsations of the brain [were] very distinct' [ibid.: 415]), Gage recounted the accident to him.

Recovery was not so straightforward. There was a period of high fevers, an abscess, but eventually the wound healed and within two months Gage was pronounced cured, but only up to a point. Otherwise, Gage was quite a different man.

The equilibrium or balance, so to speak, between his intellectual faculties and animal propensities, seems to have been destroyed. He is fitful, irreverent indulging at times in the grossest profanity (which was not previously his custom) manifesting but little deference for his fellows, impatient of restraint and advice when it conflicts with his desires, at times pertinaciously obstinate, yet capricious and vacillating, devising many plans of future operation, which are no sooner arranged than they are abandoned in turn for others appearing more feasible. A child in his intellectual capacity and manifestations, he has the animal passions of a strong man. Previous to his injury, though untrained in the schools, he possessed a well balanced mind, and was looked upon by those who knew him as a shrewd, smart businessman, very energetic and persistent in executing all his plans of operation. In this regard his mind was radically changed, so decidedly that his friends and acquaintances said he was 'no longer Gage'. (ibid.: 415)

These are the lines that give grounds for the contention that Gage changed from a likeable man and efficient worker into something of a psychopath. However, if we follow Harlow's account further, some doubts about Gage's supposed psychopathic personality emerge. His final recovery took place at his mother's place, in a small town, some 40 miles (64 km) away. This is what Harlow says about his behaviour at the time:

His [Gage's] mother, a most excellent lady, now seventy years of age, informs me that Phineas was accustomed to entertain his little nephews and nieces with the most fabulous recitals of his wonderful feats and hair-breadth escapes, without any foundation except in his fancy. He conceived a great fondness for pets and souvenirs, especially, horses and dogs – only exceeded by his attachment for his tamping iron, which was his constant companion during the remainder of his life. (ibid.: 415)

There is nothing psychopathic about this behaviour, and the remainder of Harlow's account indicates that the description of Gage as being 'fitful' and 'irreverent', indulging in the grossest profanities, pertains only to the period immediately after the accident, probably for a period of some months. He was already markedly different at his mother's. Henry Bigelow who observed Gage a year after the accident described him as calm, 'talking with composure and equanimity of the hole in his head' (Macmillan, 2002: 397). But then followed an unsettled period. Because of his unreliable behaviour Gage was not given his job back and for some time he drifted in New England. This lasted perhaps for over a year; the only event known from this period is that at one point he landed in Barnum's freak show in New York, showing off the bar that went through his head. Eventually, Gage settled down. This is evidenced by what Harlow tells us happened next, '[h]e engaged with Mr Jonathan Currier, of Hanover, New Hampshire, to work in his livery stable' (ibid.: 415). Working in stables is not a job for a psychopath. Horses are very sensitive and they require discipline and calm; they have to be attended to regularly, seven days a week, and work begins early.

After a year and a half in the stable, Gage left for Valparaiso in Chile where he was involved in setting up a coach-line. He worked in the area caring for horses and driving coaches for eight years.

Finally, this is Harlow's description of Gage's last months, taken from an account sent to him by Gage's mother:

[H]e arrived in San Francisco on or about July 1st [1860] in a feeble condition, having failed much since he left New Hampshire. He suffered much from seasickness on his passage out from Boston to Chili. [He h]ad many ill turns while in Valparaiso, especially during the last year, and suffered much from hardship and exposure. . . . [A]fter he arrived in San Francisco his health improved, and being anxious to work he engaged with a farmer in Santa Clara, but did not remain there long. In

February, 1861, while sitting at dinner he fell in a fit, and soon after he had two or three fits in succession. He had no premonition of these attacks, or any subsequent ill feeling. 'Had been ploughing the day before the first attack; got better in a few days, and continued to work in various places;' 'could not do much, changing often, and always finding something that did not suit him in every place he tried'. On the 18th of May 1861, three days before his death he left Santa Clara and went home to his mother. At 5 o'clock, A.M. on the 20th, he had a severe convulsion. The family physician was called in, and bled him. The convulsions were repeated frequently during the succeeding day and night, and he expired at 10, P.M., May 21, 1861 – twelve years, six months and eight days after the date of his injury.<sup>2</sup> (ibid.: 415)

### GAGE'S FACE

Although there is no evidence of a psychopathic personality, that is how Gage is presented and it is widely accepted that the change was the result of damage to his brain. Which parts of the brain were affected by the passage of the iron? If this could be established, we could learn something about the relation between the brain and psychopathic character traits, as some relation must obviously exist. But no autopsy was performed after Gage's death, and all that was left was the skull recovered when, at the request of Harlow, the body was exhumed, and the iron bar, which Harlow recovered from Gage's family. Only vague speculations were possible. This changed when a team of researchers undertook to study the case with modern techniques. The analysis of photographs of the skull and of the wound allowed them to re-create with modern computer techniques the most likely coordinates of the brain and work out which parts of it were damaged in the accident, and thus establish which damage 'compromised his [Gage's] ability to plan for the future, to conduct himself according to the social rules he previously had learned, and to decide on the course of action that ultimately would be most advantageous to his survival' (Damasio, 1994: 33).

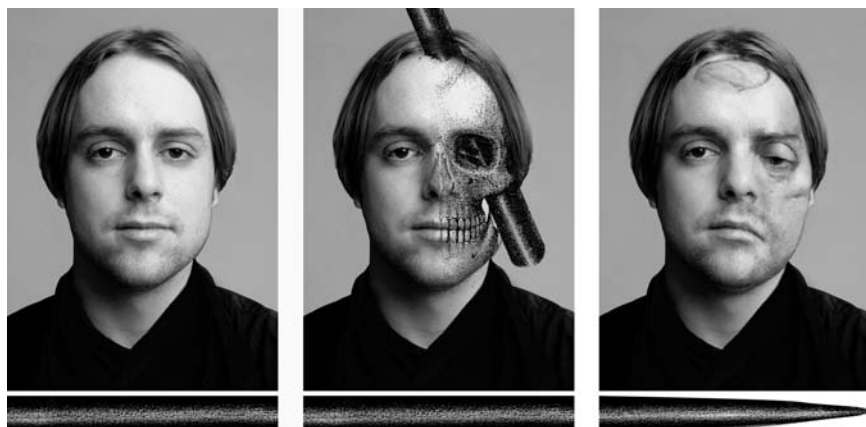
However, what is really amazing is that none of the many who comment on the case seem to have ever stopped for a moment to think what Gage might have looked like after the accident. One can imagine that a huge iron bar shooting through Gage's face must have made it quite a sight. Harlow was sufficiently struck to describe Gage's post-accident face. Here is the description:

The left side of the face is wider than the right side, the left malar bone being more prominent than its fellow. There is a linear cicatrix [scar] near the angle of the lower jaw, an inch [25.4 mm] in length. Ptosis of the left eyelid [drooping eyelid]; the globe considerably more prominent

than its fellow, but not as large as when I last saw him. Can adduct and press the globe, but cannot move it in other directions; vision lost. A linear cicatrix, length two and one-half inches [63.5 mm], from the nasal protuberance to the anterior edge of the raised fragment of the frontal bone, is quite unsightly. . . . Partial paralysis of left side of face. (Macmillan, 2002: 414)

This really seems a mess of a face. Henry Bigelow, the Harvard surgeon, who observed Gage for about two months a little over a year after the accident, also describes the face. He, too, was struck by how Gage looked, enough to arrange to have a life mask taken. As it happens, the mask does not show much, it renders the face more smooth than it really was and, most of all, it cannot portray the effects of the paralysis. But it serves well to help in an attempt to reconstruct the face. Modern techniques enable us to manipulate photographs so the features of the face can be made to look the way we want, and this is what we set out to do. A student at Goldsmiths College (Robert Lovell) agreed to 'lend' his face, which, judging from the life mask, is roughly of the same type as Gage's. He was photographed in the studio by Ivan Coleman from the College's Visual Arts Photography Department, using a Cannon D60 6 Mega Pixel SLR camera. Michael Riley of the Visual Arts Department manipulated the digital images using Adobe Photoshop CS, Adobe Illustrator CS software. He superimposed images of the life mask and the engraving of Gage's skull on to the portraits to match the size and entry of the pole. The degree of damage and the appearance were derived from the description of the face given by Harlow and Bigelow, as well as from research into imagery relating to scar tissue, trauma and fractures in medical journals.

Modern technology helps a great deal, but it proved surprisingly difficult to imagine what the face looked like when Gage first saw it. After various versions we settled for this image.



Perhaps this reconstruction has little scientific value. Certainly, we cannot be as confident of this reconstruction as neuroscientists are in establishing which parts of Gage's brain were destroyed. But nevertheless, whatever Gage's face looked like, there can be little doubt that he was dealing with disfigurement; and in this light his post-accident life begins to make perfect sense. So here is Gage's story told again.

## PHINEAS GAGE: THE STORY (2)

Phineas Gage is 25 years old. He is 5 foot 6 inches (1.6 m) tall and physically strong. He is in charge of a group of men who blast away rock to lay down railway tracks, he is popular with them, and he probably enjoys his work. He is single. Harlow does not say anything about a fiancée or sweetheart, but at his age we could expect him to have some romantic interest. At any rate, at twenty-five, in good health ('having scarcely had a day's illness from his childhood to the date of his injury' [Macmillan, 2002: 406]), he has plenty to look forward to. Then one day, bang, a massive iron bar shoots through his head. Somehow he does not even lose consciousness and remains lucid while the wound is dressed. At first he does not fully appreciate the extent of the injury for 'he hoped he was not much hurt' (ibid.: 407) and expects to be back to work within two or three days. But recovery is not immediate and it is a while before Gage starts taking stock of the situation. At one point he begins to catch the reflection of himself. Gage's heart sinks: he realizes that he is disfigured.

And then we can try to imagine how things were. First he meets his work-mates. Their attitude towards him has changed; now they turn their eyes away, they are not the same easygoing fellows; and the girls do not laugh and flirt with him as they did. And if there was some lassie that he was particularly fond of, well . . . all this must be really difficult to take. Someone will look at him, and we can imagine him snapping back, 'What are you staring at, you bastard?' And there are also those who are only too ready to give advice, but giving advice to someone in Gage's predicament is a risky business. Again, we can imagine him telling them to go to hell. Very ungrateful; definitely, to 'his friends and acquaintances' he is "no longer Gage".

It is different at home, at his mother's, where the final recovery takes place. He entertains his nephews and nieces by making up fantastic stories; they must love Uncle Phineas, and they do not care about his scars. He also grows fond of pets, especially dogs and horses. Animals not only do not care about his scars, they do not even see them. Gage quickly becomes attached to them.

But the outside world of adults cannot be ignored. Gage needs to go back to work. And here comes the first tangible blow: he is not wanted back. He may have fully recovered but his employers do not like and trust him any

more. He is shown the road that leads out to the margins, to where those unwanted disfigured men and women belong, in a freak show. And this is where he ends up, showing off his wound in Barnum's Circus in New York.

This we could reasonably expect to be the beginning of the end. We could imagine that whatever money he earns in the circus he spends in rowdy taverns, drinking himself senseless to forget his terrible face and the sordid world of adults that is surrounding him. We could see him in time becoming deranged and ending in some miserable pauper house. But this is not what happens.

As we have seen, Gage finds employment in a stable. Work is hard but it is most likely Gage does not mind, he probably shuns others and keeps to himself (and who in his place wouldn't?).<sup>3</sup> It may well be that like many before him and many since, he has decided that he is better off in the company of animals than fellow humans. For the rest of his life he will work with horses. After work in the stable, Gage leaves for Chile to set up a coach-line. He is 'occupied in caring for horses, and often driving a coach heavily laden and drawn by six horses' (ibid.: 415). This means he has strength, dexterity and an excellent relationship with the animals; Gage has evidently mastered his metier.

Eight years later Gage arrives in San Francisco, where his mother has since moved. He is ill, and it is at his family's home that he recovers. As soon as he is well, he is 'anxious to work', as Harlow put it; and indeed, Gage has always earned his keep. He finds a job on a farm in Santa Clara, not far from his mother's. It has now been 12 years since the accident, he has learned to live with his disfigured face; he knows everything there is to know about handling horses and he will always find work. He is 37 and for him the horizon is beginning to open again. Maybe life still holds some promise. But it is not to be. In February 1861, while sitting at dinner, he falls into an epileptic fit, followed by two or three more. He recovers but he is not quite the same again. It seems that the fit has rattled him, '[h]e had no premonition of these attacks' (ibid.: 416). Perhaps it has brought back the memory of those dreadful days all these years back, when the world fell apart and there seemed to be no future. He becomes fretful, and begins to move from place to place. It is at this point that Harlow says that he begins to 'always [find] something that did not suit him in every place he tried' (ibid.: 416). Gage stays in the area for a while, picking up odd farming jobs. He then returns to his mother and three days later he dies.

Was this a life of a psychopath? Did he behave dismally? One neuroscientist claims that 'Gage lost something uniquely human, the ability to plan his future as a social being' (Damasio, 1994: 19). He asks, 'Did he have a sense of right and wrong?' (ibid.: 18), which is nothing short of asking whether he had a soul, and he wonders whether Gage was 'responsible for his acts' (ibid.). This is a slur on the dead man's good name. Harlow does not report a single



act that Gage should have been ashamed of, let alone made 'responsible' for. There is no mention of violence, theft, abuse; not even something as vague as 'irresponsibility'. There is coherence and dignity in the way Gage dealt with his predicament. He deserves deep respect.

### WHAT LESSONS FROM GAGE'S STORY?

In the 19th century the case of Gage was commented on, but not frequently, and usually only briefly. These comments either spoke of Gage's full recovery or claimed that after the accident he was impaired. This difference is probably due to the diverging opinions delivered by the two doctors who knew Gage. While neither suggested that Gage turned into a psychopath (both reports concentrate mostly on the medical aspects of the case), Harlow was of the opinion that Gage was impaired, Bigelow reported him as fully recovered. Here is Harlow's view:

This case has been cited as one of complete recovery, it being often said that a very considerable portion of the left cerebrum was lost, without any impairment to the intellect. I think you have been shown that the subsequent history and progress of the case only warrant us in saying that, physically, the recovery was quite complete during the four years immediately succeeding the injury, but we learn from the sequel that ultimately the patient probably succumbed to progressive disease of the brain. Mentally the recovery was only partial, his intellectual faculties being decidedly impaired, but not totally lost; nothing like dementia, but they were enfeebled in their manifestations, his mental operations being perfect in kind, but not in degree or quantity. (Macmillan, 2002: 420)

It is not certain that Harlow's description is correct. To begin with, it is very vague and devoid of any facts that would support his view. It appears that that is what Harlow *thinks* Gage was like; however, nothing of what Harlow actually tells us about Gage's life after the accident corroborates the speculation about a 'progressive disease of the brain'.

Then there is the report of the Harvard surgeon Henry Bigelow. Bigelow became interested in the case and arranged to have Gage under his care (at his own expense) for purposes of observation. Gage travelled to Boston well over a year after the accident, and stayed there for 'eight or nine weeks', Harlow tells us in his report (Macmillan, 2002: 405). Bigelow describes Gage as having 'quite recovered in his faculties of body and mind' (Macmillan, 2002: 392), as 'shrewd and intelligent' (ibid.: 391); otherwise he does not mention anything strange or unusual about Gage's behaviour and it is reasonable to assume that had he come across something noteworthy he would have reported it, because he did so in other case presentations.<sup>4</sup>

One should also bear in mind that although Harlow's account is rich in detail, it is not clear how much contact Harlow had with Gage, particularly after Gage moved to his mother in another town. What he tells us about Gage's later life, he learnt through correspondence with his family. Bigelow, on the other hand, is the only person known to have observed Gage a good time after he had recovered from the accident and to have written down his observations. During the eight or nine weeks that he had Gage in his care, he presented Gage at the Boston Society for Medical Improvement and in a medical class at the hospital; in all, he must have got to know him well, in fact, probably far better than Harlow ever really did. Bigelow judged Gage to be 'quite recovered in his faculties of body and mind' and perhaps the most prudent course would be to take the doctor's word.

And, finally, should we accept the story as Harlow tells it, without his or Bigelow's opinions, and should we have to rely on our own judgment, what kind of conclusion would we arrive at? Curiously, although the fits that ended Gage's life indicate that there was definitely something wrong with his brain, it seems that up to the time of the seizures Gage was in full possession of his wits. His life was coherent and, somehow, someone who entertains children with made-up stories, drives heavily laden coaches drawn by six horses and makes transatlantic crossings does not come across as impaired.

So what can we learn from Gage's case? There is only one event in Harlow's report that can be confidently linked with the injury; it is the epileptic attack that killed Gage. As far as lessons for our understanding of how the brain reacts to injury, the case of Phineas Gage does not tell us anything reliable. Bigelow begins his discussion of the case with the following remark:

The leading feature of the case is its improbability. A physician who holds in his hands a crowbar, three feet and a half long [1.05 m], and more than thirteen pounds [5.8 kg] in weight, will not readily believe that it has been driven with a crash through the brain of a man who is still able to walk off, talking with composure and equanimity of the hole in his head. This is the sort of accident that happens in the pantomime at the theatre, but not elsewhere. (Macmillan, 2002: 397)

And indeed, Gage's story is a fascinating one, but it is a freak case, and basing science on freak cases is not a prudent procedure.

### GAGE'S GROWING FAME

Strange cases that defy sense get forgotten,<sup>5</sup> and so was Gage. Interest in the story waned and for the best part of the 20th century he was hardly mentioned. He begins to make sporadic appearances in literature only in the 1950s, in connection, not surprisingly, with psychosurgery. But it is in the last two

decades that his stock in the neuropsychological world has risen, and the image of Gage the psychopath has emerged; he is a contemporary construct. Harlow's words telling us that the 'equilibrium or balance, so to speak, between his intellectual faculties and animal propensities, seems to have been destroyed', that he indulged 'in the grossest profanity' and that he was 'no longer Gage' are now routinely quoted, but nothing else about him is ever mentioned. In the myopic vision of the neurosciences, Phineas Gage has been reduced to a witless psychopath. It seems that the growing commitment to the frontal lobe doctrine of emotions brought Gage to the limelight and shapes how he is described. The psychopath Phineas Gage has now entered scientific folklore; according to a calculation from recent years (Macmillan, 2002: 333) some 60 per cent of psychology textbooks quote it as one of the first cases where personality change occurred after damage to the frontal lobes.

### CONCLUSION: PHINEAS GAGE AND NEUROSCIENTIFIC PSYCHIATRY

Does it really matter? One could point out that this is just a case, and that reinterpreting one case does not change much. But there still remains a puzzle. Why is there such a striking lack of sympathy for and empathy with Gage, which is so evident in all the comments? To an extent this is because most commentators still rely on hearsay and accept what others have said about Gage, namely, that after the accident he became a psychopath.<sup>6</sup> But why such a collective blindness regarding Gage's fate? After all, had he become psychopathic, that, too, could have been his reaction to becoming disfigured (which, in point of fact, was the reason this author decided to examine the case). It seems that the reasoning is as follows: with *this* kind of damage to the brain Gage *must* have been emotionally affected. Once this is accepted, the search for the precise localization of the damage begins. The face disappears. Here is a man finding it difficult to adjust after half his face has been blown away, the neuroscientist sends him to have his brain scanned to pinpoint the exact reason for his difficulties. To put the matter succinctly and perhaps a little unpalatably I would suggest that neuroscience breeds clinical insensitivity. Since in some influential quarters a merging of neurology, psychiatry and the neurosciences is advocated (Martin, 2002, for example), its consequences for clinical practice should be examined. If Gage's fate in the neuroscientific literature is indicative of what these consequences might be, then there is cause for some concern.

One could argue that neuroscientific studies will greatly enhance our understanding in other ways and that neuroscientific and clinical approaches can and should be combined. This is a frequently advanced view. However, first, it is not clear whether neuroscientific findings are really pertinent to the

clinical psychiatrist. Anguish, disorientation, confusion can be seen on a face, but they are not visible in the brain; and, we cannot speak to a brain. Second, certain paradigms have difficulties in coexisting. Neuroscience, to be true to itself, has to be hostile to clinical experience. Why should this be? It is because of an aspiration that is at the origins of neuroscience and which still animates some neuroscientific thinking, namely, the conviction that it is possible to create a science of the mind that takes no recourse to introspection, a science that will eventually eliminate all evidence judged to be subjective. This is what inspired Gall's phrenology and it has remained part of a neuroscientific make-up. All data deemed 'subjective', terms like 'empathy', 'insight', 'intuition', for example, so important in clinical work, have no place in the neuroscientific landscape; some openly seek the elimination of any such terminology from psychological language. For example, Paul Churchland, the proponent of what he calls 'eliminative materialism', has this to say:

Eliminative materialism is the thesis that our common-sense conception of psychological phenomena constitutes a radically false theory, a theory so fundamentally defective that both the principles and the ontology of that theory will eventually be displaced, rather than smoothly reduced, by completed neuroscience. (Churchland, 1990: 206)

From this point of view it is quite consistent to argue that one can treat the mentally ill without any knowledge of, or interest in, their subjective state of mind, as these will be eliminated by completed neuroscience.

This is the direction in which the neuroscientifically driven psychiatry seems to be heading. Although knowledge about neurotransmitters is clearly of great use to pharmacologists, its pertinence for a clinical psychiatrist is yet to be demonstrated; yet this is increasingly becoming the core teaching on psychiatry courses and the experience of past clinicians is being swept away. There are no more stories to be told, no faces to be looked at. Neuroscientific knowledge and clinical sensitivity are so difficult to reconcile because there seems to be some principle involved, almost like a law of physics – one cannot see the brain and the person at the same time; as soon as the brain flickers on the screen, an inoperable cataract falls over the clinical eye.<sup>7</sup>

And while we ponder whether psychopathy has something to do with the frontal lobes or not, we forget that Phineas Gage could have been helped. This would not have required brilliant clinical expertise. Nor, for example, would knowledge of sophisticated psychoanalytic techniques have been necessary, as the reasons for Gage's difficulties were all too visible. Although he had a shredded lobe, it was his disfigured face that caused him anguish. So in this case, it would just have been a matter of being sensitive to the man. Possibly some plastic surgery could have remedied the situation (although the success of it would have been limited because of the paralysis). Chemical aid could

have been called for, some good ale, for example; perhaps for a while carefully dosed laudanum could have been given which would have calmed Gage down and helped him with the pain. Some counselling, particularly in the first months after the accident, could also have been of help. Someone could have spoken to his employers and explained that Gage's behaviour was a shock reaction to his new and awful predicament, and that if given back the job (no harm in doing so on a trial basis) he might have mended his ways. Then, who knows, maybe Gage could have remained in his community. But none of this happened. In the event Gage found his own solutions. As for the epileptic attack that killed him, nobody could have done anything about it.

## APPENDIX

These are the few paragraphs from Harlow's report that recount how Gage changed after the accident and how his subsequent life unfolded. It is reproduced here without any omissions and in the order of the original text (italics are also in the original). The facsimile of the report can be found in Macmillan's *An Odd Kind of Fame* on pages 414–17; the original was published as 'Recovery from a Passage of an Iron Bar through the Head', *Publications of the Massachusetts Medical Society* 2 (1968): 327–47.

His physical health is good, and I am inclined to say that he has recovered. Has no pain in head, but says he has a queer feeling which he is not able to describe. Applied for his situation as foreman, but is undecided whether to work or travel. His contractors, who regarded him as a most efficient and capable foreman in their employ previous to his injury, considered the change in his mind so marked that they could not give him his place again. The equilibrium or balance, so to speak, between his intellectual faculties and animal propensities, seems to have been destroyed. He is fitful, irreverent indulging at times in the grossest profanity (which was not previously his custom) manifesting but little deference for his fellows, impatient of restraint and advice when it conflicts with his desires, at time pertinaciously obstinate, yet capricious and vacillating, devising many plans of future operation, which are no sooner arranged than they are abandoned in turn for others appearing more feasible. A child in his intellectual capacity and manifestations, he has the animal passions of a strong man. Previous to his injury, though untrained in the schools, he possessed a well balanced mind, and was looked upon by those who knew him as a shrewd, smart businessman, very energetic and persistent in executing all his plans of operation. In this regard his mind was radically changed, so decidedly that his friends and acquaintances said he was 'no longer Gage'.

His mother, a most excellent lady, now seventy years of age, informs me that Phineas was accustomed to entertain his little nephews and nieces with the most fabulous recitals of his wonderful feats and hair-breadth escapes, without any foundation except in his fancy. He conceived a great fondness for pets and souvenirs, especially, horses and dogs – only exceeded by his attachment for his tamping iron, which was his constant companion during the remainder of his life. He took to travelling, and visited Boston, most of the larger New England towns, and New York, remaining awhile in the latter place at Barnum's, with his iron. In 1851 he engaged with Mr Jonathan Currier, of Hanover, New Hampshire, to work in his livery stable. He remained there, without any interruption from ill health, for nearly or quite a year and a half.

In August, 1852, nearly four years after his injury, he turned his back upon New England, never to return. He engaged with a man who was going to Chili, South America, to establish a line of coaches at Valparaiso. He remained in Chili until July, 1860, nearly eight years, in the vicinity of Valparaiso and Santiago, occupied in caring for horses, and often driving a coach heavily laden and drawn by six horses. In 1859 and '60 his health began to fail, and in the beginning of the latter year he had a long illness, the precise nature of which, I have never been able to learn. Not recovering fully, he decided to try a change of climate, and in June, 1860, left Valparaiso for San Francisco, where his mother and sister resided. The former writes that 'he arrived in San Francisco on or about July 1st in a feeble condition, having failed much since he left New Hampshire. He suffered much from seasickness on his passage out from Boston to Chili. Had many ill turns while in Valparaiso, especially during the last year, and suffered much from hardship and exposure'.

After leaving South America, I lost all trace of him, and had well nigh abandoned all expectation of ever hearing from him again. As good fortune would have it, however, in July, 1866, I was able to learn the address of his mother, and very soon commenced a correspondence with her and her excellent son-in-law, D. D. Shattuck, Esq., a leading merchant in San Francisco. From them I learned that Gage was dead – after he arrived in San Francisco his health improved, and being anxious to work he engaged with a farmer in Santa Clara, but did not remain there long. In February, 1861, while sitting at dinner he fell in a fit, and soon after he had two or three fits in succession. He had no premonition of these attacks, or any subsequent ill feeling. 'Had been ploughing the day before the first attack; got better in a few days, and continued to work in *various places*;' 'could not do much, *changing often*, and always finding something that did not suit him in every place he tried'. On the 18th of May 1861, three days before his death he left

Santa Clara and went home to his mother. At 5 o'clock, A.M. on the 20th, he had a severe convulsion. The family physician was called in, and bled him. The convulsions were repeated frequently during the succeeding day and night, and he expired at 10, P.M., May 21, 1861 – twelve years, six months and eight days after the date of his injury.

## NOTES

- 1 Recently Phineas Gage has been minutely researched by Malcolm Macmillan, and all the relevant information about Gage is now available in one volume (Macmillan, 2002). Macmillan scoured all the sources and commentaries on the case and as far as material regarding Gage is concerned this must be a definitive work. I will draw on information included in it and will base discussion of the literature on Gage on it. The volume also includes facsimiles of the three original accounts of the accident and Gage's recovery. All references will be made to pagination in Macmillan.
- 2 Macmillan checked various documents, such as Gage's birth certificate and entry in the parish records and concludes that in fact Gage died 11½, not 12½ years, after the accident (Macmillan, 2002: 94). This correction does not affect anything in this discussion of the case.
- 3 Macmillan scoured all local newspapers of towns in which Gage is thought to have stayed, he also looked at diaries of citizens of those towns, in brief, he looked at anything he could lay his hands on, but found no mention of Gage. This would confirm that he kept to himself (that is, assuming that Gage did stay in the localities in which Macmillan carried out his research).
- 4 In comments on another case of a head injury, Bigelow pays attention to the psychological state of the patient and gives quite a detailed account of the man's somewhat impoverished responses.

When addressed, his expression was intelligent and singularly present. He evidently apprehended what was said to him, but rarely replied in words. His habitual reply on such occasions was 'mais, oui', and this, with the word 'tabac', of which article he was very fond, seemed to constitute his vocabulary. There could be no question that this was a case of what has been called aphasia. As far as could be judged, his intellectual functions were not disturbed. Being brought to a new city, he showed within a few days a singular faculty of finding his way home, through the streets, and from long distances, unaided. (Macmillan, 2002: 441)

Had Gage exhibited some unusual behaviour, there seems little doubt that Bigelow would have reported it. (It is also interesting to note how little about aphasia was then understood as the patient discussed could have well been a case of aphasia. [Bigelow wrote this in 1849, Paul Broca presented the famous case of 'Tan' in 1861].)

- 5 A good example of how strange cases that defy sense are forgotten are the hydrocephalus cases that the Sheffield neurologist John Lorber examined a quarter of

a century ago. One student of mathematics, who obtained a first and was socially completely normal, had 'virtually no brain'. 'I can't say whether the mathematics student has a brain of 50 grams or 150 grams, but it's clear that it is nowhere near the normal 1.5 kilograms' (Lewin, 1980: 1232).

- 6 Antonio Damasio is the principal perpetrator of the myth of Gage the psychopath, which he presented in his widely read work *Descartes' Error* (Damasio, 1994). He tells us that in recounting the case he is following the account of Harlow, which he finds 'a trustworthy text, with an abundance of facts and a minimum of interpretation' (ibid.: 7), but still, Damasio changes the narrative, omits facts, and adds freely to his story. In effect, the psychopathic Gage that emerges from his description is quite a different man from the one Harlow describes. Here are some of the omissions and embellishments. Damasio fails to tell us about Gage's way with his nephews and nieces. Entertaining children with fabulous stories does not seem usual behaviour for a psychopath, which is probably why we are not told about it. He does, however, note the fact that Gage never parted with the iron and detects signs of pathology in this:

Harlow states that the iron was a constant companion, and points out Gage's strong attachment to objects and animals, which was new and somewhat out of the ordinary. This trait, which we might call 'collector's behavior', is something I have seen in patients who have suffered injuries like Gage's, as well as autistic individuals. (ibid.: 9)

Damasio has since become very interested in this newly identified 'collector's behaviour' and recently co-authored an article in which further 'modern Gage-like patients' exhibiting this symptom are reported (Anderson *et al.*: 2005).

Damasio also fails to tell the reader about Gage's job in the stable, or about his involvement in setting up a coach-line in Chile, instead we are told that 'he may have worked on horse farms' (1994: 9). As for his account of Gage's last months, after his return from Valparaíso to San Francisco, it is such a grotesque fabrication that it leaves one baffled:

In my mind is a picture of 1860's San Francisco as a bustling place, full of adventurous entrepreneurs engaged in mining, farming, and shipping. That is where we can find Gage's mother and sister, the latter married to a prosperous San Francisco merchant (D. D. Shattuck, Esquire), and that is where the old Phineas Gage might have belonged. But that is not where we would find him if we could travel back in time. We would probably find him drinking and brawling in a questionable district, not conversing with the captains of commerce, as astonished as anybody when the fault would slip and the earth would shake threateningly. He had joined the tableau of dispirited people who, as Nathanael West would put it decades later, and a few hundred miles to the south, 'had come to California to die'. (Damasio, 1994: 9)

This little literary flourish is pure invention. There is nothing in Harlow's account that would suggest as much as a single brawl, drunken or not. What Harlow is telling us is clear and unambiguous: Gage returns from South America to his mother to recuperate. As soon as he is fit, he goes back to work with horses, which is what he has been doing for years. He falls ill and, when the end is near,



he returns home to his mother. And this is where he dies. There is something callous in insinuating that Gage was some riff-raff who in his final days headed for California to drink and brawl himself to death.

- 7 I borrow this striking expression from the psychoanalyst Paul-Laurent Assoun, who used it in the context of the effect of DSM on clinical practice (Assoun, 2001: 21).

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## BIOGRAPHICAL NOTE

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