

## ALPHA PRIVATIVE

[...]

Neuro-scientific writing is the realm of lacuna. Not only is lacuna an important object of interest for neuroscientists (in whatever form of impairment – be it linguistic or physical), but lacuna is the main source – and was for a long time the sole source – of neuro-scientific knowledge (today, research can count on such a revolutionary technique as brain-imaging – fMRI and PET). To read neuroscience means fundamentally to become acquainted with deficits.<sup>1</sup>

A literal lacuna in some poor devil's brain gave a tremendous impulse to the emergence of the discipline. The fellow is by now a legendary figure. His name is Phineas Gage. He was the foreman of a railway construction gang preparing the bed for the Rutland and Burlington Rail Road near Cavendish, Vermont. On September 13, 1848, an accidental explosion of a charge he had set blew his tamping iron through his head (the iron bar was then deposited in the Museum of the Medical College of Harvard University. An image of it is reproduced on the website: [www.deakin.edu.au/hbs/GAGEPAGE/Pgstory.htm](http://www.deakin.edu.au/hbs/GAGEPAGE/Pgstory.htm)). The front section of Phineas' brain was destroyed, but he – amazingly enough – did not die. He did not even lose consciousness. Actually, he recovered quite soon and was still pretty much the man he had always been. Pretty much, not entirely. That gone piece of brain must have been in its original location for some purpose. While his linguistic and intellectual functions had not been altered by the transfixing iron, Phineas' personality was no longer the same. He now was strangely rude and aggressive. Thanks to such an unexpected change, a direct link could be established for the first time between the brain and behavior.

The damage of Phineas' brain is but the most spectacular of the numerous misadventures that can occur to our brains. Dysfunctions and disorders of all sorts menace cerebral integrity, causing most bizarre impairments in personality, perception, linguistic ability, memory, and physical aptitude. It's not necessary to get Alzheimer's to

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<sup>1</sup> "Neurology's favourite word is 'deficit'" is the incipit of Oliver Sacks' celebrated book *The Man Who Took His Wife for a Hat*.

become aware that memory does not always live up to our demands. Daniel L. Schacter wrote a book on the seven sins of memory (transience, absent-mindedness and blocking are the sins of omission; misattribution, suggestibility, bias and persistence – the opposite of transience – are the sins of commission). “Our memory systems – he notes (p. 11) – encode information selectively and efficiently rather than indiscriminately storing details.” Why our memories are not more capacious is another question – which we should leave to evolutionary scientists to answer (apparently, human memory forgets in order to adapt to new experiences and stay open to novelty).<sup>2</sup>

Four words of Greek origin cover more or less thoroughly the semantic field of cerebral deletion: aphasia, agnosia, apraxia and amnesia. Each designates a composite spectrum of neurological deficits. In my readings, I came across at least five types of aphasia.

Agnosia can be divided into several forms of visual impairment (see Martha J. Farah, *Visual Agnosia*, Cambridge, Mass, London, England, the MIT Press, 2004.). A good example of agnosia is to be found in Edgar Allan Poe’s *The Purloined Letter*. The letter is there, in front of everybody, but nobody can see it. Agnosia may also designate a sort of semantic knowledge impairment. For example, there are people who do not know how to discriminate living from non living things.

Apraxia is a collective term used to describe impairment in carrying out purposeful movements. Apraxia may also primarily affect oral, non-speech movements, like pretending to cough or blow out a candle (facial apraxia). This disorder may even extend to the inability to manipulate real objects.

There are at least as many types of amnesia as memories. Amnesia may affect episodic, semantic, or procedural memory. Some people do not remember specific events of their lives, like a certain summer at the sea-side (episodic memory). Others forget the meaning of as common words as America or banana (semantic memory). Others cease to know how to perform some normal activities, like putting the spoon into their mouth in order to eat or brushing their teeth (procedural memory).

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<sup>2</sup> See J. R. Anderson & L. J. Schooler, “Reflections of the Environment in Memory,” *Psychological Science*, 2, 1991, pp. 396-408.

Some syndromes appear quite bizarre. Sufferers of Capgras' delusion believe that a close relative or friend has been replaced by an impostor, an exact double, despite recognition of familiarity in appearance and behavior. Patients of Cotard's syndrome believe they are dead, walking corpses. Brain damage in the right place can disconnect the left hand (controlled by the right cerebral hemisphere), leaving the left hand without conscious control and the person at the mercy of the unconscious whims of the right hemisphere (Alien Hand Syndrome). Misidentifying a person as someone he is not occurs to patients of Fregoli Syndrome. Such patients tend to see the same person everywhere he looks – something demonstrated in that marvelous film, *Being John Malcovich*.

Following certain kinds of brain lesions, patients report an inability to see objects, but if pressed to guess at their location they display a capacity to point at them with reasonable accuracy. The phenomenon, called “blindsight”, is one of the more dramatic of a number of lines of evidence suggesting that being aware of doing something is distinguishable from doing something.

So far, I have only mentioned pathological deficits. To be sure, defenders of literature as malady would find a great deal of theoretical support in such examples. In fact, lacunae and deletions are part and parcel of the *normal* development and functioning of our neural system. Elimination is essential in working memory processes (or short term memory – i. e. the actual contents of consciousness). Because we cannot encode and store everything we perceive, we eliminate a lot. More gets eliminated in the subsequent phase of memory consolidation. Attention – i. e. the core of human consciousness – stems from selection (see further down).

When we are born, we have billions of synapses more than we do need. These synapses represent all the possible worlds in which we may end up. What happens then? The unused synapses get eliminated. Neuro-scientists call this elimination neural pruning – a rather poetic phrase.

Cell death is another case in point. “Removal of molecules, remodelling of cell structures, weakening of neuronal connections, and *even cell death are also used by the brain to encode information* [my emphasis].” (Ira B. Black, *The Changing Brain. Alzheimer's Disease and Advances in Neuroscience*, Oxford, OUP, 2001, p. viii)

Just as cell death in the brain contributes to the fashioning of knowledge, so are silence, omission and discontinuity, in literary writing, relevant to the emergence of meaning. Linguistic lacuna, like cell death, plays a morphogenetic role in the system: it generates form. “Since function follows form, cell death assumed center stage in biological process. Cell death crafts the architecture of tissues and organs. Architecture determines how organs work. Architectural design reaches its zenith in brain and nervous system.” (Black 103-4)

Neuroscience has taught us that learning stems from connections. Literature itself consists primarily of connecting activities, bridging or incorporating gaps, i. e. making the fragments of human experience, as expressed in words, appear a continuous whole. We may view a literary text as a neuronal (electrical) process. Neurons fire impulses and record the experience. Electrical signals jump the gap to next neuron in line, relaying the information. Likewise, lacunae are essential to the shaping of knowledge through linguistic creation. Autobiographies, journals, letters, poetry, novels, the very idea of plot – they all show that literature, while being creation, is also, to a high degree, a “self-destructive” process, in which breaks, interruptions, amnesia constitute a fundamental part.