Reading Summary Alexandra Long
Psychological Processing of Media
Matthew Lombard
September 4th 2017

Costandi, Mo. “Phineas Gage and the Effect of an Iron Bar through the Head on Personality.
”The Guardian, Guardian News and Media, 8 Nov. 2010, www.theguardian.com/science/blog/2010/nov/05/phineas-gage-head-personality.

In 1848 a man name Phineas Gage, age 25, was excavating rocks to make way for a railroad. Gage was stuffing explosives into a borehole with a tamping iron. As he was using the iron tamping rod to push the explosives down the hole the iron produced a spark that ignited the powder, and the resulting blast propelled the tamping iron up, out and straight through his head, entering his left cheek and exiting at an angle from the top of his skull. The tamping iron was 43 inches long, 1.25 inches in diameter and weighed 13.25 pounds.

John Harlow, the physician who attended to Gage at the scene, noted that the tamping iron was found some 10 meters away, "where it was afterward picked up by his men, smeared with blood and brain".

Surprisingly, Gage was reported to be conscious and walking around after this incident. The doctor replaced a few of the larger pieces of his skull and then sealed the wound with adhesive straps. It did initially get infected but after that Gage made a full recovery aside from being blind in his left eye.

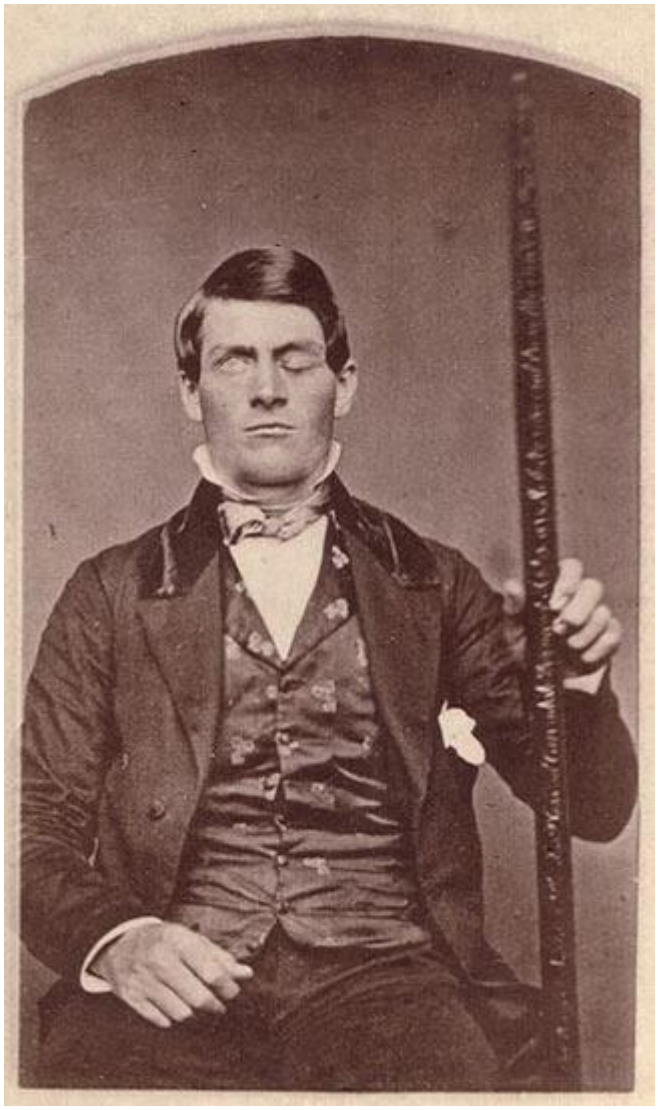
What is most interesting about this story, on top of the fact that he was able to survive a 43-inch rod entering the front of his face and exiting the back of his head, is that following this incident there were reports from family and friends that his personality

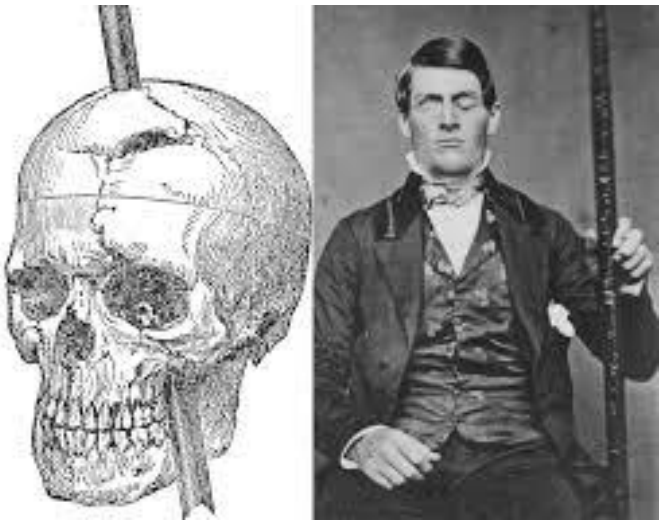
had changed profoundly. According to the Dr. Harlow “his mind was radically changed, so decidedly that his friends and acquaintances said he was "no longer Gage". Apparently before the incident Gage was an efficient and capable foreman but after the incident they could no longer employ him because he became unreliable and disrespectful to the point of using “the grossest profanity” and at times violent none of which were reportedly characteristic of him before the incident. Essentially, Gage lost his inhibitions and was transformed into a person unrecognizable by his family, friends and co-workers.

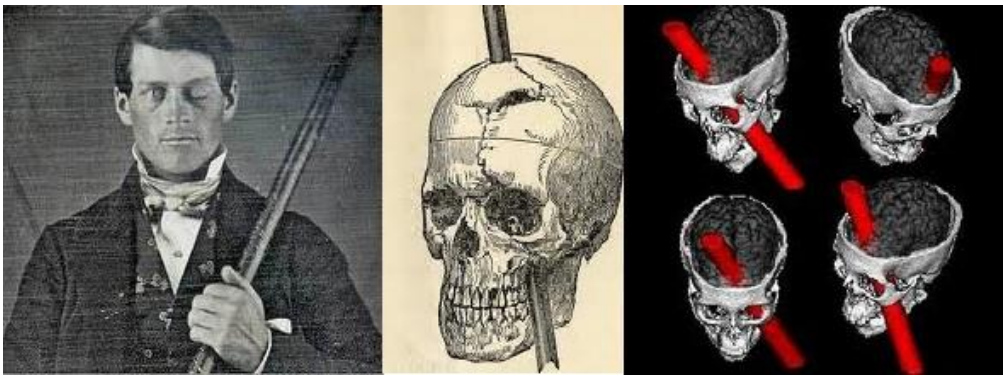
In time, Gage became the most famous patient in the annals of neuroscience, because his case was the first to suggest a link between brain trauma and personality change.

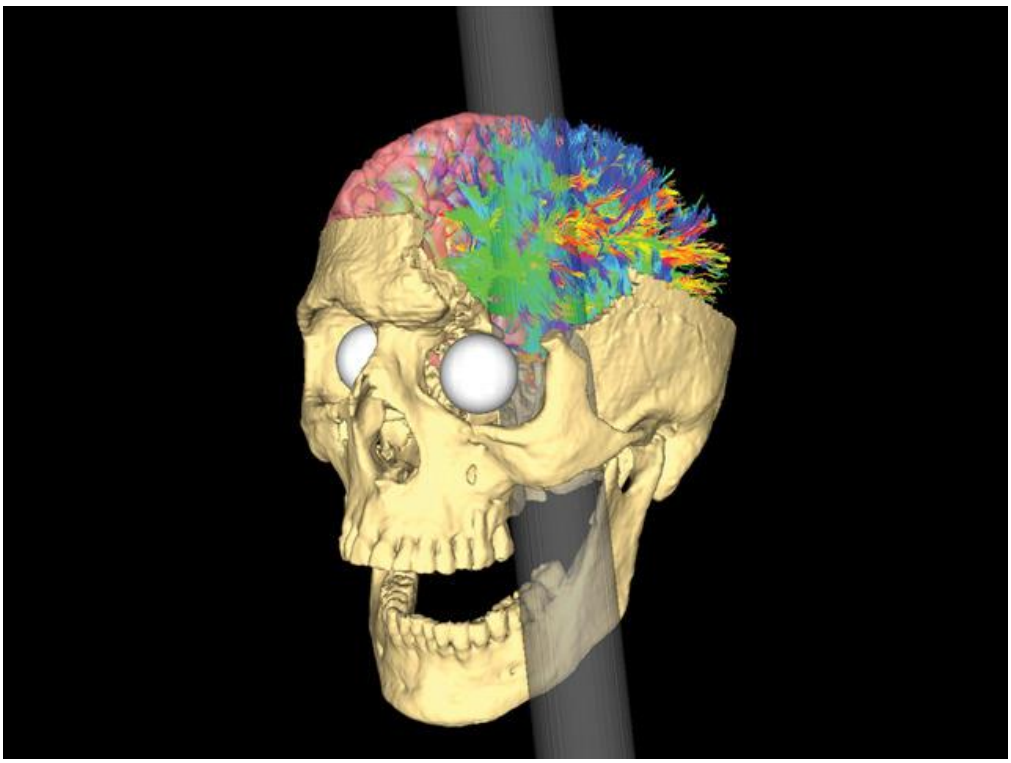
Later in life Gage was said to have “travelled around the larger towns in New England, making public appearances with his tamping iron, to which he had apparently become curiously attached.” He died at the age of 36 after a series of seizures. The article did not detail the cause of these seizures or whether or not they were related to his injury but that would be my assumption.

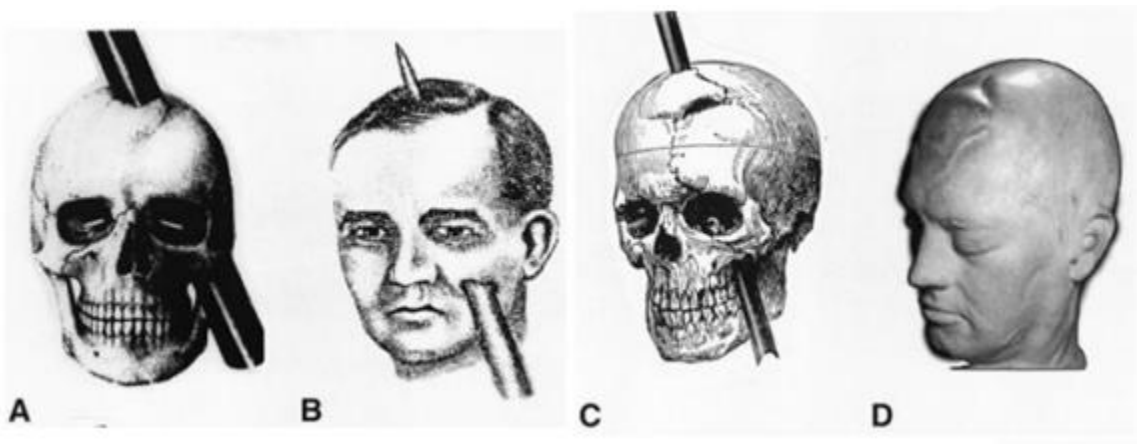
As astounding as this story sounds science is able to knock it down a few pegs with the fact that we don’t really know for sure what Gage’s personality was like prior to the incident so there is nothing to accurately compare it to. Many of the stories have probably been exaggerated. However, the accident and discovery of an altered personality taught us that complex functions such as decision-making and social cognition are largely dependent upon the frontal lobes of the brain.

Visual Aides: 



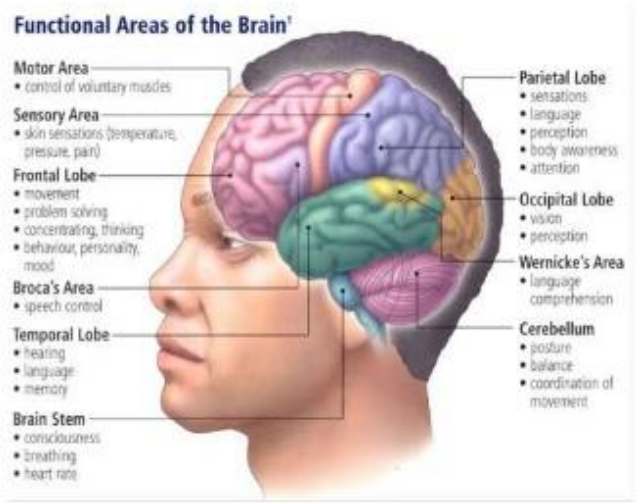






The Effects

The parts of the frontal lobes essential to intellectual, motor and language function, the motor strip and Broca's area, were undamaged, leaving his ability to move, talk, and understand language intact. The major damage caused to the ventromedial region is likely responsible for the majority of the personality changes.



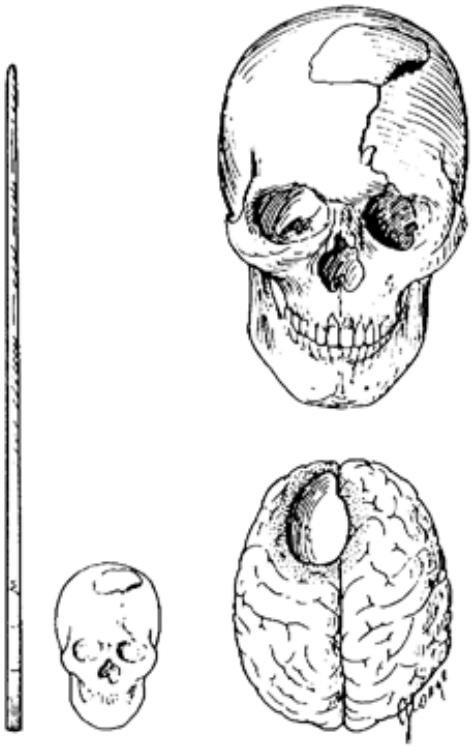
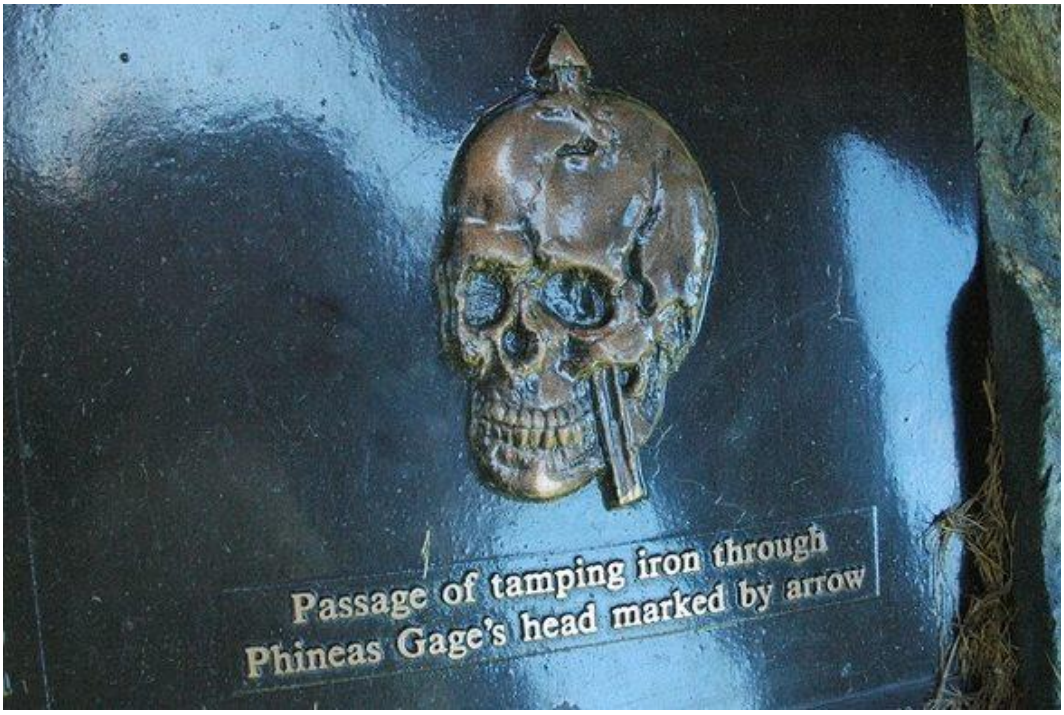


FIG. 8-1. Phineas Gage. On the left is the relationship of the size of the tamping bar to the size and location of the frontal skull lesion. On the right is an enlarged illustration of the skull defect *(top)* and an artistic rendering of the probable location of brain destruction. (From Stuss and Benson: In: *Neuropsychology of Human Emotion*, edited by Heilman and Satz. Guilford Press, New York, 1983, with permission.)

The Injury

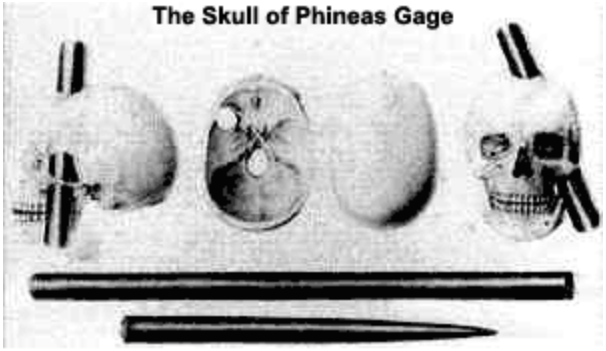
The iron rod destroyed the majority of Gage's left frontal lobe, an area of the brain responsible for our emotions, personality, and language related movements.The ventromedial region of the frontal lobe was damaged, mostly on the left side.


WOW... THAT'S NOT GOING TO LOOK GOOD IN THE MORNING



The Accident

On September 13, 1848, twenty-five-year-old Phineas Gage was working with a blasting crew when he was in an accident that drove a tamping iron through his head. The rod entered through the left cheekbone, past his eye, and out the top of his head. He survived the trauma, but exhibited significant behavioral changes.



(Image courtesy of the National Library of Medicine, History of Medicine Collection.)