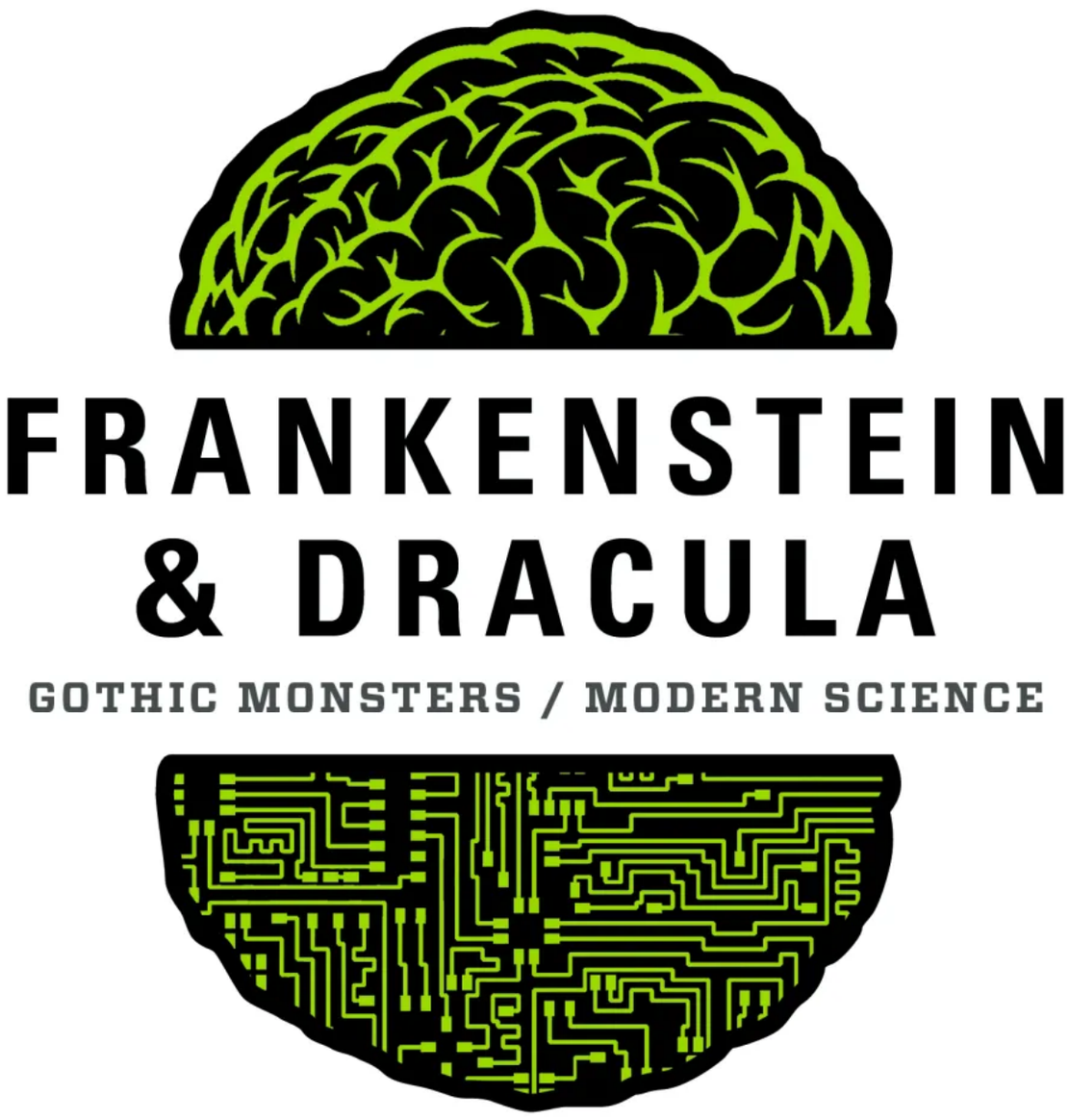
Frankenstein at 200

Two hundred years ago, Mary Shelley published *Frankenstein; or, the Modern Prometheus*, and I wanted to take the time to celebrate this occasion by thinking about my long relationship with this infinitely teachable novel. Alongside teaching this novel in a number of my courses in literature and science and the history of medicine, I had the privilege of working on the Rosenbach Museum and Library's recent exhibition, *Frankenstein & Dracula: Gothic Monsters, Modern Science,* which explores the enduring legacy of these two major Gothic novels in relation to our cultures of public science.[1]



Exhibition held at the Rosenbach Museum & Library in Philadelphia (10/13/17-2/11/18)

Once upon a time, I fooled people into thinking I wanted to practice medicine. Because of this, my folks got me a children's edition of *Frankenstein* that I loved until it could no longer hold itself together. I remember wanting to bring it back to life like Victor could. In so many ways, the novel itself is the aggregate body of different textual tissues interwoven: Shelley references alchemists like Cornelius Agrippa, Paracelsus, and Albertus Magnus alongside up-to-date developments in chemistry and biology. The concept of reanimation is by far one of the most historically fascinating things about this novel, which we must remember she started writing when she was eighteen.

Frankenstein importantly responded to a series of scientific debates surrounding the states of life and death. After all, Victor proclaims at one point in the novel: "Life and death appeared to me ideal bounds" – one of many hubristic claims that science could indeed intervene in the boundary between life and death. We must remember that medicine struggled greatly with the inability to distinguish between these states. Consider, for instance, the number of people accidentally buried alive after being found unconscious or in a drunken stupor. In 1774, William Hawes and Thomas Cogan established the Royal Humane Society in London, which was first called the Society for the Recovery of Persons Apparently Drowned. This organization operated as a learning center for resuscitation techniques and first aid. There was an annual procession for those supposedly "raised from the dead" – Mary Shelley's mother, Mary Wollstonecraft, being one of them after having jumped from Putney Bridge into the Thames. James Curry, one of the Shelleys' doctors in 1817, wrote a text that outlined how you could distinguish between "absolute" or "apparent" death: putrefaction was the only true indicator. But in between, there were states called "suspended animation" (like fainting, coma, sleeping), which Shelley drew upon to describe Victor's initial collapse from nervousness when he looks upon the creature and Elizabeth who faints upon seeing William's body. Anxieties around the undead and the inability to determine true death persisted throughout the nineteenth century and became widely recognizable in figures like Varney the vampire by the 1850s and ultimately Dracula at the end of the century.

But of course, there were actual attempts to reanimate the "absolutely" dead. In the 1831 preface to the novel, there is a direct reference to galvanism:

> *They talked of the experiments of Dr. Darwin, (I speak not of what the Doctor really did, or said that he did, but, as more to my purpose, of what was then spoken of as having been done by him,) who preserved a piece of vermicelli in a glass case, till by some extraordinary means it began to move with voluntary motion. Not thus, after all, would life be given. Perhaps a corpse would be re-animated; galvanism had given token of such things: perhaps the component parts of a creature might be manufactured, brought together, and endued with vital warmth.*

The Dr. Darwin in this passage refers to not Charles but Erasmus Darwin, Charles' grandfather who reported on an experiment in which a mixture of flour and water had apparently come to life by "spontaneous generation" or the idea of live matter emerging from dead matter, which Darwin theorizes in his scientific poem, "The Temple of Nature" in 1804. But on the issue of life out of death, we cannot have a discussion of Shelley's *Frankenstein* without talking about the electricity experiments of Luigi Galvani who is credited with the discovery of muscle contraction. He found

that frog's legs twitched as if they were alive when exposed to electric currents. Galvani's nephew, Giovanni Aldini, went a step further to replicate these experiments not on frogs (and later a lamb's head, a whole chicken, an ox, and a dead bear) but on hanged criminals. The medical use of the bodies of hanged criminals was one of the major affordances of the Murder Act of 1752, which added dissection to the punishment of hanging. In 1803, Aldini actually succeeded in his attempt to reanimate a corpse: George Forster, who was found guilty for murdering his wife and child, was hung and Aldini managed to shock him into opening his eyes, clenching his right hand, and twitching his legs. Galvanism underpinned later treatments of cognitive disability and mental illness – shock therapy, for example. Science, as this case demonstrates, was a *public spectacle* that not only served to share widely a scientific discovery but also make palpable its consequences. We must remember that this was the beginning of professional medical training at hospitals, where students attended lectures in "medical theaters" in which live demonstrations were performed. But there co-existed a performative element of scientific education that was meant to make science accessible to the public.

Surrounding the publication of Shelley's *Frankenstein* was yet another highly public debate about the very nature of life itself. At the Royal College of Surgeons, John Abernethy and William Lawrence argued over what constituted a life and how living bodies were actually different than dead/inorganic bodies. Abernethy claimed that life did not depend on bodily structure, its organization or arrangement, but existed as a material substance "superadded" to the body. Lawrence ridiculed this and defined life as simply the body's functions. Lawrence was deemed too radical because his reduction of life to working bodily functions suggested that souls didn't exist either. This led to his public retractions of all of his published lectures and his resignation from his hospital position. Yet this debate over vitalism continued even in middle to late-century discussions of blood, also seen by many as a vital substance that animated the body. Of course, as a culture, we still have not abandoned questions of what constitutes life – take for instance the enduring abortion debate, which Shelley's novel anticipates in its reimagining of the classical theory of the homunculus, a man-made human being or humanoid that could be produced by enclosing sperm in a warm environment and feeding it with human blood. Within this theory was a belief in preformationism, or the idea that really sperm contained a fully-formed person that grew into normal size and function when deposited into the female body as a kind of passive material substrate for the homunculus's incubation. Sexist as this may be, this notion underpinned Victor's birthing of the creature and what my undergraduate mentor, Anne Mellor, has described as Shelley's imagination of male-driven science stealing away the power of reproduction from nature (which Shelley genders female throughout the novel).[2] I frequently hear the Frankenstinian echoes in discussions of assisted reproductive technologies like in-vitro fertilization, or even new gene-editing technologies like CRISPR that are literally revising the notion of what life *is*.

For the Rosenbach exhibition, we not only wanted to make connections to the vitalist debates in the history of science but also to urgent concerns about climate change. The first section of the exhibit is entitled "The Promethean Summer," a reference to the novel's title "the Modern Prometheus." We wanted to set the scene with the 1815 eruption of Mt. Tambora, a volcano located on the small Indonesian island of Sumbawa. After over 1000 years of dormancy, Tambora erupted

in what was the greatest eruption in Earth's recorded history that led the diffusion of volcanic gases that disabled the seasonal rhythms of the global climate system. Spewing rock and ash for miles and emitting millions of tons of sulfur dioxide into the stratosphere alongside whirlwinds and tsunamis, the eruption killed tens of thousands of people in the resulting radical shifts in temperature, rainfall and sustained periods of famine and disease. The resulting cloud that encircled the earth contained particles that blocked sunlight, which made 1816 unusually cold for most of the Northern Hemisphere (the second coldest since 1400). Poet Samuel Taylor Coleridge described this as "end of the world weather," and many referred to it as the "Year Without a Summer." The composition of Shelley's *Frankenstein* bears the imprint of this climate event: poets Percy Shelley and Lord Byron, along with companions Mary Godwin, Claire Clairmont, and John Polidori, met near Geneva for what should have been a summer of poetry, boating, and hiking. Forced to stay indoors due to the "incessant rainfall" and the "wet, ungenial summer," the company took to reading ghost stories, and Byron proposed the challenge that each of them should write their own eerie tale. Mary Godwin's (soon to be Mary Shelley) and John Polidori's were the only tales brought to successful completion, but it was more than Byron's challenge alone that brought the man-made monster and the vampire into the public consciousness. Mary Shelley corresponded with her sister Fanny back in England regarding this abysmal weather seemed unrelenting and inescapable. The Creature himself says in the novel that he suffered first "from the inclemency of the season" but "still more from the barbarity of man." As Gillen D'Arcy Wood has noted, "Tambora's influence on human history does not derive from extreme weather events considered in isolation but in the myriad environmental impacts of a climate system gone haywire." Massive crop failure led to mass starvation and mass rioting – an apocalyptic vision that pervades *Frankenstein's* atmosphere and that reappears in Shelley's 1826 novel, *The Last Man*, which details the life of Lionel Verney, the eponymous "last man" who attempts to survive a future world ravaged by plague. I wanted to end with this because this apocalyptic vision has felt increasingly real to all of us as the Trump administration continues to deny climate change in our era of "alternative facts." Tambora revealed the very fragility of the systems at work that produce our climate and the stakes of their disruption or in some cases elimination all together. We are in the Anthropocene, as Paul Crutzen proclaimed in 2000, a geologic time period defined by human influence. Will we see another "Year without a Summer"? Decades? This is where speculative and science fiction like Shelley's *Frankenstein* does important cultural work: it imagines the seemingly unfathomable. Or, as Byron put it, "I had a dream, which was not all a dream. The bright sun was extinguish'd."

[1] My thanks to Judy Guston for bringing me on for this project – the first time that both the working notes from Stoker's *Dracula* and pages from Shelley's manuscript for *Frankenstein* are in the same room. For more about this exhibition: https://rosenbach.org/visit/exhibitions/frankenstein-dracula/

[2] See also Cynthia Harris' and Livia Arndal Woods' posts on this blog about creation and

reproduction in relation to Shelley's *Frankenstein*.