

## 19D TECHNOLOGY AS FRANKENSTEIN

In 1818 Mary Wollstonecraft Shelley (apparently on a dare to write a ghost story) wrote the Victorian novel *Frankenstein*, which inspired a series of horror movies in the 1930's and 40's (Frankenstein, Bride of Frankenstein, Son of Frankenstein, Ghost of Frankenstein, Frankenstein Meets the Wolf-Man, House of Frankenstein,...). Most people think of Frankenstein as the grotesque monster, but the novel was the story of Swiss scientist Dr. Victor Frankenstein and his attempt to create life. He succeeds in bringing the creature to life, but it turns on him and creates destruction. Many have seen Frankenstein as an allegory of runaway technology, particularly since its subtitle was "The Modern Prometheus." In the Greek legend, Prometheus steals fire from the gods and brings it to earth.

A number of Biblical themes run through the story: God creates human life from the stuff of the earth; Adam, initially innocent, yields to temptation with disastrous results; Adam was initially created "very good," but the creature was seen as "hideous" by its creator.

*"It's alive!" In the 1931 movie, Frankenstein, in the presence of several skeptical observers, cries out in exultation when the creature shows signs of life. This has become the quintessential image of the mad scientist, but it is a double myth, untrue to the novel on two accounts. First, in the novel, Frankenstein is utterly alone throughout the two-year process of creation. He has no assistant, nor are there any other witnesses of his success. Second, at the moment when the creature comes to life, Frankenstein is not triumphant, but horrified. This is how Mary pictured the scene in her waking dream. Frankenstein turns away from his creature and rushes from the room in disgust and dismay. After a brief, additional encounter with the creature, he flees from the house and does not see him again for almost two years...*

*By coincidence, Frankenstein's creature had come into possession of Frankenstein's laboratory notebook and had read the story of his own creation. In contrast to the creation of Adam, the creature finds the story of his own creation to be filthy and disgusting. Again the underlying horror is the realization that he is a merely physical being. [1]*

The story is not a blanket rejection of technology:

*"Mary (Shelly) was not a Luddite opposed to new technologies," writes the late Charles E. Robinson, a Shelley scholar, in his lucid introduction. Not only was she tutored in contemporary understandings of electricity and biomedicine, she grasped the risks of acting on "forbidden knowledge and playing God," Robinson writes. [2]*

Like the Biblical account of the Tower of Babel (Genesis 11), the Frankenstein story could be read as a warning against pride, against trying to play God, and against "runaway" technology.

Langdon Winner sees Frankenstein as a warning against autonomous technology:

*Within the wreckage that envelops both Victor and his creature, the book reveals crucial insight, one before its time and with profound implications for similar projects in the future. It can be stated succinctly as follows: The quest for power through scientific technology often tends to override and obscure the recognition of the profound responsibilities that the possession of such power entails.*

*Put even more simply: The impulse to power and control typically comes first, while the recognition of personal and collective moral obligation arrives later, if ever at all. Within that unfortunate gap – between aspirations to power through science and belated recognitions of responsibility – arise generations of monstrosity.*

*Mary Shelly's insights on these matters were prescient, well ahead of their time, and foreshadow some of the most ominous hazards and most ghastly calamities found along the path to modernity from the early 19th century up to the present day ...*

*One could offer a great many historical and contemporary illustrations of what I would call "Frankenstein's problem." An appropriate, highly practical, obviously troubling set of developments at present are found within a particular domain of scientific inquiry and application, a zone of works not all that dissimilar from the one the fictional Victor Frankenstein explored – today's realm of advanced computerization, smart algorithms, artificial intelligence and robotics ...*

*In sum, along with the generally cavalier attitudes found today's A.I. and robotics intelligentsia, new echoes of the Frankenstein tale in fictional portrayals demonstrate why Frankenstein is not only a fascinating and entertaining novel, but ultimately a searing work of prophecy. [3]*

The classical interpretation of the Frankenstein story is that of a warning against technology, particularly runaway technology.

In addition, we are warned about "playing God", the unintended consequences of our technology, and the danger of abandoning our technology as the creature was abandoned. While the monster in the movies communicates with grunts, the creature in the book was very articulate. "Contrary to the Hollywood image, the Creature is smart and agile in the original story. He learns languages quickly and can scale mountains faster than any human. He is, nevertheless, an unbearably hideous vision to behold." [4]

*It is perhaps too easy to see the message of Frankenstein as being anti-technological, in much the same way it has become too easy to dismiss Luddites as simply hating progress. Just as the Luddites weren't anti-technology per se, neither was Shelley as her novel comprises a complex, yet clearly articulated set of cultural concerns relating to scientific responsibility. Victor Frankenstein's monster does not signify that science is automatically bad but, rather, science is corrupted when divorced from society's moral context. The monster's abandonment symbolizes moral decontextualization, a step out of Neil Postman's tool-using paradigm (from Technopoly) and into the technocratic. Scientific creation is possessed with the predisposition for good until*

*corrupted by society, but its potential goodness depends on its harmonious integration within the ethical framework of the culture.*

*The blame for science run amok falls on society generally, but the bulk of the fault, Shelley suggests, lies directly with the scientist himself. Driven by the same dynamic that Arnold Pacey describes as the mainspring of technological misdirection, the impulse to go on inventing, developing and producing regardless of society's needs. Victor never reflects during the process of planning and researching his grand experiment as to whether he ought to carry on. The thing should be done if it can be done. [5]*

*The whole story is a myth, of course, but myths—as Joseph Campbell taught—are metaphors. So what is the Frankenstein monster a metaphor for?*

*Mythological metaphors are rich in meaning, and the Frankenstein monster is no exception. Perhaps what's most striking is (1) he's a big, powerful, machine-like creature, and (2) his creator can't control him. Through these two features, Shelley raised a disturbing question about the modern world. Have our machines gotten so big and powerful that they've become runaway technologies?... [6]*

What might some of these “runaway technologies” look like? Consider-

- Social media, and what it's doing to teens
- AI and resulting “deepfakes”
- Genetic modification
- Cloning
- Moves towards transhumanism

At some point do our creations become monsters? Julian Orr suggests-

*[Langdon] Winner's point about Frankenstein's creature, and technologies more generally, is first, that their creation occurs with insufficient care for the interactions between the created and the world in which they will exist, and second, that the creators consistently display a passionate desire not to know about the fates of their creations. Both the lack of care and the determined ignorance exist with respect to society as well as technology...*

*If technology is occasionally monstrous and users sometimes hostile, it is far more often true that the creators and vendors of technology pay little or no attention to the fit of that technology with society... The tools that the corporation chooses to deploy display both insufficient care for their real role in the world and a denial of the importance of social relationships around technology. This is indeed the essence of Frankenstein's tragic flaw...*

*In Mary Shelley's novel, Frankenstein's refusal to help his creation be part of society makes him monstrous, makes his creation monstrous, and ultimately destroys both of them. His refusal threatens society, which depends on viable relationships, but as the refusal is limited to an individual instance, so is the damage. If post-modern industry denies the relationships necessary to the functioning of society, what kind of monsters do we become (although one would certainly*

*prefer to say 'they'), what kind of monsters will emerge from our society, and what then will limit the damage? [7]*

Ted Peters sees the danger of playing God as linked to our innovations:

*Victor Frankenstein's sin was to play god, to attempt to create life out of non-life. "Life and death appeared to me ideal bounds, which I should first break through, and pour a torrent of light into our dark world. A new species would bless me as its creator and source; many happy and excellent natures would owe their being to me." The scientist in this story tried to apotheosize himself by creating, like Prometheus did, his own living creature who would laud him as divine. But, says author Shelley, this action violated what was sacred and the sacred, like Zeus, retaliated by letting loose a monster on the world.*

*The monster and Victor Frankenstein argued over the imago Dei, the image of God twice removed. The lonely creature confronted his maker. "Cursed creator! Why did you form a monster so hideous that even you turned from me in disgust? God in pity made man beautiful and alluring, after his own image; but my form is a filthy type of yours, more horrid from its very resemblance. Satan had his companions, fellow-devils to admire and encourage him; but I am solitary and detested." Neither the creature would have suffered loneliness nor the neighbors suffered havoc had Victor Frankenstein not played god...*

*Mary Shelley's Frankenstein tells our generation to embrace caution, prudence, and sound judgment. The novel tells us to monitor and care for the products of our innovation well into the future, to anticipate problems and to avoid harms. Once we create a new technology, we should not turn our backs on it and leave it alone. [8]*

Adam Briggie compares Shelly's Frankenstein with Goethe's "Sorcerer's Apprentice." In this 1797 poem a magician-in-training unleashes a catastrophic chain of events –but at the end his mentor returns and makes things right. (Walt Disney animated this years ago with Mickey Mouse as the hapless apprentice.)

*While the master fortunately returns just in time to cancel the treacherous spell, Shelley's tale doesn't end so nicely: Victor Frankenstein's monster goes on a murderous rampage, and his creator is unable to put a stop to the carnage. Who foretold our fate: Goethe or Shelley?... [9]*

*In Goethe's poem, disaster is averted through a more skillful application of the same magic that conjured the problem in the first place. The term for this nowadays is "reflexive modernity" – the idea that modern technology can be applied to deal with any problems of its own creation. Whatever problems arise from technoscience we can fix with more technoscience. In environmentalism, this is known as ecomodernism. In transhumanist circles, it is called the proactionary principle, which "involves not only anticipating before acting, but learning by acting."*

*Frankenstein, by contrast, is a precautionary tale. Imbued with the impulse to transform nature, humans risk extending beyond their proper reach. Victor Frankenstein comes to rue the ambition to become “greater than his nature will allow.” He laments: “Learn from me...how dangerous is the acquirement of knowledge and how much happier that man is who believes his native town to be the world.”*

*Hubris, he seems to warn, will be the death of us all. [10]*

Too many scientists and engineers, notes Briggie, “have gotten cold feet” and abandoned or denounced what they had created: Napster, Facebook, CRISPR technology, AI (Elon Musk). [11]

*The anthropologist Bruno Latour chastised Musk for this kind of thing. The way Latour sees it, the moral of Frankenstein is not that we should stop making monsters but, rather, that we should love our monsters. The problem wasn’t Dr. Frankenstein’s hubris, but his unfeeling – he abandoned his “child” rather than educating it so that it could learn how to behave. Latour’s point is that no amount of technological advance will give us total control and a blissful detachment from the world. Instead, technology, like parenting, will always require being constantly folded into new developments, tending, fretting and caring. [12]*

## Runaway Technologies

Christopher Cocchiarella offers these insights-

*At what point does technological innovation go wrong? According to Frankenstein, it’s when we lose control of our creations. As soon as we can’t control our machines, they turn into monsters. Mechanical monsters, in other words, are metaphors for runaway technologies. They symbolize what happens once technological innovation triggers a chain of unintended consequences.*

*Take social media, for example. At first, platforms like Facebook seemed like a great way to stay in touch with friends and family. Who would have guessed that, within a short time, social media would devolve into an online outrage machine. As author Siva Vaidhyanathan says in his book “Anti-Social Media: How Facebook Disconnects Us and Undermines Democracy,” If you wanted to build a machine that would distribute propaganda to millions of people, distract them from important issues, energize hatred and bigotry, erode social trust, undermine journalism, foster doubts about science, and engage in massive surveillance all at once, you would make something a lot like Facebook. Needless to say, none of that was intended. Clearly, we’ve lost control of this Frankenstein monster. [13]*

What safeguards do we need on our technology? Medical and engineering ethics have progressed a great deal since 1818, suggests Audrey Shafer:

*Safeguards, protocols and institution approvals by committees educated in the horrible and numerous examples of unethical experiments done in the name of science are used to prevent a lone wolf like Victor Frankenstein from undertaking his garret experiments. Indeed, it is amusing to think of a mock Institutional Review Board approval process for a proposal he might put forward.*

*But these protections can go only so far. It is impossible to predict all of the consequences of our current and future scientific and technologic advances. We do not even need to speculate on the potential repercussions of, for example, the creation of a laboratory-designed self-replicating species, as we can look to unintended consequences of therapies such as the drug thalidomide, and controversies over certain gene therapies. This tension, this acknowledgment that unintended consequences occur, is unsettling. [14]*

G. Pascal Zachary suggests some key lessons from the Frankenstein story:

*In Shelley's novel, the chemist, Waldman, issues a similar warning, insisting that technologists "have acquired new and almost unlimited powers; they can command the thunders of heaven, mimic the earthquake, and even mock the invisible world with its own shadows."...*

*What then can engineers do to reduce, if not eliminate, the chances of unwittingly creating a Frankenstein monster? Here are a few ideas:*

- 1. Resist the temptation to pursue projects simply because they are beautiful or too cool to resist. As the philosopher Heather E. Douglas explains in a companion essay in the new MIT edition of the novel, creative engineering often inspires feelings of awe and wonder that can obscure or erase an awareness of design challenges. When euphoria reigns, stop and take a breath!*
- 2. Technologists do best when they solve problems of value to people and the planet. Pursuing possibilities without regard to utility invites unforeseen blowback.*
- 3. Engineers should act as if creation is a shared responsibility, because their knowledge at least partly comes from others and the effects of their work inevitably extend further than themselves. [15]*

## Conclusions

*[A]s the frontiers are pushed further and further, the unintended consequences of how science and technology are used could affect who we are as humans, the viability of our planet and how society evolves. In terms of health, medicine and bioengineering, Frankenstein resonates far beyond defibrillation. These resonances include genetic engineering, tissue engineering, transplantation, transfusion, artificial intelligence, robotics, bioelectronics, virtual reality, cryonics, synthetic biology and neural networks. These fields are fascinating, worthy areas of exploration. [16]*

The questions we need to ask are these:

- Where do we draw the line in our technology?

- When have we crossed into a dangerous zone?
- Ultimately, what does it mean to be human?

## References

1. Gidley, J., "The Soul of Frankenstein," [http://opc.org/os.html?article\\_id=49](http://opc.org/os.html?article_id=49)
2. Zachary, G., "What Frankenstein Can Teach Engineers," *IEEE Spectrum*, Feb. 2017.
3. Winner, L., "Frankenstein: Giving Voice to the Monster," <https://www.langdonwinner.com/technopolis/2017/7/6/frankenstein-giving-voice-to-the-monster>
4. Cocchiarella, C., "Frankenstein Monsters, or Unintended Consequences of Technological Innovation – Part I: Runaway Technologies," <https://mindfultechnics.com/frankenstein-runaway-technologies/>
5. Doc, "My God-it's Full of Stars," <https://scholarsandrogues.com/2008/04/06/2001-part-1/>
6. Cocchiarella, op. cit.
7. Orr, J., "Lessons from Frankenstein on Technology and Society," *Proceedings of the Participatory Design Conference*, 2000.
8. Peters, T., "Playing God with Frankenstein," *Theology and Science*, 16:2, 2018, p. 145-150.
9. Briggie, A., "As Frankenstein Turns 200, Can We Control Our Modern 'Monsters'?" <https://www.scientificamerican.com/article/as-frankenstein-turns-200-can-we-control-our-modern-monsters/>
10. Ibid.
11. Ibid.
12. Ibid.
13. Cocchiarella, op. cit.
14. Shafer, A., "Why Frankenstein Matters," <https://stanmed.stanford.edu/why-issues-raised-in-frankenstein-still-matter-200-years-later/>
15. Zachary, op. cit.
16. Shafer, op. cit.