Frankenstein as Science Fiction and Fact

J. M. van der Laan

Abstract

Often called the first of its kind, Frankenstein paved the way for science fiction writing. Its depiction of a then impossible scientific feat has in our time become possible and is essentially recognizable in what we now refer to as bioengineering, biomedicine, or biotechnology. The fiction of Frankenstein has as it were given way to scientific fact. Of more importance, however, is the challenge Mary Shelley’s novel presents to the ostensibly high-minded and well-intentioned hopes and promises of the scientist/technologist. Finally, the fictional character, Victor Frankenstein, has come to serve as the poster child and whipping boy for all scientific and technological irresponsibility, so much so that thanks to him we are able to free ourselves and our scientists from any real responsibility, since none of us ever would or could be as monstrous as Frankenstein.

Keywords

bioengineering, biotechnology, biomedicine, forbidden knowledge, limits, Frankenstein, science fiction, technology

In 1816, Mary Shelley found herself in a villa named Diodati in Switzerland with the famous Romantic poets Percy Byssche Shelley, George Gordon Lord Byron (whom a female contemporary once characterized as “mad, bad, and dangerous to know”), and Byron’s friend John Polidori. Shelley was only 19 years old. While the group of friends was there, Byron proposed that they each write a ghost story to share with the others, and the story Mary invented there was what became Frankenstein or The Modern Prometheus, first published in 1818. By 1831, it had already gone into a third edition, an indication of its success and popularity. Of course, the story of Frankenstein has taken on a life of its own, until in the 20th century, it found expression in a new medium, film, and those representations of the story—Mel Brooks’ “Young Doctor Frankenstein,” for example—typically took great liberties with the original on which I focus in this essay.

Mary Shelley’s (2007) Frankenstein must arguably rank as one of the earliest examples of science fiction. Indeed, Brian Aldiss (2007) calls it “the first real novel of science fiction” (p. 353). Likewise, Roger Shattuck (1996) asserts that “all written and filmed works in the immense category of science fiction have their roots in the ground prepared by Faust [on the one hand] and Frankenstein [on the other] with their opposing attitudes toward forbidden knowledge” (p. 100). That Shattuck should attribute the origins of science fiction to both Shelley’s Frankenstein and Goethe’s Faust is insightful, since Victor Frankenstein, a student of Agrippa von Nettesheim and Paracelsus, two 16th-century Faustian prototypes, emerges as a Faustian character himself. Like Faust, he is “deeply smitten with the thirst for knowledge” (Frankenstein, p. 57) and desires to learn “the secrets of heaven and earth” (p. 58). Like Faust, he studies everything—in this case, “electricity and galvanism” (p. 61), “mathematics” (p. 62), “chemistry” in particular (p. 70), “physiology” (p. 71), and “anatomy” (p. 71)—yet always remains “discontented and unsatisfied” (p. 60). And like Faust, his search culminates in an astounding, but troubling, technological achievement (see van der Laan, 2001). What is more, the Faustian bargain, the deal with the devil, lurks behind his entire enterprise.

At the time of Frankenstein’s publication, the very idea of building a being from scavenged body parts and of such a creature’s real existence could hardly be conceived or received by the average contemporary reader as anything but a fiction. Even so, the author’s husband Percy Bysshe Shelley alluded already to the possibility of the reality in the preface attributed to his wife Mary, but which he wrote for the 1818 edition of the novel: “The event on which this fiction is founded,” he and she explained, “has been supposed by Dr Darwin and some of the physiological writers of Germany as not of impossible occurrence. I shall not be supposed as according the remotest degree of serious faith to such an imagination” (Frankenstein, p. 31). The preface refers here to Erasmus Darwin (1731-1802), grandfather of the more famous Charles, a renowned physician, physiologist, chemist, engineer, and botanist who was an eminent scientist in his own right (Florescu, 2007).

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The reference to the “physiological writers of Germany” probably indicates Konrad Dippel (1673-1734), the alchemist, physician, and chemist who was born at castle Frankenstein near Darmstadt, Germany, and who invented the dye known as Prussian blue. In all likelihood, the preface refers here as well to Georg Frank von Frankenau (1644-1704), a name suggestive of Frankenstein, who studied the regeneration of plants and animals (Florescu, 2007), wrote a lexikon on herbs (Kräuter-Lexikon), and (here is an added curiosity!) was apparently the first to publish something about the Easter rabbit. Mary Shelley was certainly also familiar with the work of Humphrey Davy (1778-1829), whose paper “The Chemical Effects of Electricity” proved to be one of the seminal works of 19th-century science. When she conceived of Frankenstein, Shelley had actually been reading the 1812 edition of Davy’s Elements of Chemical Philosophy (Florescu, 2007). She knew enough of the contemporary scientific world to send her protagonist to study, conduct, and complete his experiments at the University of Ingolstadt, which was “renowned at the time as a center for science” (Aldiss, 2007, p. 343). Likewise, she gives him an express and special interest in “electricity and galvanism” (Frankenstein, p. 61).

In The Age of Wonder: How the Romantic Generation Discovered the Beauty and Terror of Science, Richard Holmes (2008) states that Shelley “had created a composite figure who in many ways was typical of a whole generation of scientific men” (p. 328). According to Holmes, Joseph Priestley (1733-1804, who discovered oxygen), Henry Cavendish (1731-1810, who discovered hydrogen and researched electricity), Humphrey Davy (chemist and inventor), Giovanni Aldini (1762-1834, galvanist and nephew of Luigi Galvani), and William Lawrence (1783-1867, physician, surgeon, and anatomist) “may all have contributed something to the portrait” (p. 328). Shelley might well have know of Johann Wilhelm Ritter (1776-1810) also, a galvanist who was reputed to have actually experimented not only with “the revival of dead animals by electrical action” but also of dead human beings (p. 329).

As far as the science or scientific fact in science fiction is concerned, let me note that I do not care to analyze or determine the extent to which Shelley’s text is scientifically accurate or not. More important and more instructive are the motives underlying the fictional scientific research of the protagonist on the one hand and on the other the trajectory of his fictional experiments toward subsequent scientific fact. Nevertheless, the constructed reality of the story points to a future far beyond the date of its first publication. Mary Shelley’s vision of frightening scientific and technological possibility now pales when compared with all that contemporary biomedical science and technology is able to accomplish. The unimaginable as she imagined it, has in many ways come true. As Stephen Hawking (1996) wrote in the foreword to L. M. Krauss’s The Physics of Star Trek, “today’s science fiction is often tomorrow’s science fact” (p. xiii). Latter-day writers like Willard Gaylin (1972) in a piece for The New York Times Magazine or Ray Hammond (1986) in his study The Modern Frankenstein: Fiction Becomes Fact refer to Frankenstein in order to describe what otherwise still seem like fictions—made-up, fantastic, and unbelievable—yet are actual scientific realities. Whether or not Shelley intended her novel to be a prescient view of a distant future isn’t at issue. Rather, Frankenstein—like so much science fiction to follow—warns of the manifold dangers which accompany the promise and progress of science and technology.

The fact in the fiction is the truth in the myth. That is, the fact and the truth of the story do not reside in the literal, in the reality of Frankenstein’s existence, in the accuracy of Shelley’s science, in the link to any of her contemporaries, or in any subsequent technoscientific breakthroughs the novel might suggest or anticipate, but in the figurative, in what Frankenstein and his story tell and reveal about scientific and technological motivation, inquiry, and practice; about scientific presumption, audacity, and amorality; about uncontrolled and uncontested scientific and technological experimentation and advance; and about their consequences. Her figuration of the man of science who knows no bounds, has no conscience, and makes a monster is here what matters most. It may well be difficult to take Frankenstein seriously today, given its devolution into camp. What is more, the story, with and in spite of its dire warnings against divine presumption, “seems almost quaint in a world where science no longer presumes but presides” (Skal, 1998, p. 34). For those very reasons, however, it is more than ever necessary to give the novel our most serious consideration and attention.

The themes of the novel proper are as old as the myth of Prometheus whom the subtitle names and who, against Zeus’s prohibition, stole fire from the gods and gave it to human beings. As such, Prometheus is one of the first and oldest stories about technology. From fire or along with fire, Prometheus gave human beings what the ancient Greek language termed techne, in other words, all the arts, sciences, and technologies. Besides its preoccupation with the unquenchable thirst not only for knowledge but also for forbidden knowledge (also at the center of the story of Prometheus, not to mention Faust), Shelley’s Frankenstein clearly concerns itself with vexing and fraught questions about science and technology, questions we still face today.

What knowledge, for example, is or should be off limits or forbidden to us? Or should no knowledge, no science (which after all means “knowledge”) be forbidden? We live in a world where whatever can be thought, will be thought, whatever can be known, will be known, whatever can be done, will be done. Along with Faust, Frankenstein led the way down that path. He wished to learn, to know, to penetrate “the hidden laws of nature” (Frankenstein, p. 57, “the physical secrets of the world” (p. 58), “the deepest mysteries of creation” (p. 68). “What glory would attend the discovery,” he declares (also describing his motives and his undertaking), “if
I could banish disease from the human frame and render men invulnerable to any but a violent death!” (p. 61). He simply (or not so simply) states the same basic desires and forces that still typically motivate the scientist and technologist and that underlie most research in biomedicine or pharmacology today. (The only angle he leaves out is monetary advantage and reward: “Wealth,” he states and with no irony, “was an inferior object” [p. 61].)

A driven experimental scientist, *Frankenstein* wanted to modify, improve, and enhance the human body. “I will pioneer,” he asserts, “a new way, explore unknown powers, and unfold to the world the deepest mysteries of creation” (*Frankenstein*, p. 68). His words anticipate the very same kind of thinking that culminates in something like the Human Genome Project, which determined the sequence of chemical base pairs in the composition of DNA, which identified and mapped the genes of the human genome, and which was considered by some to deliver the key to unlock the last secrets of biology, indeed, of life itself.

But the story tells us, even *Frankenstein* himself admits, that his pursuit of the knowledge he desires occasions something akin to an “insurrection” (*Frankenstein*, p. 68). His enterprise is “dangerous” (p. 73), “unlawful” (p. 75), and “exceeded moderation” (p. 77). Which is to say, the knowledge he seeks through his scientific research is and should be prohibited. For him, as for science and technology in general, there are no limits, no boundaries to knowledge, because he desires only to advance knowledge, in this case, biomedical science. As is so typical in scientific-technological research and development, he believes as well that his scientific research and experiments are performed in the service of humanity, a higher cause, and a greater good. He tells of the great appeal and the satisfaction to be derived from the scientific endeavor: “None but those who have experienced them,” he reports, “can conceive of the enticements of science” (p. 70).

Let us quickly review *Frankenstein*’s scientific studies and activities, not to mention his technological skills, as spelled out in the story. “I made some discoveries in the improvement of some chemical instruments” (*Frankenstein*, p. 71), he reports, and “became acquainted with the science of anatomy, but that was not sufficient” (p. 71). “Not sufficient” subtly alerts us to the imperative of science and technology, to the conviction that there is never an end point in the advance of such discovery, invention, and innovation. Next, he became “capable of bestowing animation upon lifeless matter” (p. 72), and then “began the creation of a human being” (p. 73). In a sense, his project bears much resemblance to the latter-day sciences of cloning and genetic engineering or bioengineering. On this subject, see Andrew Kimbrell’s (1993) book, *The Human Body Shop: The Cloning, Engineering and Marketing of Life*. *Frankenstein* even wanted in fact to create “a new species” (*Frankenstein*, p. 73).

To supply the project, he “collected bones from charnel-houses,” while “the dissecting room and the slaughter-house furnished” many of his materials (*Frankenstein*, p. 74). It sounds grisly, but harvesting pig arteries or human organs and other body parts at death—at auto accidents, for example—for use to restore or “reanimate” another human body is perhaps not so very different. Consider the January 28, 2006, article in the *Washington Post* by Michael Powell and David Segal: “In New York, a Grisly Traffic in Body Parts.” They report the following:

A macabre scandal has spread from a body-harvesting lab in New Jersey to hospitals as far away as Florida, Nebraska and Texas as hundreds of people discover that they have received tissue and bone carved from looted corpses, not least the cadaver of Alistair Cooke, the late and erudite host of PBS’s “Masterpiece Theatre.”

And how were those corpses provided? By “rogue” funeral homes, a latter-day, sanitized version of *Frankenstein*’s “charnel houses.”

Like most of us, *Frankenstein* believes implicitly and unshakably that scientific and technological advances are inherently and implicitly good—very good actually, even the best—for humanity. As he puts it, “when I considered the improvement which every day takes place in science and mechanics [we might well say biotechnology now], I was encouraged to hope my present attempts would at least lay the foundations of future success” (*Frankenstein*, p. 73). Indeed, biotechnology as conceived and employed by *Frankenstein* is designed to take human beings to a new level beyond themselves, just as bioengineering or nanotechnology or cybernetic-organic (cyborg) research is now designed to do as well.

For example, although Diana Bowman, Graeme Hodge, and Peter Binks report in their 2007 *BSTS* article about nanotechnology and Michael Crichton’s novel *Prey* that “the few data now available [for nanotechnology] give cause for concern” (p. 441), they nevertheless still affirm that “these new technologies continue to show the potential to advance human well-being and society” (p. 442). In addition, they acknowledge that “some nanomaterials appear to have potential to damage skin, brain, and lung material, to be mobile or persistent in the environment, or to kill microorganisms (potentially including ones that constitute the base of the food web)” (p. 441; as cited in Balbus, Denison, Florini, & Walsh, 2005, p. 65). As many readers may know, nanomaterials are used for cosmetics, nutritional supplements, and even clothing. Bowman et al. (2007) sum up the problem as a lack of governmental oversight and regulation, but that hardly gets to the core of the problem.

Science and technology are understood and believed to provide improvements and to supply solutions to problems
of human existence. But as the story shows and as Jacques Ellul (1990, p. 39) so often pointed out, the actual results are typically and characteristically the exact opposite. In The Technological Bluff, he lists four trenchant propositions:

- First, all technical progress has its price.
- Second, at each stage it raises more and greater problems than it solves.
- Third, its harmful effects are inseparable from its beneficial effects.
- Fourth, it has a great number of unforeseen effects.

In other words, technological innovations, advances, and solutions unavoidably bring with them a whole new set of unanticipated problems. As Ellul (1990) sums up, “technical solutions bring with them the very evils they are supposed to remedy or produce worse ones in another area” (p. 93). The expected blessings turn out to be curses; success coincides and actually equates with failure itself.

Frankenstein, much like us latter-day scientists and technologists, fails to foresee any negative results and is completely blind to the possibly catastrophic consequences of his grand research plan and project. While the scientist and technologist may have intimations or reservations about the project, it is only after the fact, after the experiments, after the inventions and innovations have been carried out and realized that they are sometimes able to recognize the damage and the danger. The famous technologist and pioneer of virtual reality Jaron Lanier admits as much in his 2010 book You Are Not a Gadget: A Manifesto. Only after having finally accomplished what he set out to do can Frankenstein then see clearly enough to discern exactly what he had been engaged in: “now that I had finished, the beauty of the dream vanished, and breathless horror and disgust filled my heart” (Frankenstein, p. 77).

As the novel shows, the scientific enterprise produces monsters instead of enhanced human beings. Frankenstein may succeed in the creation of a creature in his own image, “a being like myself” (Frankenstein, p. 73), as he tells it, but the creature he creates is, he discovers and admits, nothing other than a “monster” (p. 78). Because the creature is made in the image of the creator, we discover that Frankenstein himself must be a monster as well, for the creature must necessarily reflect the image of the creator. At one point in the story, Frankenstein describes the monster as his “own spirit let loose from the grave” (p. 95). The monster, too, recognizes that he is a reflection of his maker. “God, in pity,” he laments and at the same time accuses Frankenstein, “made man beautiful and alluring, after his own image; but my form is a filthy type of yours, more horrid even from the very resemblance” (p. 147).

Eventually, Frankenstein’s outward appearance actually reveals the monstrousness previously hidden within. Like the monster, he becomes “a miserable spectacle of wrecked humanity” (Frankenstein, p. 175). In other words, the scientist/technologist is the real monster here. Radu Florescu (2007) compares Frankenstein to “a criminal magician who employs up-to-date tools” (in Frankenstein, p. 376). It calls to mind the argument Richard Stivers (1999) made in his book Technology as Magic. Technology provides the up-to-date tools for latter-day “magicians,” if not outright “criminals.” Or as Albert Einstein (1998) observed in a letter to his friend Heinrich Zangger on December 6, 1917, “all of our exalted technological progress, civilization for that matter, is comparable with an axe in the hand of a pathological criminal” (p. 412). (His own words must have come back to haunt him after his own involvement in the development of the first atomic bomb.) Even at the beginning of his experiments, Frankenstein admitted that while engaged in such activity he shunned others as if he “had been guilty of a crime” (Frankenstein, p. 76).

As Shelley makes clear, the grand experiment, the creation of an artificial life-form resulted, even in Frankenstein’s own mind, in “catastrophe” (Frankenstein, p. 77). She depicts this artificial production of life as “a monstrous aberration” (Shattuck, 1996, p. 94). And yet the lessons remain unlearned. Frankenstein’s horrible failure failed to produce in him any reassessment of his scientific undertaking or to lead him to any true understanding of the catastrophe he caused. After all that has happened, he still thinks and talks the same at the end of the story as at the beginning. He had begun his life, he attests, “with benevolent intentions and thirsted for the moment when I should put them in practice and make myself useful to my fellow human beings” (Frankenstein, p. 108).

Precisely these intentions had motivated his scientific experiments, but proverbial wisdom reminds us that the road to hell is paved with such good intentions. Frankenstein had intended to be a great benefactor of the species who worked for the benefit of mankind (cf. his speech to the crew on Walton’s ship; Frankenstein, p. 228), but we see in the story how utterly mistaken he was and is, how utterly he failed in his success. (Ironically, his first name is Victor. Of course, the only victory he can claim is a staggering and frightening defeat.) Even after all his disappointments and torments, and on the brink of death, Frankenstein remains oblivious to the devastating effects of his scientific project: “During these last days I have been occupied in examining my past conduct,” he confesses to the polar explorer and ship’s captain Walton, “nor do I find it blameable” (p. 230). In spite of his enormous failure, he clings tenaciously to his vision of scientific progress and with his last breath declares: “I have been blasted in these hopes [in science and discoveries], yet another may succeed” (p. 231).

Entirely missing from Frankenstein’s consciousness are realizations like those of J. Robert Oppenheimer (1954), who oversaw the development of the atomic bomb or Robert A. Lewis, the copilot of the “Enola Gay,” the plane
from which the bomb fell on Hiroshima. Reflecting later on the event, Lewis eerily compared the reality with a scene from science fiction: “It was the actual sight that we saw that caused the crew to feel that they were a part of Buck Rodger’s 25th century warriors” (Gruson, 1983, p. B8). At the time the bomb actually fell on Hiroshima, exploded, and the city disappeared, Lewis wrote in his logbook “My God, what have we done?” (Malnic, 2007, p. A1). Similarly reporting his response to the successful detonation of the first nuclear weapon, Oppenheimer (1954) recalled quoting a verse from the Bhagavad Gita: “Now I am become Death, the destroyer of worlds” (see an excerpt of the 1967 NBC television documentary The Decision to Drop the Bomb, produced by Fred Freed, where Oppenheimer speaks these words: www.atomicarchive.com/Movies/Movie8.shtml).

Yet how often do we fail to arrive at such insight? And how much more often do we not suffer instead from the same hubris and conceits, from the same mistaken confidence, as Frankenstein?

So where are we today, almost 200 years after the publication of the novel Frankenstein? While Frankenstein built a being out of salvaged body parts, liver, lung, kidney, and even heart transplants are now commonplace and life-saving interventions. Besides such major organs, we now harvest corneas, tendons, skin, and bones. Thanks to advances in surgical procedures we are now able under favorable circumstances to attach or reattach various appendages and more. Perhaps the most astonishing of such surgeries occurred in the recent past when for the first time a human face was transplanted. Even the use of pig arteries in the human circulatory system now hardly raises eyebrows. The injection of modified botulism as a beauty aid for cosmetic purposes is widespread and acceptable. Most of us are acquainted as well with the recent appropriation of the name Shelley gave her protagonist for genetically engineered agricultural products: Frankenfood. Now there is growing interest in bringing the dead back to life, or cryonic reanimation, as Grant Schoffstall discusses in this issue of BSTS as well.

I do not have a good answer to my initial question about what knowledge is or should be off limits or forbidden us, but can say that we have done very little serious thinking or imagining about how science and biotechnology might go horribly wrong. One of the few to speak to that very problem is R. C. Lewontin (1993), who illuminates the dangers of unforeseeable damage in his discussion of DNA implantation. “Even if it were our intention only to provide properly functioning genes to the immediate body of the sufferer,” he writes in Biology as Ideology, “some of the implanted DNA might get into and transform future sperm and egg cells” (p. 70). Any miscalculations of the effects of the implanted DNA, he goes on to explain, “would be wreaked on our descendants to the remotest time” (p. 70). While Frankenstein is the literary example of horrible miscalculation, there are plenty of other real-life instances of such grievous error. Typically, however, we thoughtlessly go our merry way in celebration of our latest technological accomplishment, only to discover later what great damage we’ve done, at which point we again forge ahead optimistically with the next generation of technological innovations, even thinking those new technological advances will solve the problems caused by our old or still extant technologies. We tend to believe that there are no limits to human knowledge or to scientific research or to technological innovation and advance. Faust believed it, Frankenstein believed it, but their stories and ours tell us over and over again that there are limits after all; that we are not able to, or should not, know everything; and that when we nevertheless seek to know such things, we wreak havoc.

Oppenheimer (1954) provides an additional insight into the scientific-technological enterprise. “When you see something that is technically sweet,” he said, “you go ahead and do it and you argue about what to do about it only after you have had your technical success. That is the way it was with the atomic bomb” (p. 81). That is also exactly the way it was with Frankenstein for whom the prospect of discovery and innovation was exceedingly sweet and who only after he had had his technical success began to worry about what to do about what he had done. And that is the way it remains with science and technology. Jaron Lanier’s (2010) book also speaks precisely to that very issue.

According to Brian Stableford (1995), the Frankenstein story has become “a central myth of the kind of technophobia which argues that modern man is indeed doomed to be destroyed by his own artifacts (and that such a fate, however tragic, is not undeserved)” (p. 46). Stableford does not agree with this assessment, however, and both wishfully and mistakenly thinks it “unlikely in the extreme that a book which Mary Shelley elected to call The Modern Prometheus was planned as an assault on the hubris of scientists” (p. 49). Closer attention to the text entirely precludes such an interpretation. What if, he asks, while completely ignoring the story as written, “the scientific miracle that Victor Frankenstein had wrought had been allowed to be a miracle indeed, and the resurrected man no monster at all?” (p. 56). The simple answer is, “The so-called miracle was indeed a monster!” Let’s not forget that Frankenstein fled aghast from the repulsive being he had made. Like Frankenstein himself, Stableford still hopes for and wants to believe in technology as the only kind of salvation humans might find “to redeem themselves from every kind of earthly damnation” (p. 56).

As Susan Lederer and Richard Ratzan (2005) observe, the name Frankenstein has by now become “a cultural short hand for science out of control” and “the experiment-gone-wrong” (pp. 463-464). Brian Aldiss (2007) likewise remarks that “the world has adopted Frankenstein as the model of the irresponsible scientist” (in Frankenstein, p. 354). Having done so, we invest the fictional character with a certain reality. We conveniently make Frankenstein, now more than
a symbol, responsible for all scientific irresponsibility, and so free ourselves and our scientists from any real responsibility, since none of us are any such monsters as Frankenstein. In this sense, Ellul (1980) is right about science fiction: that science fiction books or movies are

a mechanism for adapting, for adjusting to the technological society as it really is. We are shown a horrible, unacceptable model, which we forcefully reject; but it is not technology, it is an imaginative treatment of what technology could be! And in our refusal, our rejection, our condemnation of this, we think we have waved off technology; hence, we must be lucid and vigilant beings, we are rid of our anxiety. (p. 112)

Similarly, Kurt Black (1995, p. 329) writes that “the questions raised in the novel simply fade away. . . . The ethical questions that could concern mainstream scientists or engineers fade away,” because the story transforms into social consciousness, devolves into the grotesque and ridiculous, and retains only shock value.

Even so, Frankenstein might yet be rescued from such irrelevance. According to Ellul, we regard the science fiction, the Frankenstein, scenario as fiction and fantasy. Hence, we can think that it is not going to happen and certainly not to us. But it is no longer merely fiction and fantasy. It has happened and it does happen. What a work of art like Frankenstein can do, when taken as serious literature and as something more than mere entertainment, is discredit scientific, technological utopianism with its dream of human improvement, advancement, and progress. Frankenstein shows scientific, technological utopianism to be the fantasy, the real science fiction. As well, I would assert in accord with Heidegger, that the meditative thinking of literature as exemplified in Frankenstein offers an alternative and counterbalance, maybe even an antidote, to the calculative thinking of science and technology, possibly even a rescue from its dangers (cf. John McCarthy’s, 2006, Remapping Reality, and Heidegger, 1966).

Let me offer some final thoughts about the word monster, a key word in Frankenstein and of considerable, yet subtle significance. It derives from Anglo-Norman and Middle French by way of Old French and classical Latin (see The Oxford English Dictionary). Initially, in 12th-century Old French, the word had the sense of “prodigy” or “marvel,” but within a 100 years it took on the meaning of a “disfigured person” or “misshapen being,” both of which apply to Frankenstein’s creation. The earlier Latin monstrum had similar connotations and could mean “portent, prodigy, monstrous creature, wicked person, monstrous act, atrocity,” which likewise describe Frankenstein and his undertaking. The etymological root of the word, the verb monere, at the core of the word monster, meant “to warn.” And that is where Frankenstein leaves us: with a portent and a warning about monstrous acts and atrocities undertaken in the name of scientific and technological progress and benefaction.

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Note
1. Writing in December of 1917, Einstein was lamenting the amorality of a Europe at war. He goes on with his indictment to say that “our life is corrupted not just technologically but also medically—which is actually only a kind of technological pollution” (p. 412).

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