



## “A spark of being”: Frankenstein and anesthesiology

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Mary Wollstonecraft Shelley published *Frankenstein: Or, The Modern Prometheus* when she was 20 years old, writing the tale in response to a challenge by Lord Byron two years earlier during a stormy summer stay in a Swiss mansion. The barebones of the plot is part of the public imagination—a student, Victor Frankenstein, becomes obsessed with creating life and succeeds in doing so. Nevertheless, Frankenstein immediately rejects his creature, which has devastating consequences. Shelley's novel, the first to feature science as the construct to create a “human,” has a wealth of themes, layers, characters, and sensibilities that make it a worthwhile and surprising read. Although I read it when I was young, I had forgotten it, and only stumbled upon it again as the book is a staple in the canon of medical/health humanities, an academic discipline that seeks to deepen understanding of the contexts of medicine, health, illness, and mortality through the tools and lens of the humanities, arts, and qualitative social sciences.

As the director of Stanford University's health humanities and the arts program, *Medicine & the Muse*, I had long sought a theme to build a collaborative cross-campus initiative. Over the years, I floated ideas—none took root. But several years ago when I had happened to hear a panel discussion at an ethics and humanities conference which mentioned 2018 as the 200<sup>th</sup> anniversary of the publication of the novel, I decided to use Frankenstein to create a platform where people from vastly different disciplines could engage with the topic, and also each other. I re-read the book, became captivated by Shelley's words, the structure of the novel, and how this work of fiction has become generative in and of itself, spawning over a hundred films, for example.

As I became obsessed with Frankenstein, the *Stanford Frankenstein@200* initiative I had created itself grew into

a sort of monster—a multipronged effort that included grants, exhibits, courses, panels, symposia, an international conference, stem cell research, theatre offerings, readings, workshops, concerts, dance, film series, a festival, and even an outdoor multimedia laser light show extravaganza.<sup>1</sup> Unlike Victor Frankenstein, who kept his creation secret from his doomed family, my daughter designed flyers and programs, my son's mother-in-law volunteered at the conference, my sister flew 3,000 miles to register attendees, and my husband accompanied me at countless events. Furthermore, *Frankenstein@200* created an extended family across the campus and community that engaged scientists, artists, doctors, engineers, humanists, and musicians.

The reasons why Frankenstein's relevance continues to increase are multifold. We live in an epoch of scientific and technologic advances, which could lead to the creation of a sentient being. Through a combination of artificial intelligence, robotics, and genetic and tissue engineering, we are on the verge of a new world. Bits of brain, formerly thought to be dead, are grown and neural networks formed. The complexity of perspectives, themes, and historical contexts related to the novel have made this work part of multiple academic discourses—ethics and bioethics, disability studies, race and ethnicity studies, climate change research, and film and media studies, to name a few. The use of “franken-” as a prefix conjures a range of images and concepts, from food manipulations to any project deemed slipping from control.

The novel explores what it means to be human and what it means to be monster. It is not only the hubris of Victor Frankenstein that wreaks havoc, but also his inability to empathize with his creature, whom Frankenstein views as hideous. Ultimately, it is Frankenstein's rejection of his creature that creates a murderous, vindictive monster.

But what does Frankenstein have to do with anesthesiology? As it turns out, quite a bit. Although I hope some of us share the genius and dedication to research that Victor exhibits, his attitudes, behaviours and beliefs are all cautionary tales for the anesthesiologist. For

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example, Victor is horrified by the esthetic appearance of the creature—its abnormally large physique, its patched, sallow skin, its icteric sclerae: “by the glimmer of the half-extinguished light, I saw the dull yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs”<sup>2</sup> (Figure).

As anesthesiologists and intensivists, we encounter patients with physical and mental characteristics that do not fit the norm. In fact, we aid in the creation of physical distortions—we thread tubes into orifices and stick cannulae through the skin, we give fluids or place our patients in positions that contribute to edema, we enable disfiguring surgery for cancer treatments or amputations for vascular insufficiency or infection. Though the purpose of our work is noble—to heal and help those who are ill—we must acknowledge that, as humans ourselves with emotions and prejudices, some body distortions will affect us. I am cognizant that the boggy, infected tissues resulting from “skin popping” (a patient’s nonsterile injections of illicit drugs into the skin) adversely affect me. Hence, I must be extra cautious to not judge the patient who presents with this condition, as I struggle to find an appropriate site for an intravenous line.

The motto of the Canadian Anesthesiologists’ Society is “Science Vigilance Compassion,” and of the American Society of Anesthesiologists: “Vigilance.”<sup>3,4</sup> They are both clarion calls for patient-focused care, warnings to never lapse into complacency. Victor himself is not complacent in his feverish toils to create a human, but unlike Victor, the anesthesiologist’s reason to avoid complacency is out of duty and care. We regard complacency as anathema because, in response to the profound trust of the patient, we guide and protect those we render vulnerable. The patient is never our “monster,” but we become monstrous the moment we fail to place the patient’s interests and life as our paramount responsibility.

There are a number of procedures we participate in that are related to resuscitation. For example, defibrillation, cardioversion, dysrhythmia ablations, convulsive shock treatment, nerve stimulation, and electric brain implants are all procedures that have a relation to the galvanic experiments Mary Shelley witnessed in her time, and to which she hints in the extremely short creation scene of the novel. These modern procedures utilize “the spark of being” she presciently described.<sup>2</sup>

Other procedures we as anesthesiologists are involved with have Frankensteinian overtones: the creation or prolongation of life from nonliving, or once living, parts. These interventions include transfusion, transplantation, organ harvesting, stem cell medicine, reproductive medicine, cadaver implants, and plastic surgery (such as flaps). Anesthesiologists play critical roles in these procedures and in the research leading to their

refinements and innovations. Modern medicine’s efforts to prolong meaningful life can seem miraculous, but must be overseen, scrutinized, examined for ethical quandaries, and fairly utilized.

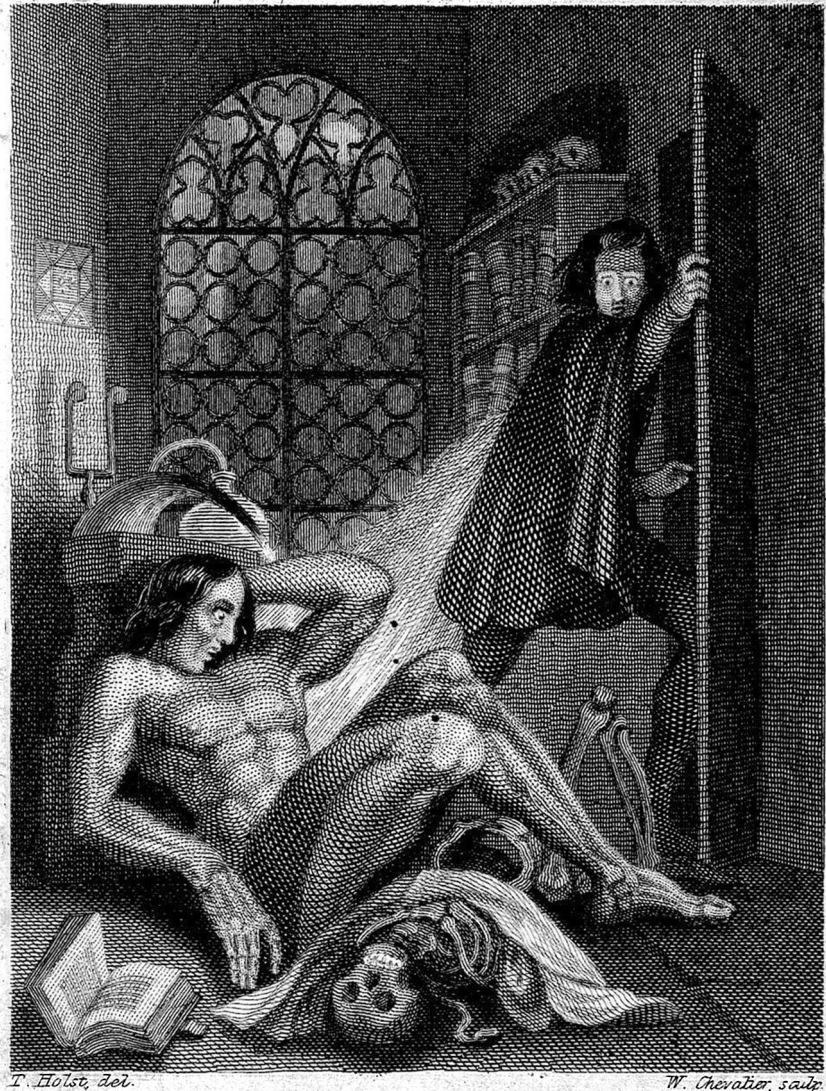
Anesthesiologists are at the vanguard of patient safety. The development of life-like simulation mannequins and scenarios has been led by anesthesiologists for medical education, study of team dynamics, and improved patient care. The anesthesiologist in the “hot seat” feels as if the episode of sudden deterioration of the simulated “patient’s” vital signs under anesthesia is real. Debriefing, essential for all scenarios, is particularly important when the mannequin “dies.”

As artificial intelligence becomes more integrated into our lives, including the practice of medicine, anesthesiologists will need to explore and cultivate their roles in this new world. A large part of the reason Frankenstein resonates so deeply with us now is not the creation of sentience from charnel house or graveyard parts, but rather the construction of robots that not only pass mental Turing tests, but also stroll all the way through the uncanny valley to be unidentifiable as robots. Both science fiction and science itself have grown to incorporate technology in life-saving and life-extending processes. As anesthesiologists, we have interacted with the beginnings of these human-machine interfaces: ventilators, bypass machines, ventricular assist devices, deep brain stimulators, feedback infusion systems, even laboratory measurements.

It behooves us as anesthesiologists and humans to participate in discussions of the future of humankind. We are the ones who enable and witness the near magical emergence at the end of general anesthesia, when we bring our temporarily incapacitated patients back to themselves, to their personhoods, to their identities, and to their families. We know what that looks like, what it feels like, and what that “welcome back” should be.

The tale of Frankenstein teaches us what monsters are created when humility, compassion, and respect are not foremost in our work and lives. Anesthesiologists, more than any other doctors, intervene in their patients’ capacity to be human. But we also, more than any other doctors, understand the responsibility of those transitions. So, share the good news with your cardioversion patient after you plunged her sensorium into brief, deep unconsciousness, and brought her back again. “Your heart rhythm is normal again.” Rejoice in the first breath your patient takes after you terminate the positive pressure ventilation that you vigilantly adjusted to sustain him throughout surgery. “Open your eyes,” you say. “Take a breath.” And your patient does. We witness and enable these transitions and transformations daily. We must not diminish these occurrences as mundane, but continue to respect the

**Figure** Frontispiece, first illustrated edition of *Frankenstein*: Victor Frankenstein observing the first stirrings of his creature. Engraving by W. Chevalier after Th. von Holst, 1831. Credit: Wellcome Collection. CC BY 4.0.



T. Holst, del.

W. Chevalier, sculp.

## FRANKENSTEIN

*"By the glimmer of the half-extinguished light, I saw the dull, yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs,  
\*\*\* I rushed out of the room."*

Page 43.

London, Published by H. Colburn and R. Bentley, 1831.

profundity of our work, and its meaningfulness for ourselves, and for our patients. We know we are not gods, but we must also know, we are not Frankenstein.

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