

EDITORS' PREFACE

DAVID H. GUSTON, ED FINN, AND JASON SCOTT ROBERT

No work of literature has done more to shape the way humans imagine science and its moral consequences than *Frankenstein; or The Modern Prometheus*, Mary Shelley's remarkably enduring tale of creation and responsibility. *Frankenstein* is the literary offspring of an eighteen-year-old girl ensconced in a romantic yet fraught summer getaway on the shores of Lake Geneva in response to a "dare" to come up with a ghost story. That dare was issued a little more than two hundred years ago. In writing *Frankenstein*, Mary produced both in the creature and in its creator tropes that continue to resonate deeply with contemporary audiences. Moreover, these tropes and the imaginations they engender actually influence the way we confront emerging science and technology, conceptualize the process of scientific research, imagine the motivations and ethical struggles of scientists, and weigh the benefits of scientific research against its anticipated and unforeseen pitfalls.

The world will celebrate the bicentennial of *Frankenstein's* publication on 1 January 2018. Arizona State University (ASU) will be the epicenter of this celebration of the power of literature, science, art, imagination, and ingenuity. ASU's Frankenstein Bicentennial Project is a constructive, intellectual, and public endeavor meant to celebrate *Frankenstein's* pervasive influence on contemporary culture and scientific research. With funding from the US National Science Foundation (NSF Award no. 1516684), we are producing a citizen-curated, digital narrative experience of *Frankenstein* and Frankensteiniana in collaboration with dozens of museums and other partners. Our goal is to understand the galvanizing power of *Frankenstein* to stoke the public imagination and to harness that energy to ignite new conversations about creativity and responsibility among science and technology researchers, students, and the public. We hope these conversations will inspire a deeper understanding of how to govern science and technology responsibly. We believe *Frankenstein* is a book that can encourage us to be both thoughtful and hopeful: having these conversations can help all of us make better decisions about how to shape and understand scientific research and technical innovation in ways that support our well-considered values and ambitions.

Mary Shelley's landmark fusion of science, ethics, and literary expression provides an opportunity both to reflect on how science is framed and understood by the public and to contextualize new scientific and technological innovations, especially in an era of synthetic biology, genome editing, robotics, machine learning, and regenerative medicine. Although *Frankenstein* is infused with the exhilaration of seemingly unbounded human creativity, it also prompts serious reflection about our individual and

collective responsibility for nurturing the products of our creativity and imposing constraints on our capacities to change the world around us. Engaging with *Frankenstein* allows a broad public and especially future scientists and engineers to consider the history of our scientific progress together with our expanding abilities in the future and to reflect on evolving understandings of the responsibilities such abilities entail.

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This critical edition of *Frankenstein* for scientists and engineers is—like the creature himself—the first of its kind and just as monstrous in its composition and development. Originally proposed by our colleague Cajsja Baldini in ASU’s Department of English, the skeleton of the critical edition was fleshed out at a workshop at ASU in the spring of 2014, hosted by two of us (Guston and Finn) and funded by the NSF (NSF Award no. 1354287) to explore science-and-society projects that might be built around *Frankenstein*. Robert served as scribe in breakout sessions dedicated to fleshing out the critical edition, which also included Baldini, historian Catherine O’Donnell, and representatives from the ASU Libraries, a local high school, and the larger community. We then sent copies of *Frankenstein* to professors and students in science, technology, engineering, and mathematics (STEM) fields and asked them to identify key terms and passages requiring elucidation and elaboration for STEM students from high school to graduate school. We received almost one thousand suggestions! And so the editorial work began in earnest.

In the spring of 2015, still working with NSF funding, we brought together a small group of advisers to discuss both a print version and an immersive digital version of an annotated *Frankenstein*. One key contributor was Charles E. Robinson, emeritus professor at the University of Delaware and one of the world’s leading scholars of *Frankenstein*. Robinson graciously offered us the opportunity to use his painstakingly line-edited and amended version of the original manuscript published in 1818 as our core text. The workshop yielded a strong sense of what distinguishes our critical edition from previous ones, which have dwelt on the novel’s literary or historical importance, addressing it as representative of romanticism or the gothic. Other volumes have focused on the science or ethics of *Frankenstein* or both, but they have been either critical anthologies or otherwise engaged with the novel in a secondary fashion. We wanted our version to be unique in bringing together the primary text and annotations and short essays by a diverse group of experts. This juxtaposition will allow STEM readers to explore critical understandings of the ethical and societal dimensions

of scientific inquiry in the immediate company of Victor Frankenstein, his creature, and a gripping narrative of creativity and responsibility.¹ Rather than focusing on the specifics of the science and what Mary Shelley got or did not get right,² our version (although including some such discussion) emphasizes broader questions of the scientific endeavor, the roles of scientists, and the relationship between scientific creativity and responsibility.

With the serial and at times massively parallel assistance of Valerye Milleon, Mary Drago, and Joey Eschrich, we vetted the lengthy list of suggested annotations and then solicited, assigned, collected, edited, amplified, truncated, massaged, and merged the annotations into the far-ranging critical conversation composing this volume. We also identified key themes to be highlighted in longer essays—including creativity, imagination, monstrosity, angst, responsibility, and the roles of gender in *Frankenstein* and in science and engineering—and commissioned essays from leading scholars and writers at ASU, across the United States, and around the world. The end result, we believe, is an edition of *Frankenstein* that incites a deeply engaging cross-disciplinary exploration of the complexities of the development of personal and professional identity and of the rightful place of science and scientists in our rapidly changing world.

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In organizing and editing this material, we were faced with innumerable decisions about style and content. Upon reflection, perhaps the most consequential are the naming conventions we have adopted. First, we have decided to refer to the author and her main protagonist simply as Mary and Victor wherever possible. We do not wish to diminish them with this familiarity, but we do wish precisely to render them more familiar. Mary was eighteen years old when she began to set her ideas to paper. Victor was a young man, still very much a student. Both of them are more like you, the reader, in that sense than like us. We want you to see them more as colleagues, classmates, and maybe even as friends rather than as a distant contributor to the literary canon and the maniacal character she devised.

Recognizing—as many have before us, from the author of *Genesis* to Mary herself—that to name something is to assert some measure of creative power over it, we have decided to attempt to consistently identify Victor’s creation as “the creature.” We do this for several reasons, foremost among them to allow readers to determine for themselves whether the appellations *daemon* (frequently used in the text) and *monster* (most often used in posterity) are appropriate. For us, *creature* is a more neutral, descriptive, and pedagogically appropriate denomination.

It is worth pointing out that the way we now use the word *creature* ignores a richer etymology. Today, we refer to birds and bees as creatures. Living things are creatures by virtue of their living-ness. When we call something a creature today, we rarely think in terms of something that has been created, and thus we erase the idea of a creator behind the creature. We have likewise lost the social connotation of the term *creature*, for creatures are made not just biologically (or magically) but also socially. In the contemporary film *Victor Frankenstein* (2015), for example, *Harry Potter*'s Daniel Radcliffe plays Igor—Victor's hunchback assistant not present in Mary's novel but invented for stage and screen—who is rescued from a circus, cured of his malformation, and embraced by Victor first as assistant and then as partner in his laboratory. Victor raises him from a subhuman existence, even giving him the name “Igor” because the freak-show hunchback has no name, and makes him an English gentleman worthy of invitations to clubs and balls and even the affection of a beautiful woman. Igor understands that he is Victor's creature in this regard, just as surely as if his life were created from nonlife. So to recognize both the biological and the social aspects of creation—as well as the failure of Mary's Victor to name his creation, thus rejecting the creature's social creation—we have decided on “the creature.” So Mary, Victor, and the creature constitute the trinity of our text.

We also want to reflect on the fact that we are a trio of roughly middle-aged guys potentially appropriating Mary's work. Although changing the biological aspects of our identities for the purposes of this volume is not really an option, we can consider what it was like for us to confront issues of gender in *Frankenstein* and raise these issues for ourselves and for our readers. First, we must emphasize again that although the idea for the Frankenstein Bicentennial Project came from one of us, the idea for this volume came from our colleague Cajsa Baldini. As a lecturer in English at ASU, Cajsa is in a more vulnerable academic position than we are (two of us are tenured, one is on the tenure track). She had the further burden, familiar to many women, of family medical challenges that ultimately caused her to pass the project to us. Without her creative spark, this project would never have existed, and we are grateful for her blessing and her willingness to allow us to pursue the work in her stead.

It may be difficult for some readers, especially those accustomed to living the relatively privileged life of the white male, to recognize how hard it was for Mary to write and publish this book as a young woman without money or the support of her family (with the exception of her husband, the poet Percy Bysshe Shelley, who was just as much an outcast as she was).

When the first edition appeared in 1818, it listed no author, and some reviewers and readers assumed Percy was the real architect of the narrative. Several reviewers who knew the truth found it deeply alarming: the *British Critic* blamed the flaws it perceived in the text on the gender of its author, brutally ending its review by saying, “The writer of it is, we understand, a female; this is an aggravation of that which is the prevailing fault of the novel; but if our authoress can forget the gentleness of her sex, it is no reason why we should; and we shall therefore dismiss the novel without further comment” (“Review of *Frankenstein*” 1818). It was only one of the many times Mary was excluded from consideration because of her gender and her unconventional choices.

We can also speak of what it was like to learn from Mary because any failure on our part to acknowledge the sheer brilliance of her composition, its heritage and its progeny, its intricacies and its clarion vision, would be a failure as colossal as Victor’s failure to acknowledge the intelligence of his creature—except that we are Mary’s creatures and not the other way around. As university teachers, we know—but we do not always show—that our students have things to teach us. We do not labor under the misapprehension that we are bringing very much at all to Mary; rather, our hope is to bring Mary more clearly and powerfully to you. This endeavor requires, as we hope we have done through the invited essays and annotations, the recognition that Mary was not just an interesting writer but also a powerful thinker. Her parents—the feminist philosopher Mary Wollstonecraft, who died as a consequence of Mary’s birth, and the similarly radical political philosopher William Godwin—provided her with the raw material. Tales of her intensive tutoring bring to mind that imposed by other nineteenth-century tiger fathers such as James Mill, who in educating John Stuart Mill produced a nervous breakdown in his son before producing a political theorist who surpassed him. Turning gender roles around, Mary did not turn inward and anxious but instead turned outward and rebellious. Sixteen-year-old Mary ran off with Percy from England to continental Europe, returning shortly after only to run off again on the jaunt that led to her to imagine *Frankenstein*. Mary was doing drugs (laudanum, a powdered opiate) and became pregnant by a man who was at the time married to someone else: if she had turned up at ASU or any other school, she would have been labeled an “at-risk student” and targeted for intervention.

And the risks she faced were significant. By the time Mary began writing *Frankenstein*, she had already become a mother and lost a child. Little Clara arrived two months early in February 1815, only to die two weeks later, to Mary’s harrowing sorrow. Mary wrote later of a “waking dream”

that inspired *Frankenstein* in which she managed to revive baby Clara by moving her closer to the fire and nursing her to health. Mary would give birth to four children in all and bury three of them. Throughout Mary's life, birth and death were intimately connected. The themes of parenthood and responsibility in *Frankenstein*, of lost creatures and dead children, were visceral experiences for Mary. Among its many faces, *Frankenstein* was a very personal ghost story for its author.

After *Frankenstein* was published, Mary's life was perhaps even more challenging. She lost two other children, largely because of traveling with them across Europe in precarious conditions for the sake of her beloved Percy, and then she lost him, too, when he drowned in Italy at the age of twenty-nine. A less-resilient heroine of novels of Mary's time might have followed Percy to the grave by her own hand. Mary persisted. And just as we are in the thrall of her intellectual power, we are in awe of her resilience and emotional strength.³

The questions of gender and marginality come to the fore in several of the essays we have collected in this volume, specifically in the contributions by scholar Anne K. Mellor and fiction writer Elizabeth Bear. We subscribe to the idea that only Mary, with her bodily experience and embodied wisdom, could have written *Frankenstein* with such profundity. Indeed, questions about Mary's authorship persisted even after her name as author was first revealed; later critics supposed that it was really Percy's work, as if Mary could not have done it. To be sure, Percy contributed a great deal. But if you have visited the manuscript and fair copy at the Bodleian Library at the University of Oxford and been given a brilliant tour of its revelatory details by Bruce Barker-Benfield (as one of us has), you can see exactly how she did it—the dynamics of love and creativity played out in the looping flow of Mary's authorial hand and the angular interjections of Percy's editorial additions. This book by a young woman who would spend hours reading literature, philosophy, and history by her mother's grave, who was cut off by her father when she fled to Europe with Percy, and who lost a child of her own at seventeen is singular. No one else before or since could have written *Frankenstein* with the same combination of intellectual breadth, moral depth, and intense personal experience.

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We also feel it is important to make the case for bringing Mary, Victor, and the creature into the heart of conversations about contemporary science and technology. Of course, it is a privilege to engage with one of the most influential and widely assigned (if not as widely read) novels in the

English language and one that has inspired so many high and low cultural expressions. That fecundity reveals something important about this story: *Frankenstein* is unequivocally not an antisience screed, and scientists and engineers should not be afraid of it. The target of Mary's literary insight is not so much the content of Victor's science as the way he pursues it. This target is the same in much of science fiction—a genre that Mary certainly helped to invent—especially the kind that takes a dystopian turn.⁴ We can choose to focus on the cautionary nature of the tale or on the part that continues to inspire students who believe that they can do better—as creative and responsible thinkers, makers, researchers, and citizens.

Since Mary's day, science and technology have become more pervasive in society. (We will demur from saying which society was changing faster, Mary's under steam power or ours under solar, nuclear, and computational power.) As we anticipate the third century beyond Mary's vision, we open the door to what may be the most pervasive scientific and technical endeavors yet: the creation and design of living organisms through techniques of synthetic biology, the creation and design of planetary-scale systems through climate engineering, and the integration of computational power and processes into nearly every sector of global society and even the fibers of our being. These technologies, radically different from each other in scale and materials, share a Promethean perspective. Each fuses natural processes with updated human ingenuity and purpose to offer much-needed benefits, but at the same time each presents real and even existential risks that have roots in the long stream of previous iterations of human ingenuity and purpose. Yet this framing of synthetic biology, climate engineering, and ubiquitous computation in terms of risk and benefit conceals crucial questions of values and politics: Who gets to decide on the agenda for scientific research and development? Who gets to say what problems or grand challenges we try to solve? Who gets to say how we solve them (or resolve them or muddle through them)? Who gets to partake in those benefits, and are they the same people put at risk by our attempts to solve the problems at stake?

These and many other questions are part of the enduring legacy of Mary Shelley's *Frankenstein*, here brought to you in a new critical edition designed to enhance our collective understandings and to invent—intentionally—a world in which we all want to live and, indeed, a world in which we all can thrive.

NOTES

1. By “critical,” we mean being engaged in a detailed way with the text so that we are dealing not with superficial appearances but rather with deeper meanings and understandings. Scholars in the humanities often call this approach “close reading.” We do not mean “critical” in the sense of “demeaning” or “disparaging.” In fact, for the style of critical engagement you will encounter in this volume, simply attacking the novel or highlighting its flaws would not be nearly so revealing or fun.

2. One contemporary source for this perspective is an episode of the cable television series *Prophets of Science Fiction* (2011), dedicated to Mary Shelley and *Frankenstein*. The series was conceived, hosted, and executive-produced by blockbuster science fiction film director Ridley Scott.

3. The challenges of understanding Mary Shelley across the centuries have been brought to life brilliantly by a monologue commissioned and performed at the Bakken Museum. Located in Minneapolis, the Bakken is a small museum dedicated to the history of research into electricity and magnetism inspired by Earl Bakken, inventor of that most Frankensteinian technology, the transistorized pacemaker. At the workshop in May 2014, we were treated to a performance of this monologue by Dawn Krzykowski Brodey.

4. The relationship between science fiction and society’s broader relationship to the future is central to the work that one of us (Finn) pursues at the Center for Science and the Imagination at ASU. The center was founded to explore and expand our collective capacity to imagine a broad range of possible futures, especially in terms of creativity and responsibility.

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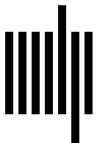
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Corrected 1818 text of Mary Shelley's *Frankenstein* © Charles E. Robinson

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