

## THE AUTHOR

# HOW TWO DEATHS, ONE AT HER BIRTH AND ONE AT TWELVE DAYS, BUILT VICTOR FRANKENSTEIN

MARY SHELLEY • 1797-1851 • LONDON

**M**ary Wollstonecraft Godwin was born in London on 30 August 1797. Her mother died eleven days later, of an infection carried in by the hands that delivered the afterbirth. That mother was Mary Wollstonecraft, who five years earlier had written *A Vindication of the Rights of Woman* and made the case that women were not ornamental animals but reasoning creatures kept deliberately ignorant. Her father was William Godwin, whose *Enquiry Concerning Political Justice* had argued that government, marriage, and property were all forms of coercion that a rational species would eventually put down. She was the child of the two most notorious radicals in England, and she never met one of them. The first fact of her life is that her arrival killed the person who made her.

Godwin made it worse before she could read. In 1798 he published a memoir of his dead wife that told the truth as he understood it: the affairs, the illegitimate first daughter, the two suicide attempts. He meant it as honesty and it was received as confession. Wollstonecraft's reputation did not recover for a century. So her daughter grew up with a mother who existed as two objects, a shelf of books and a stone in the churchyard of St Pancras, and she was taken to both. She was taught her letters at the grave. It is where she went to read, where she went to be alone, and, at sixteen, where she went to tell Percy Bysshe Shelley that she loved him.

The house supplied the rest of the education, because there was no school. Godwin's Skinner Street was a place where the talk was the curriculum. Samuel Taylor Coleridge came to read *The Rime of the Ancient Mariner* aloud, and Mary, sent to bed, hid behind the sofa to hear it: a poem about a man who commits one irreversible act against a living creature and spends the rest of his life telling strangers about it. Her father's guests argued chemistry and

electricity and the rights of man over dinner. A stepmother arrived in 1801 with children of her own, including the stepsister, Claire Clairmont, who would be present for everything that mattered later. Mary read her way through Godwin's library the way another child would have gone through a school, and what she absorbed was not a subject but a habit: that an idea should be pushed until it either holds or breaks.

Percy Shelley came into the house in 1814 as a disciple of her father, twenty-one years old, already married to Harriet Westbrook and already the father of one child by her. He and Mary declared themselves at Wollstonecraft's grave in June, and on 28 July they left for the Continent, taking Claire with them. Mary was sixteen. Godwin, who had spent his career arguing that marriage was a form of tyranny, refused to speak to her for years. The philosophy did not survive contact with his daughter.

On or about 22 February 1815 Mary gave birth to a daughter. The journal that day records it flatly: "she is delivered of a female child... The child is not quite 7 months. The child not expected to live." It lived twelve days. The journal follows them: the child unexpectedly alive, then favourable symptoms, then very well, then a cradle bought, then a note that she and her baby went out. On Monday 6 March the entry runs, in full: "find my baby dead. Send for Hogg. talk. a miserable day." She wrote to a friend the same day, and it is the plainest sentence she ever wrote. "It was perfectly well when I went to bed. I awoke in the night to give it suck it appeared to be sleeping so quietly that I would not awake it. It was dead then but we did not find that out till morning." Then, at the end: "for I am no longer a mother now."

The journal does not let it go, and the entries in between are the ones nobody quotes. On 9 March: "still think about my little baby, 'tis hard indeed for a

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mother to loose a child.” On 13 March: “think of my little dead baby. this is foolish I suppose yet whenever I am left alone to my own thoughts and do not read to divert them they always come back to the same point, that I was a mother and am so no longer.” Two things in that entry turn up later in the book. She calls her own grief foolish, which is a seventeen-year-old apologising for it in a diary nobody was meant to read. And she names the one thing that holds it off, which is reading. The creature she invented three years later teaches itself to read while hiding from a world that will not look at it, and what reading gives him is what it gave her: a few hours in which the thought does not come back to the same point.

Then, on Sunday 19 March 1815, this:

Dream that my little baby came to life again, that it had only been cold and that we rubbed it by the fire and it lived. I awake and find no baby. I think about the little thing all day.

The next day’s entry, Monday the 20th, is four words long: “Dream again about my baby.”

She was seventeen. Three years before the book was printed she had already written its premise in her own notebook: a dead body, warmth applied, the dead thing living again, and then waking up. She would go on to bury two more children before she was twenty-two.

The summer of 1816 supplied the occasion, not the material. A volcano in Indonesia had put enough ash into the atmosphere to cancel the season across Europe, and the party at the Villa Diodati on Lake Geneva, Lord Byron, his physician John Polidori, Percy Shelley, Claire, and Mary, spent June indoors in the rain reading ghost stories to one another until Byron proposed they each write one. She was eighteen. By her own retrospective account, written for the 1831 edition fifteen years later, she listened to Byron and Percy Shelley talk late about galvanism and the experiments of Erasmus Darwin and whether the component parts of a creature might be manufactured and brought together, and went to bed and could not sleep, and saw “the pale student of unhallowed arts kneeling beside the thing he had put together.” Everyone else at the villa produced something forgettable or nothing. Polidori got *The Vampyre* out of it. The eighteen-year-old got the book

that founded a genre.

She finished it in about a year, through two more deaths that would have stopped most writers: her half-sister Fanny killed herself that October, and in December Percy Shelley’s wife Harriet was pulled drowned from the Serpentine, pregnant. Mary and Percy Shelley married at the end of that month. *Frankenstein; or, The Modern Prometheus* was published on 1 January 1818, anonymously, dedicated to Godwin, with a preface written by Percy Shelley that made no mention of who had actually written the book. Reviewers assumed a man. Walter Scott, reviewing it warmly, assumed the man was Percy. She was twenty.

What followed was mostly loss. Clara died in 1818, William in 1819, and only Percy Florence survived her. Percy Shelley drowned off the Italian coast in July 1822, leaving her a widow at twenty-four with a two-year-old and no money. She kept them alive by writing: *Valperga*, *The Last Man*, *Lodore*, *Falkner*. She also edited her husband’s poems so thoroughly that his reputation today is substantially her construction. She died in 1851, at fifty-three.

The novel is not a warning about science, whatever a century of film posters has claimed. It asks what a maker owes the thing it has made, once that thing turns out to be a person. Mary Shelley knew the question from both ends. She was the made thing whose making killed its mother, and the mother who could not warm a cold baby back to life. ■

## THE MOMENT

**CORPSES TWITCHING UNDER ELECTRODES,  
A FIGHT OVER WHAT LIFE IS, AND A  
SUMMER THAT NEVER CAME**

WRITTEN 1816-1817 • PUBLISHED 1818 • REGENCY BRITAIN AND LAKE GENEVA

**T**he thing to understand about *Frankenstein* is that in 1816 almost none of it was fantasy. A reader who picked up the first edition had lived through fifteen years of newspaper reports about men applying electricity to dead bodies and getting a response. The novel's premise was not an invention. It was an extrapolation from the previous week's science news.

Start with the volcano, because it set the room. In April 1815 Mount Tambora erupted in what is now Indonesia, the largest eruption in recorded history, and threw enough material into the upper atmosphere to dim the sun across the northern hemisphere. The following year had no proper summer. Crops failed from New England to Switzerland, bread prices doubled, and famine and typhus followed. That is the weather that kept Byron's party indoors at the Villa Diodati on Lake Geneva in June 1816, reading ghost stories to each other by lamplight in the afternoon. The wettest, ugliest summer in living memory is why the ghost story competition happened at all.

Then the electricity. Luigi Galvani had shown in the 1780s that a dead frog's leg kicks when current runs through it, and concluded that living tissue carried an electrical fluid of its own. His nephew Giovanni Aldini took the demonstration across Europe and scaled it up to humans. In January 1803 Aldini came to England, and on the 17th, at the Royal College of Surgeons in London, he ran current from a battery of zinc and copper plates through the body of George Foster, a twenty-six-year-old hanged at Newgate for drowning his wife and child in the Paddington Canal. The President of the College supervised. Aldini's own account of what the corpse did is worth reading in his words: "the jaw began to quiver, the adjoining muscles were horribly contorted, and the left eye actually opened." Moving a rod to the rectum convulsed the entire body, an effect he said was "so

much increased as almost to give an appearance of reanimation." *The Times* carried it on 22 January. Fifteen years before Mary Shelley published, the central image of her novel had been performed on a real body, in front of an audience of surgeons and gentlemen, and printed in the newspapers.

One correction to the legend, because the packet should be fair to the man. Aldini was not chasing resurrection. His stay in London was sponsored by the Royal Humane Society, and his actual research question was whether galvanism could revive people who had drowned. He selected Foster because a hanging produced what he considered a typical case of asphyxiation. He was working on resuscitation, which is a real medical field that still exists. What the public took from the demonstration was something else entirely, and what the public took from it is what ends up in the novel.

She was reading the real literature while she wrote. In October 1816, working on the novel almost every day, she recorded in her journal that she was reading Humphry Davy's chemistry, and she listed it among her books for that year as the introduction to Davy's chemistry. Which volume she meant is genuinely disputed, because she never wrote down the full title and the candidates are several. What is not disputed is the register. Davy was the most famous public lecturer in British science, and his standing pitch to an audience was that the chemist had acquired powers close to creative ones, able to modify the world rather than merely describe it. When Victor's professor Waldman delivers the speech that sets the whole disaster in motion, praising the moderns who "penetrate into the recesses of nature, and shew how she works in her hiding places," he is speaking in that register, to a student who has just been told his boyhood reading was worthless. The 1818 preface, written by Percy Bysshe Shelley, opens by claiming the event of the novel had been judged "not of

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impossible occurrence” by Erasmus Darwin and unnamed German physiologists. The book announced itself, on its first page, as plausible.

The deepest context is a fight most readers have never heard of, and it ran the entire time she was writing. In 1814, at the Royal College of Surgeons, the eminent surgeon John Abernethy delivered a set of lectures asking what may be the most enticing question available: what is life? His answer was that living matter differs from dead matter because it is pervaded by a subtle, immaterial vital principle, something added to the body rather than produced by it, and he reached for the new science of electricity to describe how such a thing might work.

His answer was attacked by his own former apprentice. William Lawrence had come to Abernethy in 1799 as a sixteen-year-old, had lived in his household, and owed him his career. In 1816, the year of the ghost story competition, Lawrence used his own lectures at the College to ridicule his old master’s invocation of a life-giving spirit. His counter-position is more interesting than the version usually reported: Lawrence did not simply declare that life is chemistry. Following the French anatomist Xavier Bichat, he argued that life is a matter of organisation, that vital functions belong to particular tissues arranged in particular ways, and that no additional spirit needs to be imported to explain them. Abernethy hit back in 1817. Lawrence answered again in 1819.

What made it dangerous was not the biology. It was that Lawrence’s position was French, and in Britain after Waterloo, French meant revolutionary, materialist, and atheist. The conservative *Quarterly Review* accused him of “converting the lecture-room of the College into a school of materialism,” and much of the public outrage was less about physiology than about a junior man turning coarse invective on the patron who had raised him. Lawrence lost, and it cost him. His anti-religious reputation got him dismissed from the staff of Bethlehem Hospital in 1819. He withdrew the lectures from circulation to save his career, lost the copyright, and then had to watch pirated editions circulate anyway. The retreat worked exactly as intended. He recovered, became president of the same Royal College of Surgeons

where the fight had happened, and ended his life as a surgeon to Queen Victoria.

And the argument was not happening at a distance. William Lawrence was the Shelley household’s doctor. He treated Percy Bysshe Shelley through the summer of 1815, when Percy Shelley wrote to a friend that his health had “been considerably improved under Lawrence’s care,” and he was consulted again in September 1817, while *Frankenstein* was in press, when it was Lawrence who told him to leave for Italy. After Percy Shelley drowned, Lawrence served as Mary Shelley’s own medical adviser for two years. So the physician attending the family, in the years the novel was written and published, was the man at the centre of a national fight over whether life is something added to matter or simply a property of how matter is arranged.

Historians of science make the connection to the book directly, in both directions. The application of galvanic and electrical study to living bodies carried materialist and radical undertones in exactly this period, and her 1818 novel is cited as a place where that charge is brought to bear. The novel itself refuses to say which side is right. Victor never tells us what the spark was, and after two hundred years of readers demanding to know, that still looks like the correct decision.

There is also the sordid practical matter of where Victor gets his materials, and the book is precise about it because its readers knew. British law allowed anatomists only the bodies of executed murderers, a supply set by the Murder Act of 1752 and nowhere near large enough for the anatomy schools. The gap was filled by resurrection men, who dug up the freshly buried and sold them to surgeons by the body. When Victor describes collecting his materials from the dissecting room, the charnel house, and the unhallowed damp of the grave, that is not gothic decoration. That is a documented trade, running at full volume in the cities where the book was written and read.

Around all of it sat a political moment turning hard against everything her parents stood for. Britain after Waterloo was hungry and restive: the Corn Laws of 1815 kept bread expensive to protect landowners, riots followed, and in 1817 the government

suspended habeas corpus and started prosecuting radical publishers. William Godwin had argued in *Political Justice* that people are made by their circumstances rather than born good or wicked, and that a creature treated with justice will behave justly. His daughter took that claim and built the hardest possible test of it. The creature is born benevolent, teaches itself to read, wants only company, and is met with disgust every single time. He becomes a

murderer by being treated as one. That is Godwin's philosophy put in a vice, by someone in a position to know its limits. Her mother's argument is in there too, in a novel where every woman is acted upon and none survives it: Justine is executed for a crime everyone knows she did not commit, Elizabeth is killed as an instrument of revenge against a man, and the female creature is destroyed half-made, before anyone thinks to ask her anything.

## THE TWO TEXTS

**FRANKENSTEIN EXISTS IN TWO SIGNIFICANTLY DIFFERENT VERSIONS, AND THIS PACKET USES THE FIRST.**

The 1818 edition appeared on 1 January in three volumes, anonymously, in a print run of about 500, dedicated to Godwin. In 1831 Mary Shelley revised it for a cheap single-volume reprint series, published under her name, and the changes are not cosmetic. Elizabeth stops being Victor's cousin and becomes an unrelated foundling. A heavy vocabulary of destiny and fate is threaded through Victor's account, so that a man who made a series of choices starts to read as a man overtaken by forces. The politics soften throughout.

By then she was thirty-three, had buried three children and her husband, and was writing to stay respectable enough to keep selling books.

This packet is not being eccentric in choosing the earlier text. The scholarly question is whether 1831 is a sharpening of the original focus or a recantation of it, and recent scholarship has largely landed on recantation, treating the 1818 version as the one containing Mary Shelley's most stable and coherent statement of her own beliefs. Marilyn Butler judged that the 1831 revisions "neutered" an "urgent, unusual, brilliantly-imagined earlier book." Anne Mellor, in an essay written specifically to help teachers choose between the two, argues the 1831 text cannot do justice to its author. The 1831 introduction itself is widely read as an apology, a woman writer explaining away her own audacity, and the readings pile up in one direction. Sandra Gilbert and Susan Gubar call it anxious and deferential.

Mary Poovey finds her eager to disavow what by then seemed to her like blasphemy. Susan Wolfson hears an almost embarrassed tone. Mellor reads it as a defensive confession, shaped by Percy Shelley's opinion of her abilities. That reading is not unanimous and the argument continues, which is worth knowing, but the weight of it sits with 1818.

The plain version, for a classroom: the 1818 text is the one written at eighteen and nineteen, in the middle of the vitalism fight, by someone who still thought her father might be right about how people are made. The 1831 text is the one written by a widow who had learned what the world costs. Both are worth reading. Only one of them still believes its own argument. ■

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## THE REAL SUBJECT

**EVERYONE REMEMBERS A MAN WHO WENT TOO FAR. THE BOOK IS ABOUT A MAN WHO WALKED AWAY.**

SETTING: GENEVA, INGOLSTADT, AND THE ARCTIC ICE · THE 1790S

**A**lmost every student arrives at *Frankenstein* already knowing what it means. Science goes too far. A man plays God and is punished. Do not meddle in things you do not understand. That reading is two centuries old, it is what the film posters sold, and the novel does not support it. Victor Frankenstein is never punished for building the creature. Nothing goes wrong at the moment of creation. The experiment works. What destroys him, and everyone he loves, is what he does in the ninety seconds afterward: look at the living person he has made and leave the room.

The subtitle tells you the book is an argument about creation, and it does more work than it looks. The Greeks had two Prometheus stories. In one he steals fire from the gods and gives it to humanity, and is chained to a rock for it. In the other, older and less famous, he makes the first humans from clay. Victor is both at once: he takes a power that was not his and uses it to make a person. Which of those is the crime is the question the novel is built to ask. And it was live in the room where the book was conceived. Byron wrote his own Prometheus poem at Lake Geneva that summer, and the Romantic reading of the myth in that circle was heroic, the rebel defying illegitimate authority for humanity's sake. The teenager in the house wrote the version where the rebel makes something that can suffer, and then cannot stand the sight of it.

The novel hands you its own key on the title page, in the epigraph from *Paradise Lost*:

Did I request thee, Maker, from my clay To mould me  
man? Did I solicit thee From darkness to promote me?

That is Adam, complaining to God about having been made at all. The creature later finds Milton and reads it as history rather than fiction, the funniest and saddest joke in the book. He works out his own position from it, and says so to Victor's face:

"Remember, that I am thy creature: I ought to be thy Adam; but I am rather the fallen angel, whom thou drivest from joy for no misdeed." He is right, for a reason that indicts Victor rather than himself. Milton's Satan falls because he rebels; the creature does not. He is cast out the moment he opens his eyes, before he has done anything at all, by a God who takes one look and runs. Adam had a garden and a maker who talked to him. This Adam wakes up alone in an apartment in Ingolstadt with the lights off.

Then there is the reading you cannot unsee, and it belongs to a nineteen-year-old who had recently given birth. Victor's great achievement is producing a child without a woman. He does it alone, over two years, in secret, hiding it from his family, and when the thing is finally born his response is horror and flight. He goes to bed. And then he dreams:

I thought I saw Elizabeth, in the bloom of health, walking in the streets of Ingolstadt... as I imprinted the first kiss on her lips, they became livid with the hue of death; her features appeared to change, and I thought that I held the corpse of my dead mother in my arms.

That dream is on the same page as the creature's first breath. A man produces life by unnatural means and immediately dreams of a dead mother and a bride become a body. The book is not subtle about it, and the mothers keep dying: Victor's mother Caroline dies of a fever caught nursing Elizabeth, before he ever leaves for university. Justine's mother rejects her before she is hanged. When Victor finally does begin to build a woman, he tears her apart before she can be finished, in part because he cannot bear what she might choose. The one female creature in the novel is destroyed offstage, without being asked anything.

Look at how the book is put together, because the structure argues too. Walton writes letters to his sister. Inside those letters, Victor tells his story. Inside

Victor's story, the creature tells his. The most sympathetic account, the only one that explains rather than accuses, is buried two layers deep, reachable only through two men who are frightened of him. That is deliberate engineering. Mary Shelley makes the reader do the listening Victor refuses to do, and puts it at the exact centre of the book.

What the creature says when you finally get there is her father's philosophy, tested to destruction. William Godwin argued that people are made by their circumstances, that a creature met with justice behaves justly. The creature's account is that case, made by the defendant: he wakes benevolent, he watches a poor family and loves them, he teaches himself to read, he saves a drowning girl and is shot for it, he asks a blind man for friendship and gets it, until someone with eyes walks in. He turns murderous only after every attempt at connection ends in disgust. He is not evil by construction but by neglect, and he says so plainly, four sentences later in the same speech: "I was benevolent and good; misery made me a fiend. Make me happy, and I shall again be virtuous." Note what that second sentence does. It is not an excuse but an offer, and it is still open when he makes it.

Here the novel refuses to make it easy, and this is the part worth pressing students on. It does not let the creature off. His first murder is a child, William, strangled for being a Frankenstein. He then plants evidence on a sleeping girl, Justine, and lets her hang. That is not the act of a wounded innocent, and the book knows it. So the honest question is not "who is the real monster," which is a slogan that closes the discussion in thirty seconds. It is whether an explanation is the same as an excuse. Circumstance made him. Does circumstance acquit him? The creature himself does not think so, which is why he ends the novel intending to burn his own body. Mary Shelley believed her father was substantially right about how people are made and still would not let his philosophy wash a murder off.

Which brings the argument back to Victor. His sin is not ambition, and not the crossing of some line marked "too far." He is right about the science, and it works. His failure is one of obligation, repeated: he abandons the creature at birth, stays silent while

Justine hangs, breaks his promise of a companion, and keeps the secret until everyone he loves is dead. Given a dozen chances to take responsibility, he chooses flight. The lesson the culture drew is "do not build it." The lesson the book teaches is that building it was never the hard part.

One last thing, and it is not really a mistake. Everyone calls the creature Frankenstein. English teachers have corrected that for a hundred years, right about the noun and wrong about the instinct. The creature has no name. Victor never gives him one, calling him wretch, daemon, fiend, and it. The one character in this book with a name he did not earn is the man who made a person and would not stay to name him. ■

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## THE SCIENCE

**BUILD A BODY, START IT, AND THEN RAISE THE MIND THAT WAKES UP INSIDE IT. ONLY ONE OF THOSE IS AN ENGINEERING PROBLEM.**

MEDICINE · NEUROSCIENCE · SOCIAL SCIENCE

**V**ictor Frankenstein refuses to tell you how he did it. He says so directly, and he gives a reason: he will not hand another person the knowledge that ruined him. Readers have complained about that gap for two hundred years, but it is the most scientifically honest decision in the book. Mary Shelley was nineteen, she was reading the actual chemistry of her day, and she understood that any specific mechanism she invented would be wrong within a generation. So she left the spark out and wrote everything around it, which is where the real science lives anyway. Strip away the missing recipe and three genuine problems remain, and they get harder as you go: assemble a body, start it running, and then deal with the fact that a mind has woken up inside it and has nowhere to go.

**The body.** Victor's raw material comes from the dissecting room, the slaughterhouse, and the grave, and the novel is specific about it because its readers knew that supply chain intimately. What he is attempting is the assembly of one functioning organism from parts of several dead ones, which is a problem in anatomy and, though nobody had the word, in immunology. He works at night through the autumn and winter, and he notes the season himself: cold slows what he is fighting, which is decay. That detail is good biology. Everything that follows from it is where the trouble starts, and the audit takes it up below.

**The spark.** The novel places itself precisely in the science of 1816 without committing to it. The 1818 preface claims Erasmus Darwin thought such a thing not impossible; Victor's professors preach the modern chemistry that gives men something close to creative power; and every reader knew about the corpses twitching under Giovanni Aldini's electrodes at Newgate. What the book does with all of it is refuse the question. Victor never says whether he added something to matter or merely arranged matter

correctly, and that refusal is the exact fault line the anatomists were fighting over while she wrote. The novel takes no side, and the reason is not timidity. Whichever side is right, the creature is awake and hungry and alone, and the moral problem is identical either way. That is a nineteen-year-old declining a metaphysical argument because she has spotted that it does not change the obligation.

**The mind, which is the part everyone skips.** The creature's account of his own first hours is the best science in the book and it is almost never taught. He wakes to what he calls a strange multiplicity of sensations, seeing, feeling, hearing, and smelling at once, and says it took him a long time to learn to tell his senses apart. That is a startlingly accurate description of undifferentiated sensory experience, and it beats William James to the "blooming, buzzing confusion" of infancy by seventy years. What follows is a developmental experiment run in prose: he discovers that fire is warm and also hurts, learns that a fallen branch is a tool, and then spends more than a year hidden beside a cottage watching a family, acquiring language entirely by observation, without anyone ever addressing a word to him. He learns to read from three books he finds in a discarded bag. By the time he confronts Victor he can construct a legal argument about his own rights.

The point of that sequence, and the reason it belongs in a science packet rather than only a literature one, is that Mary Shelley is making a claim about where a person comes from. Victor built a body. He did not build a mind, and the novel is emphatic that nobody could: the creature's intelligence, his morality, his tastes, and his eventual violence all arrive through experience, and specifically through how he is treated. The nature-versus-nurture argument would not get that name until Francis Galton coined it in 1874, and this is a fully worked position on it, fifty-six years early,



staged as a controlled experiment with one subject and no kindness in the protocol.

**The society.** Which makes the last science in the book the one that had no name at all. A creature exists that can reason, suffer, and argue. It asks for a companion and offers, in exchange, to remove itself from human contact forever. Victor has to decide whether it has standing to ask, whether a promise

made to it binds him, and whether the potential harm of a second creature justifies breaking the first one's only hope. Those are the questions of research ethics, informed consent, and the moral status of a created being, and the word for that field, bioethics, would not be coined until 1970. The novel gets there in 1818 by the simple method of taking its own premise seriously.

## THE LAWBREAKER

WHERE THE SCIENCE BREAKS, AND WHY EACH BREAK IS WORTH MORE THAN A NITPICK.

Three real obstacles, plus one of scale. Note that none of them is “you cannot make life,” which is a slogan rather than an audit.

**The brain is the first thing to die, and Victor is shopping in the wrong aisle.** This is the fatal one, and the numbers are worth putting side by side because students always guess wrong about the scale.

Start with how fast a working brain quits. When the heart stops, blood pressure halves within about three seconds. Consciousness goes at roughly **eight seconds** after the last heartbeat, and by ten to fifteen seconds the circulation has come to a complete standstill. Eight seconds. Not eight minutes. That is how much uninterrupted supply the most demanding tissue in the body requires simply to keep running, and the reason is that neurons are the hungriest cells you own and hold almost no reserve. Push past that and the loss stops being functional and becomes structural: sustained loss of oxygen to the brain causes brain damage and then brain death within a few minutes.

Two details make that gap concrete. The eight seconds are not eight seconds of awareness. The same study notes that a person is typically unaware anything is wrong for the first three or four of them, and anyone who does notice has only a few seconds to lie down before consciousness goes and they fall. It does not fade on a dimmer. It goes out while the subject is still deciding whether something is happening.

Now the comparison. When surgeons at the Peter

Bent Brigham Hospital in Boston performed the first successful human organ transplant on 23 December 1954, the donated kidney spent **82 minutes** with no blood supply at body temperature before it was connected, and it began working promptly anyway. Eighty-two minutes for a kidney, against eight seconds for consciousness and a few minutes for the brain itself. Same body, same temperature, same absence of blood, and roughly three orders of magnitude between them. That is the gradient Victor is working against, and he is not working against it by minutes. His materials come from graves and charnel houses, which means tissue that has been dead for days. Whatever he stitched into that skull was ruined before he collected it, and the novel then has the creature not merely regain function but acquire language faster than a human infant does. Cold helps, and the novel notices cold, which is to its credit. It does not help nearly enough. The honest version of Victor's result is a body that moves and a mind that is gone, and that version of the story has no argument in it, which is presumably why we do not have it.

The eighty-two minutes come with a caveat that cuts the same way. Starzl, reporting the case thirty years later, allows that some of the abnormal kidney function seen in those early twin recipients may have been a late effect of ischemic damage, which is to say that even the tissue built to survive an hour without blood may have paid for it quietly. The organ that tolerates the interruption best is not untouched by it. The organ that tolerates it worst is the one Victor needs intact.

**A body made from many bodies attacks itself.** Nothing in 1818 could have known this, which makes

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it a good teaching obstacle rather than an error to scold. Every cell carries surface markers identifying it as self, and an immune system trained on one set of markers treats every other set as an invader. Return to that 1954 kidney, because the reason it worked is the whole lesson. Surgeons had been attempting kidney transplants since the 1930s and the grafts kept failing. The Boston case succeeded because the donor and the recipient were identical twins. There were no anti-rejection drugs in 1954, so the only available way to prevent rejection was to make rejection impossible, which meant a genetic match so perfect that the recipient's immune system could not tell the tissue apart from its own. The surgical team was so intent on confirming the twins really were identical that they grafted skin between them first and watched to see whether it took. That is the length medicine had to go to in order to move **one organ** between **two** people who shared **all** of their DNA. Victor's creature is not a transplant recipient. It is a chimera assembled from a crowd, so the problem runs in every direction at once, with each donor's tissue rejecting its neighbors and each donor's surviving immune cells attacking the rest, which is the mechanism now called graft-versus-host disease. There is no immunosuppression in 1816, no tissue typing, and no concept that either is needed. A creature built this way does not become a hunted fugitive in the Alps. It fails, catastrophically, in the first week, and the failure is invisible from the outside until it is total.

**Electricity makes muscle twitch. It does not organize anything.** The demonstrations that gave the book its plausibility were real and were also widely misread, including by the crowds who watched them. Applying current to a dead body depolarizes muscle membranes and produces contraction. That is genuinely what happens, and it is why George Foster's jaw quivered and his left eye opened at the Royal College of Surgeons in 1803. It is not the beginning of life. A contraction carries no information and coordinates nothing; the muscle is being operated from outside like a puppet, and the moment the current stops, so does it. The gap between a twitching limb and an integrated organism that regulates its own temperature, circulates blood, digests, and maintains a nervous system is not a gap of degree. It is the entire

problem, and electricity does not address any of it. The modern version of the same misunderstanding is worth handing to students directly, because they have all seen it on television: a defibrillator does not restart a stopped heart. It does close to the opposite. It stops a heart that is quivering chaotically, delivering enough current to depolarise a critical mass of heart muscle all at once, so that the heart's own pacemaker gets a clean moment in which to resume. A first shock in current practice carries at least 150 joules, and every one of them is spent stopping a rhythm rather than starting one. Defibrillation terminates a rhythm. It does not begin one.

This is not a fine distinction, and it is not a matter of opinion. Current European Resuscitation Council guidelines sort cardiac arrest rhythms into two lists. The shockable ones are ventricular fibrillation and pulseless ventricular tachycardia, both of which are hearts doing the wrong thing rather than nothing. The **non-shockable** ones are pulseless electrical activity and **asystole**, which is the flat line. The flat line on the monitor, the one that in every hospital drama triggers a shout for the paddles, is on the list of rhythms you are specifically not supposed to shock.

Two centuries after Aldini, the public still believes electricity turns death back into life. This book is a substantial part of why, and the belief has outlived every piece of evidence against it.

**And a matter of size.** Victor makes the creature about eight feet tall, and gives an honest engineering reason: working at normal human scale, the parts were too small to handle quickly. But scaling a body up does not scale its strength up to match. Double a creature's height and its cross-sections, which set the strength of bone and muscle, grow fourfold, while its volume and therefore its weight grow eightfold. Galileo worked this out in 1638, so the objection was available. A human enlarged by a third would be carrying substantially more load per square centimeter of bone than the design tolerates, and real human gigantism brings joint failure, cardiac strain, and reduced, not enhanced, athleticism. The creature in the novel is not merely large. It is faster than any man, tireless, and able to outrun a dog sled across a glacier. The size and the agility are pulling in opposite directions.

## THE LONG FUSE

WHAT THE BOOK SET IN MOTION IN THE REAL WORLD, AND WHAT ONLY LOOKS AS IF IT DID. TWO DIFFERENT CLAIMS, KEPT APART ON PURPOSE.

A book can **anticipate** something, picture it before the science arrives, with no line of cause between the two. Or it can **inspire** something, put an idea into a real person's head that they then act on. *Frankenstein* is unusual in this catalog because its inspired column is genuinely stronger than its anticipated one, and because what it put into the world was not a device but an argument that is still being used.

**Anticipated: the obligation problem.** The novel poses a question that no discipline existed to hold: when you make something that can suffer, what do you owe it, and does it get a say. It reaches that question by taking its premise seriously rather than by predicting any technology, and the question turned out to be the durable one. Organ transplantation, assisted reproduction, animal research, human subject protection, and now the construction of systems that behave as though they have interests all run into some version of it. No causal claim is being made here. She did not see transplantation coming. She saw that the interesting problem starts after the experiment succeeds, which is a different and better kind of foresight.

**Anticipated: that a made mind has to be raised.** The creature's education is the novel's quiet prediction. Victor's error is treating creation as a manufacturing step that ends when the thing moves. What the book shows is that the object then has to be taught, socialized, and given a place, and that skipping this stage produces the disaster rather than the creation itself producing it. That framing has aged extremely well and it is currently being rediscovered, loudly, by people building systems they do not fully understand. Again, anticipation only. There is no line running from this novel to anyone's engineering.

**Inspired: an argument about where the genre came from.** This is documented influence rather than resemblance, and it is worth reporting as the live disagreement it still is rather than as a settled fact.

In 1973 the novelist and critic Brian Aldiss argued in *Billion Year Spree* that *Frankenstein* is the first science fiction novel, and he built his history around it: the opening chapter is called "On the Origin of Species: Mary Shelley." His grounds are a definition. Science fiction, he wrote, "is the search for a definition of mankind and his status in the universe which will stand in our advanced but confused state of knowledge (science), and is characteristically cast in the Gothic or post-Gothic mode." On that definition the novel qualifies twice over, because it asks what a human being is and it asks in the Gothic register. Aldiss expanded the book with David Wingrove as *Trillion Year Spree* in 1986.

The argument shaped how the field understands its own origins, and it is still being fought. *The Encyclopedia of Science Fiction* credits it as giving "profound pleasure as a myth of origin," then adds that it "fails circumstantially to be altogether convincing." Others invert the claim entirely. Writing in *The Cambridge Companion to Science Fiction*, Brian Stableford holds that "the Gothic trappings of *Frankenstein* (1818) place it firmly within the tradition of **anti-science** fiction," and that the *Frankenstein* formula, an unruly artefact destroying its creator, became the principal narrative form of anti-science fiction and still holds that position. In the same volume, a chapter on the life sciences calls the novel "the founding work, arguably the basis for all of sf since."

So: first science fiction novel, founding work of the whole field, or the founding work of the tradition that opposes science. Three respectable positions on one book. What none of them dispute is that a nineteen-year-old's novel is where the argument has to be held, which is its own kind of influence.

**Inspired: a metaphor that now does political work.** Here is the sharpest and best documented influence, and it is not a gadget. The novel handed public debate a name for a specific fear, and that name became an actor in an actual policy fight. The case is documented down to the day. On 1 June 1992 the *New York Times* ran an opinion piece by Sheldon Krinsky objecting to the Food and Drug

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Administration's decision to exempt genetically engineered crops from case-by-case review. A reader named Paul Lewis wrote in, and on 16 June 1992 the paper printed his letter on page A24:

Ever since Mary Shelley's baron rolled his improved human out of the lab, scientists have been bringing just such good things to life. If they want to sell us Frankenfood, perhaps it's time to gather the villagers, light some torches and head to the castle.

That is the coinage, in full, at the moment of its birth: one word in one sentence of one letter to the editor. "Frankenfood" went on to become the dominant frame for genetically modified crops in the European press, and the frame outperformed the technical arguments on both sides. A novel does not usually get to do that. This one supplied the vocabulary that two centuries of scientific controversy would be argued in, and a teenager's title character became a prefix.

**Inspired, and this part is the problem: the influential version is the misreading.** Go back and read that letter again, because it convicts itself. In one sentence, Paul Lewis makes four mistakes about the book he is invoking, and every one of them comes from the movies.

Victor Frankenstein is not a baron; the 1931 Universal film renames him Henry and gives the title to his father. There is no laboratory in the novel and no apparatus of any kind, because the author declined to describe the method at all; Victor works in a rented upper room. The creature is not an improved human and Victor never claims it is. And there are no villagers with torches and no castle anywhere in the book: the mob and the burning windmill are the 1931 and 1935 films. What actually happens in the novel is a man building something in an apartment and then walking away from it.

This is the Long Fuse running through Hollywood rather than through the text. The 1931 film also made one change that inverts the argument outright: its creature is given a criminal brain by mistake, so it is born bad, which is the precise opposite of the novel's case. So when "Frankenstein" enters a public argument about science, the meaning being carried is almost always the film's, which is do not build it,

and not the novel's, which is do not abandon what you build. The most consequential real-world deployment of this book's name is a sentence that gets the book wrong four times, and it worked anyway. That is worth putting in front of students directly: a story can change the world through the version of itself that nobody checked.

**What it did not do.** It did not cause any biotechnology, and it did not predict one. Anyone claiming the novel foresaw organ transplants or artificial intelligence is reading a mechanism into a book that pointedly declines to supply one. The honest verdict is that *Frankenstein* changed how a civilization argues about science rather than what it built, and unlike the previous specimen in this collection, where the influence stayed cultural and stopped there, this one crossed back over into regulation, funding, and law. Concepts, not devices, but concepts with a body count in research budgets. ■