



Reflections on STS in Sci-fi by Women: A Study of Mary Shelley's *Frankenstein* and Octavia Butler's *Xenogenesis Trilogy: Dawn*

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Abstract – This paper examines Mary Shelley's *Frankenstein* (1818) and Octavia Butler's *Dawn* (1987) as science-fictional thought experiments that interrogate the ethical, social, and ecological consequences of scientific intervention in life. Drawing on the interdisciplinary framework of Science, Technology, and Society (STS), along with concepts from bioethics and ecofeminism, the study explores how both texts critique scientific rationality when it operates without ethical responsibility. Shelley's *Frankenstein*, often regarded as the foundational work of modern science fiction, exposes the dangers of unchecked ambition and irresponsible experimentation, anticipating contemporary debates on cloning, artificial life, and bioengineering. Butler's *Dawn*, situated in a post-apocalyptic and posthuman context, extends this critique by examining genetic manipulation, hybridity, colonisation, and ecological symbiosis. While Shelley foregrounds individual responsibility and the moral limits of scientific inquiry, Butler complicates ethical judgment by framing survival as contingent upon compromise, interdependence, and the redefinition of the human. Together, these texts demonstrate how science fiction functions as a critical and pedagogical space for reflecting on ethical science, environmental sustainability, and the future of human and non-human life in an age of technological acceleration and ecological crisis.

Keywords: Science fiction; thought experiment; STS; bioethics; ecofeminism; hybridity; Anthropocene; posthumanism

Introduction

Science fiction has long functioned as a literary laboratory for examining the ethical, philosophical, and social implications of scientific progress. From its early manifestations to contemporary speculative narratives, the genre has provided imaginative spaces in which science, technology, and society intersect. Despite their foundational contributions to science fiction, women writers have historically been marginalised within its literary canon. Writers such as Mary Shelley and Octavia Butler, however, not only shaped the genre but also employed it to challenge dominant scientific, patriarchal, and anthropocentric paradigms.

Mary Shelley's *Frankenstein* (1818), widely recognised as the first science fiction novel in English, and inaugurates the genre by presenting a cautionary narrative of scientific ambition unrestrained by ethical responsibility. Written during a period of rapid scientific transformation, the novel anticipates modern debates surrounding bioethics, artificial life, and the moral limits of scientific experimentation. More than a Gothic tale, *Frankenstein* operates as a sustained thought experiment that interrogates the consequences of humanity's desire to control nature.

More than a century later, Octavia Butler's *Dawn*, the first novel of the *Xenogenesis trilogy*, revisits these concerns within a post-apocalyptic and posthuman framework. Butler extends the science-fictional critique of science by addressing genetic engineering, hybridity, colonisation, and ecological interdependence. Through the figure of Lilith Iyapo, Butler challenges conventional notions of autonomy, consent, and humanity, proposing survival through symbiosis rather than domination.

Women writers in the field of literature in general and science fiction in particular have been playing a substantial role. The tradition of science fiction by women writers like Octavia Butler, Mary Shelley, and others is quite rich, diverse, varied, often neglected and out of the domain of the ideological, phallogocentric critical scrutiny. Science fiction literature is the offspring of both men and women writers. Women have been the grandmothers and mothers of science fiction right from beginning to the present time. Whether folklores, folktales, folk literature, diaries, advice books, epic poems, travelogues, lullabies, scriptures, songs, essays, short stories, treatises, imaginary or nonfictional writings, dramas, prose or poetry, literary criticism, scientific-philosophical-ideological treatises, theories, encyclopaedias, and even science fiction literature women have contributed abundantly to the intellectual output as both producers and consumers, writers and readers as well.

Critics, however, eye the passage with skepticism. Many hold that the novel is in fact based on valid scientific research and that it also predicts a possible future discovery. Interestingly, the subtitle of the novel *The Modern Prometheus* refers to a figure in Greek mythology who stole fire from gods to help mankind. There also subsists a story of Prometheus the plasticator who is said to have created mankind out of clay. The two myths when amalgamated together make the fire itself a symbol of animation of life. In the novel Victor Frankenstein defies god by creating life himself.

Thought-experimentation, humanistic critique, Speculative Fiction: In Mary Shelley's *Frankenstein*

Mary Shelley's *Frankenstein* occupies a foundational position in the history of science fiction because it presents scientific experimentation as a moral and social problem rather than a purely technical achievement. As a science-fictional narrative, the novel dramatizes a daring experiment that results in catastrophic consequences, thereby functioning as a sustained critique of scientific ambition unregulated by ethical responsibility. Shelley's text anticipates modern anxieties surrounding bioethics, artificial life, and technological control, revealing how scientific progress, when detached from moral accountability, can produce social and psychological devastation.

As a speculative narrative, *Frankenstein* draws upon contemporary scientific developments while projecting their possible consequences into an imagined future. Shelley was deeply engaged with the scientific debates of her time, particularly those concerning galvanism, evolution, and materialism. Her familiarity with the works of scientists such as Humphry Davy, Erasmus Darwin, and Luigi Galvani enabled her to ground the novel in legitimate scientific discourse rather than supernatural fantasy. Consequently, the creation of life in *Frankenstein* is presented not as magic but as the outcome of experimental science, marking a decisive shift from pre-scientific superstition to modern rational inquiry.

The novel's subtitle, *The Modern Prometheus*, foregrounds Shelley's reworking of classical mythology within a scientific framework. In Greek myth, Prometheus steals fire from the gods to benefit humanity; in Shelley's reinterpretation, Victor Frankenstein acquires the metaphorical "fire" of life through scientific means. Unlike the mythic Prometheus, however, Victor fails to anticipate the

ethical consequences of his transgression. Shelley thus transforms the Promethean myth into a critique of Enlightenment hubris, exposing the dangers of humanity's attempt to usurp the creative powers traditionally attributed to nature or divinity.

From the perspective of Science, Technology, and Society (STS), *Frankenstein* illustrates that scientific knowledge is never neutral or isolated from its social consequences. Victor's experiment does not occur in a vacuum; its repercussions extend into the social, emotional, and moral realms. The Creature's abandonment reveals the failure of scientific responsibility, demonstrating that the true horror of the experiment lies not in the act of creation itself but in Victor's refusal to care for what he has made.

The destruction of the female creature further intensifies the novel's ethical inquiry. Victor's fear of creating a "race of devils" reveals his belated recognition of scientific responsibility, yet his response is marked by panic rather than moral maturity. By destroying the unfinished female companion, Victor attempts to reclaim control over his creation, only to provoke further violence and loss. The novel thus underscores the impossibility of undoing scientific actions once their consequences have been set in motion.

The chain of deaths that follows—William, Justine, Clerval, Elizabeth, and ultimately Victor himself—demonstrates the far-reaching impact of irresponsible experimentation. Shelley presents scientific failure not as an isolated error but as a catalyst for social collapse, implicating family, community, and moral order. The Creature, often misidentified as the sole source of horror, emerges instead as a tragic product of neglect and social rejection. Shelley thus frames *Frankenstein* as a moral guide for scientific practice, anticipating contemporary debates on the limits of technological intervention in life.

Ultimately, *Frankenstein* functions as a pioneering science-fictional thought experiment that interrogates the responsibilities and values of scientific endeavour. By extrapolating the consequences of unchecked ambition, Shelley transforms scientific speculation into ethical reflection. The novel remains a powerful cultural myth because it continues to illuminate the dangers inherent in scientific progress divorced from social responsibility, reminding readers that knowledge without ethics can lead not to enlightenment but to destruction.

Cultural Myth, Hybridity, and Posthuman Ethics in Octavia Butler's *Dawn*

Octavia Butler's *Dawn*, the first novel of the *Xenogenesis* trilogy, reconfigures the ethical concerns introduced in Mary Shelley's *Frankenstein* within a post-apocalyptic and posthuman framework. While Shelley foregrounds individual scientific ambition and responsibility, Butler expands the scope of ethical inquiry to encompass species survival, ecological interdependence, and genetic transformation. Set in the aftermath of a nuclear holocaust that nearly eradicates humanity, *Dawn* situates science and technology not as instruments of individual mastery but as mechanisms of enforced adaptation and survival.

The novel centres on Lilith Iyapo, a Black woman who awakens aboard an alien spaceship after centuries of suspended animation. She learns that the Oankali, a genetically advanced extraterrestrial species, rescued the last surviving humans and restored Earth's ecosystem. However, this act of salvation comes with a non-negotiable condition: humanity must submit to genetic hybridisation with the Oankali. Butler thus immediately frames scientific intervention as ethically ambiguous, intertwining survival with coercion and consent with domination.

From the perspective of Science, Technology, and Society (STS), *Dawn* reveals science as inseparable from power structures and social control. The Oankali's advanced biotechnology—organic spacecraft,

genetic manipulation, and sensory communication—demonstrate a form of science deeply embedded within their biological and cultural systems. Unlike human technological practices, which often exploit nature, Oankali science operates through symbiosis. Yet Butler resists idealising this model, exposing its colonial logic beneath the rhetoric of benevolence.

The Oankali's intervention parallels historical narratives of colonisation. By presenting their actions as necessary for humanity's survival, the Oankali reproduce the logic of the so-called civilising mission, wherein domination is justified as altruism. Humans are denied reproductive autonomy, and the promise of a genetically "improved" future becomes a means of legitimising coercive control. Butler thus critiques scientific paternalism, exposing how claims of superior knowledge often mask ethical violence.

Hybridity emerges as the novel's central thematic and ethical concern. Through the Oankali practice of gene trading, Butler destabilises fixed notions of species, identity, and humanity. The hybrid offspring—neither fully human nor fully Oankali—embody a posthuman condition that challenges anthropocentric hierarchies. In contrast to *Frankenstein*, where the Creature is rejected for his difference, *Dawn* presents hybridity as inevitable, though deeply contested.

Ecofeminism concerns permeate the novel's depiction of posthuman survival. Butler links ecological collapse to hierarchical and violent human behaviour, suggesting that humanity's self-destructive tendencies stem from an evolutionary contradiction between intelligence and dominance. The Oankali's commitment to symbiosis, sustainability, and non-exploitative living positions them as ecological counterpoints to human excess. However, Butler refuses a simplistic ecological utopia, emphasising that even symbiosis can reproduce asymmetrical power relations.

In contrast to Victor Frankenstein's isolated scientific pursuit, *Dawn* presents science as a collective, embodied, and relational practice. Knowledge is transmitted through sensory experience rather than abstract rationality, challenging logocentric models of understanding. This emphasis aligns with posthuman and ecofeminist critiques of Enlightenment rationality, which privilege domination, mastery, and separation over relationality and care.

As a science-fictional thought experiment, *Dawn* extends the ethical concerns of *Frankenstein* into a global and ecological dimension. Where Shelley warns against unchecked ambition, Butler interrogates the costs of survival itself. Together, these texts reveal science fiction as a powerful critical medium for examining the moral limits of science, the politics of creation, and the fragile future of life on Earth.

Comparative Analysis: Creation, Power, and Ethical Responsibility

When read in dialogue, Mary Shelley's *Frankenstein* and Octavia Butler's *Dawn* reveal the evolving ethical concerns of science fiction across two centuries. Although separated by historical context, scientific paradigms, and narrative form, both texts employ speculative science as a means of interrogating the relationship between knowledge, power, and responsibility. Each novel functions as a thought experiment that exposes the moral consequences of scientific intervention in life, while simultaneously reflecting the socio-political anxieties of its time.

In *Frankenstein*, scientific creation is individual, secretive, and driven by personal ambition. Victor Frankenstein's pursuit of knowledge is marked by isolation and detachment from social accountability. His failure lies not in the act of creation itself but in his refusal to acknowledge ethical responsibility toward his creation. Shelley thus critiques enlightenment rationality by revealing how the pursuit of mastery over nature can lead to alienation, suffering, and moral collapse.

By contrast, *Dawn* situates scientific intervention within collective survival and systemic power relations. The Oankali's genetic practices are transparent, communal, and biologically integrated, yet they are also coercive and asymmetrical. Butler complicates ethical judgment by presenting science as both salvific and violent. Survival in *Dawn* is contingent upon compromise, loss of autonomy, and the dissolution of human exceptionalism.

***Dawn* – As sci-fi advancement:**

The story begins when she's awakened from stasis by Oankali, aliens who rescued her and a handful of other survivors after a nuclear holocaust ravaged the Earth. While these "lucky" few slept, the Oankali spent the intervening centuries restoring the planet and readying it for humanity's return. Lilith is tapped to lead the first wave.

But the Oankali aren't acting solely out of the goodness of their hearts (or whatever organs function as the metaphorical equivalent in their bizarre, many-tentacle bodies). Salvation comes at a price. And the cost is genetic.

The Oankali are also technologically advanced but in organic fashion. They grew their ship. They replicate organisms and objects from "prints" of each entity's molecular makeup. They store their subjects in Venus flytrap-like plants that sustain them in hibernation. And, as Lilith explains to some of the humans she's charged with leading, the Oankali "manipulate DNA as naturally as we manipulate pencils and paintbrushes."

This theme of coercive experimentation carries over to sex. The rapes attempted by other humans in the book are the familiar sort of terrible. (In *Dawn*, terrestrial tensions and barbarity don't improve when the constraints of civilization are stripped away.) But the chemical and neurological manipulation the ooloi use to tempt and control their patients corrodes consent in a different, more insidious way.

Conclusion

Mary Shelley's *Frankenstein* and Octavia Butler's *Dawn* endure as powerful science-fictional thought experiments that interrogate the ethical limits of scientific progress. Through speculative narratives of creation, transformation, and survival, both texts challenge the assumption that technological advancement equates to moral improvement. Instead, they reveal how science, when divorced from ethical responsibility and social accountability, can reproduce violence, domination, and ecological crisis.

Shelley's novel warns against unchecked ambition and the illusion of mastery over life, anticipating contemporary bioethical debates surrounding artificial intelligence, cloning, and genetic engineering. Butler's *Dawn* extends these concerns into the context of the Anthropocene, confronting readers with the ethical dilemmas of survival in a world shaped by ecological devastation and technological dependence. While Shelley emphasises restraint and responsibility, Butler forces an engagement with compromise, hybridity, and the redefinition of humanity itself.

Together, these texts demonstrate the enduring relevance of women's science fiction as a critical mode of ethical inquiry. By situating science within social, ecological, and political contexts, Shelley and Butler reveal the genre's capacity to question dominant narratives of progress and control. Their works underscore the necessity of integrating ethical reflection into scientific practice, particularly in an era marked by environmental collapse and biotechnological power.

Ultimately, *Frankenstein* and *Dawn* invite readers to reconsider what it means to create, to survive, and to coexist with the non-human world. As speculative explorations of science and responsibility, these novels offer not definitive solutions but critical frameworks for imagining more ethical, sustainable, and inclusive futures. In doing so, they reaffirm science fiction's role as a vital literary space for negotiating the moral challenges of the present and the uncertain possibilities of the future.

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