

Beyond Algorithms: Reconstructing Intelligence—From STEM to STEAM

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Abstract: In a world that is increasingly becoming dominated by artificial intelligence, algorithmic governance and data-based rationality, modern definitions of intelligence have been reduced to narrowness in its understanding of computation, efficiency and techno-economic utility. The paper will critically look at the ethical and epistemological implications of prioritizing artificial or instrumental intelligence over emotional intelligence, and it will be argued that these reductionist paradigms lead to social alienation, moral disengagement, and unsustainable types of progress. Placing the discussion in the context of an interdisciplinary approach that builds on literary criticism, philosophy of technology, and cultural history, the paper prefigures two canonical works of Victorian literature, *Frankenstein* and *Hard Times*, as arguments against intelligence deprived of empathy, imagination, and moral accountability. In an in-depth examination of the text, the paper traces a historical lineage from the mechanistic rationality of the nineteenth century to the algorithmic systems of the twenty-first century, showing how both dehumanize people by denying them the power of emotion and moral accountability. The investigation contributes to the development of the STEAM paradigm as an ethical and epistemological remedy to STEM-oriented models, and the necessity of the humanities to the development of empathy, moral imagination, and relational accountability. Finally, the paper reprimands intelligence as a living, relational, and ethical ability. It claims that, in the absence of emotional intelligence, technological progression is simply unsustainable to the existence and democratic culture of the human species.

Keywords: Artificial Intelligence (AI), Emotional Intelligence (EQ), Algorithmic Governance, Ethics of Technology

Introduction

The twenty-first century has seen the redefining of the concept of intelligence in a way that has never been witnessed before. A multidimensional ability of human beings that involves reason, emotion, moral sense, and imagination, intelligence has been reduced to a set of algorithmic efficiency, computational speed, and predictive accuracy. Artificial intelligence, machine learning, and automated decision-making systems have become the unavoidable definitions of value in the sectors of education, governance, healthcare, and labor. Within this field, STEM subjects have taken up the role of epistemology and supported the assumption that intelligence is mainly technical, quantifiable, and economically productive. However, this restriction creates a paradox.

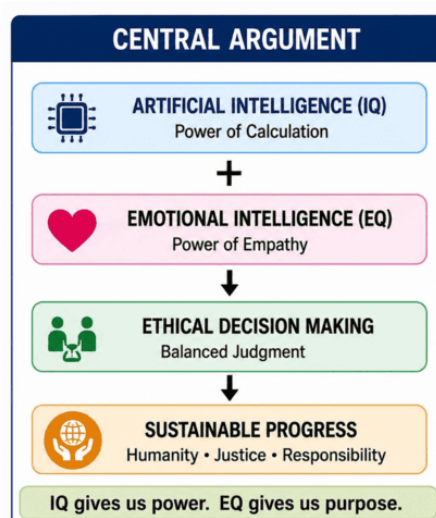


Figure 1. Central argument: artificial intelligence guided by emotional intelligence enables ethical decision-making and sustainable progress.

Technologically advanced societies are also facing the problem of emotional alienation, erosion of ethics, fragmentation of society, and lack of moral engagement. Systems aimed at maximizing efficiency often do not take into account people's experiences, empathy, and accountability. Critical choices on access to education, employment, justice, and healthcare are being increasingly devolved to non-living systems that lack the capacity to engage in ethical thinking. This alienation raises a basic question: Is it possible to live the life of a human being with intelligence disconnected from emotional and moral consciousness? The present paper suggests that it is not possible. The preference for artificial or instrumental intelligence (AI) over emotional intelligence (EQ) is not just a technological change, but an epistemological crisis. Science helps in economic growth, but emotion helps in life itself. EQ- consisting of empathy, moral imagination, relational awareness, and ethical accountability- is not an addition to intelligence but a constituent part of it. Intelligence is extractive and not humane when it is not able to partake in education and governance. The digital age is not the only place with this imbalance. The literature created in earlier periods of technological acceleration provides potent insight into the moral implications of unemotional rationality.

The two canonical works, *Frankenstein* and *Hard Times*, show an astonishingly prescient view of current worry about artificial intelligence. Written in the Scientific Revolution and in the Victorian Industrial Revolution, respectively, these texts question the threats of knowledge detached from compassion, responsibility, and feeling. Snow's formulation of the two cultures offers a critical theoretical perspective on this divide. The contemporary literature reacted to it by revealing the emotional and moral price of such development. *Hard Times* by Dickens critiques an education system preoccupied with facts and efficiency, and *Hard Times* by Shelley dramatizes the disastrous results of scientific invention without moral accountability. Contemporary theorists reflect these issues. According to Martha C. Nussbaum, purely economic systems of education driven by economic productivity may result in machines, not full citizens. Hans Jonas is another author who argues that the recent power of technology requires an ethics based on responsibility toward future life.

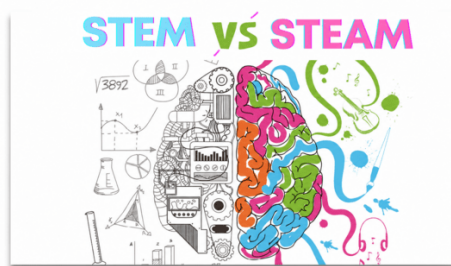


Figure 2. STEM and STEAM as complementary modes of analytical and creative intelligence.

The change of STEM to STEAM is a solution to this problem as the required epistemological adjustment. STEAM never weakens science; it balances the situation by bringing the humanities and literature, philosophy, ethics, and arts as the mediating elements that can control the power of technology. Artificial intelligence is put under the ethical watch of emotional intelligence. *Frankenstein* and *Hard Times* are not just literary works but theoretical models that are here to stay when it comes to the crisis of intelligence in the age of algorithms. Snow even cautioned that the divorce of scientific knowledge and humanistic knowledge produces decision-makers who cannot even contemplate human outcomes:

The clashing point of the two subjects, the sciences and the humanities, is intellectual rather than moral. However, it is the moral problem which is urgent. When those who are responsible for decisions are not educated to imagine the human consequences of their actions, the results can be disastrous. (70)

This remark gains new urgency in an age in which algorithms are playing an ever more significant role in the lives of humans. The caution Snow gives indicates that without imagination, i.e., without emotional and moral richness, intelligence brings no neutrality, but destructiveness. The Victorian age provides a harsh historical parallel. The Industrial Revolution brought about changes in production, labor, and education that were mechanized and utilitarian and rational.

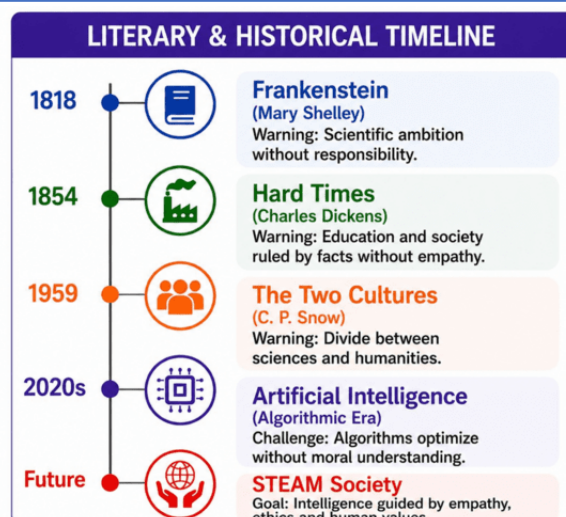


Figure 3. Literary and historical development from Victorian warnings to a future STEAM society.

The modern-day exaltation of artificial intelligence as the ultimate measure of advancement in humanity has made it necessary to re-evaluate the concept of intelligence as such. Previously viewed as a complex human ability that implies reason, emotion, moral judgment, and imagination, intelligence has been reduced over the years to connote capacity to compute, predict, and implement an algorithm. This theoretical narrowing privileges artificial intelligence (AI) as a non-living, instrumental type of thinking, and disadvantages emotional intelligence (EQ), the moral and relational center of human existence. The imbalance thereof has severe consequences in education, government, and social structure. Artificial intelligence works in the form of abstraction. It digests information that is not tied to lived experience and transforms people's behavior into variables, probabilities, and outputs. Although such systems are fast and massive, they are not conscious, compassionate, or morally responsible. Emotional intelligence, on the other hand, is intrinsically embodied and relational. It is a result of vulnerability, affect, and moral sensitivity to others. The difference between AI and EQ is, then, not only functional but also ontological; the former is simulated, the latter lived. This difference is important for understanding why technical progress, uncontrolled by emotional intelligence, often recreates inequality and dehumanization. The myth of algorithmic neutrality is unveiled by Cathy O'Neil, who criticizes the concept of algorithmic governance:

Models are opinions embedded in mathematics. They are not neutral. They reflect the priorities and assumptions of their creators, and when they are deployed at scale, they can cause enormous harm without the people who design them ever seeing the human suffering they create. (21)

This point of O'Neil can be highlighted as one of the main contradictions of artificial intelligence: even though it seems objective, AI increases bias because it is deprived of emotional and ethical understanding. Algorithms do not require something to be just; they simply compute efficiency. In the absence of EQ, intelligence is extra-human instead of humane. Humanities are no exception to this danger.

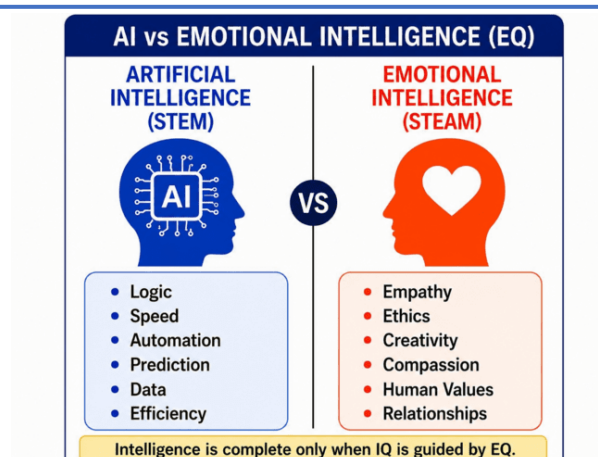


Figure 4. Artificial intelligence and emotional intelligence: contrasting capacities within a balanced model of intelligence.

According to the philosophical and literary traditions, moral blindness is always a result of intelligence without emotion. Martha C. Nussbaum, an author on the subject of education and democracy, cautions that societies that are obsessed with economic growth run the risk of emptying the emotional capacities needed to be moral citizens:

Thirst for national profit and economic growth encourages the neglect of education in the humanities. However, this neglect produces generations of useful machines rather than complete citizens who can think critically, understand the suffering of others, and participate meaningfully in democratic life. (18)

Nussbaum's formulation has special importance in the current context. Her reference to the useful machines prefigures the modern state of affairs where humans are being conditioned more and more to think in algorithms and become maximizing, competitive, and performing rather than practicing empathy, moral imagination, and relational responsibility. In this regard, the crisis of intelligence is a crisis of education too. The fact that IA is privileged, and not EQ, is reminiscent of the logic of industrial modernity. In the Victorian Industrial Revolution, labor, time, and value were redefined through mechanization. Human beings were also judged more by their productivity and efficiency, and emotional well-being was considered irrelevant or inefficient. The Victorian literature retaliated by pre-empting sympathy as a moral balancing force to industrial rationality. George Eliot can express this vision in as powerful a manner as follows:

The growing good of the world is partly dependent on unhistoric acts; and that things are not so ill with you and me as they might have been, is half owing to the number who lived a hidden life (785) faithfully.

Eliot's critique of unhistoric acts criticizes mainstream histories of progress. She proposes that caring, sympathy, and responsibility, as moral and emotional labor, are actions that keep society alive, but they cannot be measured by efficiency. This observation stands in direct opposition to modern algorithmic models that put a premium on measurable outcomes. The moral constraints of IA are even more

emphasized once we look at them in terms of responsibility. Hans Jonas posits that technological power is an underlying change in the extent of human activity that requires a new ethical formula:

The new kind of power we possess calls for a new kind of ethics. No previous ethics had to consider the global condition of human life and the far-off future. Technology now threatens the very survival of humanity if it is not guided by responsibility. (6)

Jonas's argument supports the need for emotional intelligence. Responsibility is not an algorithmic operation, but an ethical disposition based on care for others and concern for the future. AI can foresee results, yet it does not experience compulsion. Only EQ allows human beings to respond to the ethical burden of technological authority. This ethical vacuum is subsequently compounded by the loss of human interaction in the digitally mediated world. An analysis of technological intimacy by Sherry Turkle shows that artificial systems are imitated to replicate intimacy when the systems remove emotional interaction.



Figure 5. Ethical intelligence model based on empathy, creativity, responsibility, and ethics.

The empathy that Dickens focuses on is similar to that facilitated by George Eliot, who claims that the world is kept alive by unwritten instances of moral care. Dickens's ethical vision is highlighted at the end of the novel. Gradgrind's eventual realization of his mistake is a partial rediscovery of emotional intelligence. He is enlightened by the fact that facts cannot guide human life and that education without imagination creates moral emptiness. This Victorian criticism can be a strong frame of reference when discussing modern issues of artificial intelligence and education. With societies giving up power to algorithms more and more, Dickens' warning becomes more urgent- in the end, systems that negate emotional intelligence take away human dignity. Technology proposes itself as the architect of our intimacies. It offers the illusion of companionship without the demands of friendship, and in doing so, it reshapes what we expect from one another. (1)

In his criticism, Turkle suggests a slight yet threatening change: as fake systems approach the ability to imitate emotional interactions, human beings will have to reduce their hopes regarding empathetic attitude and responsibility. The development of

emotional intelligence through lived relations is gradually replaced by simulated affection. The social unity and accountability have dramatic implications of this displacement. The confrontation between IA and EQ, then, cannot be interpreted as a denial of science or technology. *Hard Times* by Charles Dickens contains one of the most extended literary criticisms of instrumental intelligence of the nineteenth century. The novel was written during the Victorian Industrial Revolution to challenge a social and educational system of utilitarian rationality, mechanization, and economic efficiency. In a sense, Mary Shelley's *Frankenstein* shows the moral shortcomings of individual scientific ambition, and *Hard Times* illustrates the institutionalized outcomes of intelligence without emotional underpinning. Dickens gives a picture of a society where facts, statistics, and productivity are substituting imagination, empathy, and moral judgment, and the logic of algorithmic governance is already expected of modern society.

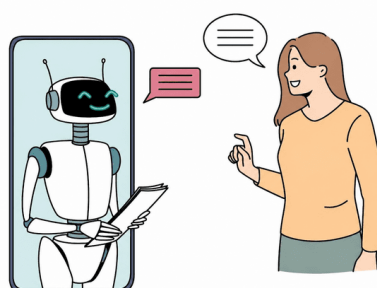


Figure 6. Human interaction with an artificial conversational system, illustrating technologically mediated communication.

Instead, it demands a rearrangement in which artificial intelligence is subordinate to emotional intelligence. Science and technology are instruments; they need ethical management. Emotional intelligence offers the evaluation framework in which technological power can be used responsibly. This is what the STEAM paradigm aims to accomplish. STEAM recuperates the moral and emotional aspects of intelligence by reinstating arts and humanities in STEM education. Literature, philosophy, and arts lead to the ability to envision costs, put themselves into others' shoes, and negotiate a moral dilemma, the abilities that no algorithm can recreate.

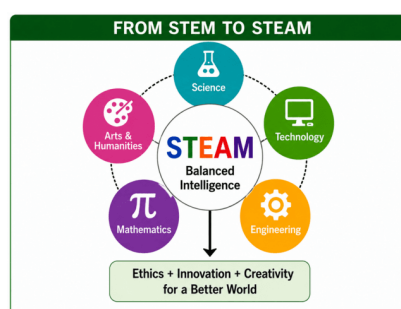


Figure 7. The transition from STEM to STEAM as a model of balanced intelligence and ethically guided innovation.

This paper is therefore based on the conceptual framework of a critical synthesis: artificial intelligence is instrumental cognition, and emotional intelligence is moral, relational cognition. They are both required, although not equivalent. AI is also dangerous without EQ. Without ethical imagination, intelligence is destructive. This paradigm sets the stage for a fine-grained literary reading of two canonical works that dramatize this lack of balance with a prophetic vision: Mary Shelley's *Frankenstein*, which questions the insensible intelligences of science, and Charles Dickens' *Hard Times*, which questions the insensible intelligences of utilitarianism. Collectively, these writings give a historical and theoretical basis for reworking intelligence in the algorithmic era. This requires human creators to see emotional intelligence as the ethical basis of all technological power. The ensuing violence of the creature is not a natural trait but a socially constructed reaction to isolation, rejection, and lack of emotionality. This ethical criticism is expressed by the creature himself with unbelievable clarity. Being anything but a mute or dumb creature, he proves to be of acute emotional intelligence, empathy, and moral consciousness, which his creator lacks. His need for companionship predicts relationality as the principle of moral living: I am malicious because I am miserable. Am I not shunned and hated by all mankind? ... If I cannot inspire love, I will cause fear. (Shelley 103)

This statement turns the traditional hierarchies of intelligence. The so-called monster has emotional self-consciousness and moral reasoning, and the human scientist is ethically irresponsible. Shelley therefore upsets Enlightenment suppositions that identify intelligence as rational control. She implies that emotional intelligence is not inferior to scientific intelligence, but it is ethically superior. The fact that the creature needs someone to share a room with further proves how important emotional intelligence is: This person must be of the same species and share the same imperfections with me. In this case, Shelley prefigures one of the principles that Victor disregarded; intelligence is relational. Existence cannot be maintained in solitude. It requires tending, continuity, and emotional dedication to creation. Shelley gives the creature authoritative power in the narration, which enables him to express pain, desires, and ethical thought. His learning is by book, by literature- literature such as *Paradise Lost*, *Plutarch's Lives*, and *The Sorrows of Young Werther*- develops sympathy, not violence. This fact supports the humanistic assertion of Shelley: literature leads to emotional intelligence because it allows people to project other lives and moral issues. The confrontation scene in *Paradise Lost* is especially eye-opening for the creature. He is Adam and Satan at the same time, realizing that he wants to belong and he is not a part of it. This dual identification is a sign of an advanced emotional awareness that Victor lacks because of his stern rationalism. Shelley thus equates emotional intelligence with narrative imagination and moral reflection. Where Shelley is critical of the ambition of one person to a scientific goal, Dickens is critical of the social effect of rationality without sympathy. Thomas Gradgrind, the man who represents the ideology of intelligence by facts, is put in the middle of the novel. Gradgrind's educational philosophy reduces intellectual qualities to quantifiable information, in which emotional or creative knowledge is not recognized as valid. Dickens brings about this worldview and makes it purposely ironic and rhetorically overindulgent: Now, what I

want is, Facts. Teach these boys and girls nothing but Facts. Facts alone are wanted in life. Plant nothing else, and root out everything else. (5)

The epistemological violence of the core of utilitarian rationality. Gradgrind's demand for Facts alone can be compared to the modern-day prioritization of data, measures, and algorithmic outputs. Dickens unveils the dehumanizing nature of such an approach by the fact that he silences emotional intelligence, the ability to make ethical choices and act socially responsibly. Gradgrind's philosophy reflects the broader industrial logic of Victorian England, as human beings became more commodity-valued based on productivity rather than dignity. The similarities between *Hard Times* and the modern algorithmic culture are quite impressive. Gradgrind has made education more about facts, just as modern institutions tend to define intelligence through data analytics, standardized testing, and predictive algorithms. However, as Cathy O'Neil notes, these systems often increase injustice because they do not involve moral judgment. Dickens envisions such criticism by showing how even systems created to be efficient do not help the people who require compassion the most. The current time, and how modern AI discourse recreates the same epistemological imbalance, and why the STEAM paradigm provides a needed solution.

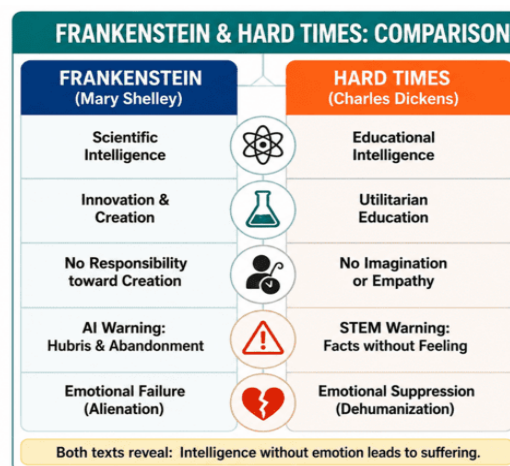


Figure 8. Comparative thematic structure of *Frankenstein* and *Hard Times*: intelligence without emotion as a source of suffering.

Dickens reinvents the meaning of intelligence based on morality and emotion and not a technical ability through Sissy. This redefinition goes directly against utilitarian epistemology. The effect of Sissy slowly upsets Gradgrind's obsessive vision, showing that emotional intelligence has a healing power that rational calculation does not have. This is why Dickens places empathy as a remedy for systemic dehumanization. In addition, *Hard Times* reveals that emotional intelligence can help in maintaining social cohesion. However, these allegations hide a very important shortcoming in ethics: artificial intelligence is not emotional; hence, it is not morally responsible. The success of instrumental intelligence is exemplified by algorithmic governance. Optimization of decisions will be based on statistical probability and not on ethical consideration. People are turned into data; their lives have been abstracted into trends, risk scores, and chances.

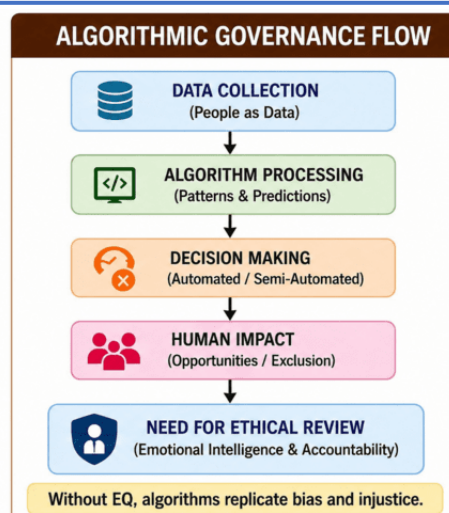


Figure 9. Algorithmic governance flow and the need for emotional intelligence, accountability, and ethical review.

Cathy O'Neil reveals the abstraction of vulnerable populations in the critique of data-driven systems. Big Data processes codify the past. They do not invent the future. They do not do anything original or creative. The ethics of responsibility by Hans Jonas gives this integration a philosophical background. Jonas posits that the existing technological mightiness compels man to behave out of tact and mindfulness to further generations: "Act out of a way that the consequences of your action can be adjusted to the endurance of true human life (Jonas 11). Artificial intelligence will not accomplish this imperative. It takes emotional intelligence, a sense of vulnerability, interdependence, and moral responsibility. Therefore, the argument in favor of STEAM is not retrogressive or non-technological. It is an acknowledgment that intelligence should be responsible for life. Moral judgment can never be replaced by artificial intelligence used to help make decisions. STEAM education will put this ethical lesson into practice by reinstating emotion, ethics, and creativity in scientific education. With the lack of emotional intelligence, technological progress is experiencing the same disaster that Victorian literature attempted to warn people about.



Figure 10. Visual representation of the movement from STEM to STEAM through the addition of arts and humanities.

Examples of this role are in *Frankenstein* and *Hard Times*. They do not provide any solutions of a technical nature; they develop ethical consciousness. They make readers learn to envision the consequences and not just to maximize results.

Conclusion

The current isolated conceptualizations of intelligence, which are becoming more defined by algorithmic rationality and techno-economic usefulness, are morally insufficient and unsustainable on social grounds. Victorian Industrial Revolution up to the current era of artificial intelligence, the privileging of instrumental intelligence over emotional intelligence has shown that it is not a unique event, but rather a manifestation of a crisis of modernity. The analysis of *Frankenstein* and *Hard Times* has demonstrated that in the literature, the threats of intelligence without empathy and responsibility are expected and criticized. Victor *Frankenstein's* ambition to be a scientist blindly and Gradgrind's education unquestioningly and intensively are both examples of alienation, suffering, and moral failure. Such systems make the situation worse, as shown by Cathy O'Neil and Sherry Turkle, who criticize that they undermine emotional abilities and intensify inequality. The ethical web of society cannot be maintained by the recorded deeds of kindness but by the unregistered kindness of caring, as George Eliot reminds us. STEAM balances the lack of capability and conscience; it is through reintegrating the humanities into scientific education. Humanity needs to bring progress through empathy, responsibility, and moral imagination. It is only through rebuilding beyond algorithmic intelligence that societies can be confident that technological progress will not be just efficient, but beneficial to the tenacity of human dignity.

Works Cited

- Dickens, Charles. *Hard Times*. 1854. Edited by Paul Schlicke, Oxford UP, 2008.
- Eliot, George. *Middlemarch*. 1871–72. Edited by David Carroll, Oxford UP, 2008.
- Jonas, Hans. *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*. Translated by Hans Jonas and David Herr, U of Chicago P, 1984.
- Nussbaum, Martha C. *Not for Profit: Why Democracy Needs the Humanities*. Princeton UP, 2010.
- O'Neil, Cathy. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Crown, 2016.
- Shelley, Mary. *Frankenstein; or, The Modern Prometheus*. 1818. Edited by J. Paul Hunter, Norton Critical Edition, W. W. Norton, 2012.
- Snow, C. P. *The Two Cultures*. Cambridge UP, 1959.
- Turkle, Sherry. *Alone Together: Why We Expect More from Technology and Less from Each Other*. Basic Books, 2011.