Anastasia Klimchynskaya

Fictions of Equality: Science Fiction and the Technological Challenge to Democracy

To say that technology shapes our lives would be an understatement. It is relatively easy to cite half-a-dozen examples: smartphones in our pockets, able to provide the time, Internet access, a GPS, and myriad other functions; personal assistants and smart homes; medical technology that can perform surgeries; ubiquitous social media; digital wallets that allow us to pay for our purchases, among many others. Technology molds our identities and our behaviors on a daily basis and shapes the ways in which we engage in social life, which has been the subject of extensive scholarship.

But the ubiquity of these technologies also has drastic effects on democracy, equality, and access in our society. It can limit access to democratic institutions and public spaces, increase social stratification, and invisibly increase segregation. This occurs, obviously, in big, headline-making ways: election hacking, voter suppression, and the manipulation of information, for example. But it also occurs in much more insidious and invisible ways. For example, machine-learning algorithms use “proxies” – that is, stand-in data based on discriminatory, and sometimes illegal, statistical correlations to decide which neighborhoods should be more highly policed, predict a convict’s rate of recidivism, or decide an individual’s eligibility for entry-level jobs. (O’Neil) The ubiquity of such algorithms leads to pervasive, but invisible, discrimination. The ride-sharing company Lyft recently launched Lyft Shuttle: a carpool service that will travel along a designated route and make specific stops along the way. An equivalent of the city bus for the more affluent, it would effectively segregate transportation while serving as dangerous competition for already-underfunded public transit. (Muoio)

In short, the use and implementation of technology on both the individual and social scales is inseparable from issues of equality, civil rights, privacy, and access to democratic institutions. Importantly, I would like to suggest that it is our beliefs and narratives around technoscientific innovation that define the ways in which we develop and integrate technology into our society, and
consequently affects our rights and freedoms. In particular, I focus on the way works of science fiction bleed into our collective cultural imagination to influence how we perceive the dangers and possibilities of technology, and consequently how we use and integrate it. While the challenges of technology to freedom and equality have been extensively studied by scholars, the role of these invisible but pervasive narratives in shaping our knowledge and behavior around such technologies is less studied. It is this gap I would like to fill in. Consequently, the first part of this paper suggests a methodology for understanding how narratives around technoscience shape knowledge and behavior, while the second proposes several examples of links between specific science fictional narratives and the implementation of technologies that have had consequences for civil rights and income inequality.

**Theory and Methodology**

Firstly, I want to lay down a methodology for understanding how our narratives shape the way we interpret the world, and consequently act within it. I take a two-pronged approach to this: one drawn from sociology, the second from cognitive science. Together, they elucidate how our narratives around technoscience shape our beliefs and behaviors, individually and collectively.

**Cognitive Science**

Fiction has been suggested by cognitive theorists to function like a flight simulator for human social life. As Jonathan Gottschall summarizes, “just as flight simulators allow pilots to train safely, stories safely train us for the big challenges of the social world. Like a flight simulator, fiction projects us into intense simulations of problems that run parallel to those we face in reality. And like a flight simulator, the main virtue of fiction is that we have a rich experience and don’t die at the end.” (58) That is, the “flight simulator” of fiction allows us to develop knowledge about the world that, importantly, does not necessarily exist on a conscious level. Such implicit, subconscious knowledge, called schemas, are “working models of what we know about how the world works” that “develop continually, and are
internally coherent.” (Oatley, 61) When “events occur, or things are said, in a story or in a life, we assimilate them to our own schemas...What we see and what we read are taken in insofar as they achieve significance for us, by becoming parts of our schematic models, our implicit theories of what we know about the world.” (Ibid) That is, we derive schemas – cognitive frameworks – from fiction, and when we encounter reality, our brains fit the new information we are confronted with into these schemas. Since this does not necessarily happen on a conscious level, the narratives we have internalized frequently structure our beliefs, knowledge, and behaviors in invisible ways.

Such a schematic approach to the world becomes particularly pertinent when considering the human response to novelty. The novel is that which, by definition, we have no prior knowledge of or cognitive framework for, and technological innovations are, by definition, novelties. They are the unknown, that which has not previously existed, whose functioning we do not necessarily understand. Yet, when we confront such novelties, we must somehow integrate them into our working models of the world to make them coherent. Science fiction, which deals with the future, the unknown, technologies that have not yet been invented and disseminated, and even the impossible, is a primary candidate for providing such a working model. It offers us the schemas through which we can understand technological novelty. And, since science fiction has been in existence for more than two hundred years, it has now developed an extensive lexicon of its own – termed the “megatext” by Damien Broderick. This megatext is made up of a set of ideas, icons, and technologies – from the robot to the time machine – that are instantly recognizable to a reader of the genre, and, in some cases, to anyone who has even a passing understand of popular culture. This science fictional megatext furnishes many of the schemas through which we understand novelty.

Sociology

This cognitive approach complements a broader sociological perspective for understanding how fiction structures our behavior in response to the unknown. In particular, I draw from sociology the idea
of the sociotechnical imaginary, which enables an understanding of the way science fiction shapes collective and social behavior and enables the behaviors that make up social life within technological modernity. In a seminal text, Sheila Jasanoff defines sociotechnical imaginaries as “collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology” (6). This collective aspect bears emphasizing: Charles Taylor notes that the social imaginary is “that which enables us to carry out the collective practices that make up our social life,” (108) and Ajun Appadurai refers to the imaginary as a “constructed landscape of collective aspirations” (31). That is, a sociotechnical imaginary is not an individual vision of the future, but the collective visions, aspirations, hopes, and fears of a nation or community that simultaneously shape, and are shaped by, technoscience. They are the embodiment of “co-production,” which describes the way “knowledge and its material embodiments are at once products of social work and constitutive of forms of social life” (Jasanoff 2-3). More explicitly, the relationship between the imagination and technoscientific production functions in two directions, as social and cultural forms influence the directions of technoscientific progress, which in turn shapes society. Technoscience thus forms an indelible part of the cultural imagination and, consequently, of social practice.

For Jasanoff, sociotechnical imaginaries are “associated with active exercises of state power,” but it is useful to expand her definition by returning to Charles Taylor’s broader definition of the social imaginary:

...the ways people imagine their social existence, how they fit together with others, how things go on between them and their fellows, the expectations that are normally met, and the deeper normative notions and images that underlie these expectations. (22)

That is, an imaginary defines how individuals understand society as a totality and their relationship to it, which in turn directs their expectations and behaviours as participants within the social sphere. With the
explosion of technoscience into society, interpersonal and social relationships, norms, expectations, and collective practices were naturally transformed. Understandings of “how things fit together” that include technoscience are therefore required, and sociotechnical imaginaries that are not necessarily engaged in active exercises of state power perform the necessary work of making coherent existence in a changing world and providing individuals with a crucial understanding of the social (and global) whole.

Jasanoff notes that science fiction is “a repository of sociotechnical imaginaries” (337); the genre can, and does, play a crucial role in shaping expectations of the future and helping normalize the technologies and behaviours necessary to exist within modernity. As a literary form concerned with possibility, the future, and the social role of technoscience, science fiction enters into the collective imagination as it becomes an indelible part of the way one understands the modern, technological world and structures their conceptions of the technoscientific future. One has only to look at the influence of fictions such as The Terminator or Frankenstein on our fears of an AI uprising for obvious examples: the popularity of these fictions has allowed them to become explanatory frameworks, evoked any time AI, automation, or research ethics are discussed. The results of the thought experiment of science fiction thus become a shared vocabulary to articulate hopes and concerns about the technological present and the future. This cultural lexicon, in turn, informs sociotechnical imaginaries, which serve as a kind of mythology of technological modernity and its future.

In short, then, both individually and collectively, consciously and subconsciously, science fiction contributes to shaping our identities, our behaviors, and our social life, and influences how we use technology, whether we reject and fear it or integrate it into our lives. It defines the possibilities that we allow to shape our future.

**Belief and Behavior**

Let me suggest two examples that illustrate how our beliefs and narratives have shaped the way we have used and implemented technoscientific innovation, to our detriment. The first example is our
use of machine-learning algorithms and Big Data in almost every aspect of life today. Crunching enormous amounts of data, these algorithms decide the interest rates on our loans, our insurance premiums, and which neighborhoods should be the most policed, process resumes to decide on the most promising candidates, calculate which voter bases politicians should target and what the likelihood of an individual’s recidivism is. Because of their pervasiveness and scope, data scientist Catherine O’Neil terms these algorithms “Weapons of Math Destruction.” As she points out, these algorithms were “marketed as fair and objective. After all, [they] didn’t involve prejudiced human beings digging through reams of paper, just machines processing cold numbers. By 2010 or so, mathematics was asserting itself as never before in human affairs, and the public largely welcomed it.” (3) All was not well, however: “the math-powered applications powering the data economy were based on choices made by fallible human beings….many of these models encoded human prejudice, misunderstanding, and bias into the software systems that increasingly managed our lives. Like gods, these mathematical models were opaque, their workings invisible to all but the highest priests in their domain: mathematicians and computer scientists. Their verdicts, even when wrong or harmful, were beyond dispute or appeal. And they tended to punish the poor and the oppressed in our society.” (Ibid)

In short, data and math-powered applications steadily overtook almost every domain of human life because people believed they were “better” and more objective than human beings. In recent years, this assumption has been challenged by numerous data scientists and sociologists (e.g. O’Neil, Eubanks), who point out the widening inequality such algorithms create under the guise of both increased fairness and increased effectiveness. But where did this assumption come from that machine learning was “better,” fairer, and more objective than human intuition and knowledge? The obvious answer seems to be that math and numbers have always had a reputation for objectivity: unlike the humanities, they generally leave room for ambiguity. But I would like to suggest that it is also our narratives around machines, machine learning, and Artificial Intelligence that contributed to this assumption.
Machine learning is not just about math or numbers: machine learning algorithms and neural networks are the closest that we have come to what we loosely term Artificial Intelligence. It is such algorithms that allow for predictive text on our cellphones, personal assistants such as Siri and Alexa, or automated customer service workers indistinguishable from human ones. That is, to the uninitiated, unaware of how these algorithms function, they can give the impression of consciousness, knowledge, or decision-making. The most successful of personal assistants, for example, are programmed to behave in strikingly human ways when they don’t understand their input: they say something ambiguous or menacing, giving the impression of a consciousness rather than a protocol.

At the same time, such “artificial life forms” play a significant role in the cultural imagination due to a long history of science fiction. From *Frankenstein* to *Wall-E*, *Star Trek* to *Star Wars*, *AI*, robots, androids, and other artificial yet sentient beings pervade these fictional worlds and influence how we perceive their real-world counterparts. In particular, because most laypersons have no knowledge of exactly how machine learning technologies work, it is these science fictional schema that fill in the blanks. Consequently, even serious discussions of automation in publications such as *The Economist* inevitably evoke *The Terminator*’s Skynet, while banks, internet service providers, and cybersecurity companies have begun using images of robots in their marketing materials as a shortcut for the cutting-edge digital services they offer. Artificial intelligence in popular culture is inseparable from our perception of machine learning in our lives today.

Significantly, the vast majority of the most popular fictions regarding artificial intelligence place an emphasis specifically on the logic, cold calculation, and lack of emotion of these life forms. The throughline of one of the most popular and famous of android characters, *Data* from *Star Trek: The Next Generation*, is that of an android who feels no emotions but strives desperately to be human. He does not know what it is to feel; he only knows how to calculate. In apocalyptic films such as *The Terminator* or *War Games*, the highly advanced artificial intelligence retaliates against humans out of a calculated
self-preservation based on observation of human behavior, rather than on the basis of “irrational” fear and anger. Given the significant role science fiction plays in helping us understand technologies we might not otherwise understand, therefore, it is only logical that a plethora of fictions about the objectivity and rationality of machine learning and artificial intelligence has contributed to the entrenchment of these technologies, and to our willingness to believe that they are, in fact, fairer and more effective.

My second example draws on our rhetoric around space exploration. Since the end of the Space Race, public interest in space has arguably waned, and today, some of the most significant advances in the field are being done by private corporations rather than by government agencies such as NASA. The rhetoric around these innovations is overwhelmingly positive, emphasizing broad and inspirational possibilities such as discovery, exploration, and knowledge. The blurb for science popularizer and bestselling author Michio Kaku’s latest book, The Future of Humanity, for example, reads “We are entering a new Golden Age of space exploration.” In the book, he expands: “Some have written that we are entering a new golden age of space travel, when exploring the universe will once again become an exciting part of the national agenda after decades of neglect....Because of revolutionary advances in a wide range of modern technologies, we can now speculate how our civilization may one day move into outer space, terraforming planets and traveling among the stars.” (12) In this, Kaku differs little from other science popularizers and science fiction authors, who similarly talk about space travel in terms of possibility and the marvelous. In such discussions, humanity is usually referred to as a whole (as in the title of Kaku’s book), and the advancements being made by private corporations are presented as stepping stones to put humanity as a whole, rather than affluent individual humans, into space.

Once again, much of this draws from science fiction, a significant portion of which envisions the future of humanity in space. Kaku, for example, writes eloquently that “Humanity is about to embark on perhaps its greatest adventure. And the gap that separates the speculations of Asimov and Stapleton
from reality may be bridged by the astonishing and rapid advancements being made in science.” (15) In addition to Asimov and Stapledon, his book is littered with references to science fiction texts, including Star Trek, Star Wars, The Martian, Jules Verne, and 2001: A Space Odyssey. Such references to science fiction in the distant future, when space has become accessible to more than just the wealthy few, place the emphasis on larger-than-life concepts such as discovery and possibility, while obscuring the thornier, uglier practical and financial realities involved in current private-sector space exploration.

Yet that practical reality is that the companies making the greatest advances in space exploration – Elon Musk’s SpaceX and Jeff Bezos’ Blue Origin – were founded by billionaires who have made their fortunes through famously unethical workplace practices. (Just recently, Amazon employees attempted to protest their working conditions under the slogan “we are not robots!”) The price tags of even their lower-cost, reusable rockets ranges from the tens to the hundreds of thousands, making them effectively inaccessible to any but the ultra-rich. And, perhaps most chillingly, as Douglas Rushkoff writes, “if a few people do reach escape velocity and somehow survive in a bubble on Mars...the result will be less a continuation of the human diaspora than a lifeboat for the elite.” Human space exploration, he suggests, just like the quest to upload the human mind into a computer or reverse the aging process, is a means for these tech billionaires to transcend the human condition, “insulating themselves from a very real and present danger of climate change, rising sea levels, mass migrations, global pandemics, nativist panic, and resource depletion.” Marshalling the captivating imagery of science fiction and its rhetoric of possibility (Musk’s SpaceX recently launched into space a car full of references to The Hitchhiker’s Guide to the Galaxy, which met with an excited response from science fiction fans), these moguls are less interested in confronting pressing humanitarian issues such as global warming than in developing means for the select few to escape them. Of course, there are just as many dystopian visions of humanity’s future in space as there are utopian ones – from Total Recall to The Expanse – but it is the rhetoric of the latter that is marshalled in the name of possibility.
Confirmation Bias

Though I have outlined only two examples, this problem is an insidious and pervasive one, partly because our fictions are so apt at serving as confirmation bias. As Catherine O’Neil writes, “The same [algorithms] that abuse the poor also place the comfortable classes of society in their own marketing silos... For many of them, it can feel as though the world is getting smarter and easier. Models highlight bargains on prosciutto and chianti, recommend a great movie on Amazon Prime, or lead them, turn by turn, to a café in what used to be a “sketchy” neighborhood. The quiet and personal nature of this targeting keeps society’s winners from seeing how the very same models are destroying lives, sometimes just a few blocks away.” (200) That is, the well off (who are frequently those developing, implementing, and legislating new technologies) believe technology improves life because that is their personal experience. And, as O’Neil importantly emphasizes, these algorithms frequently serve to invisible segregate us: we ride-share instead of riding the bus, access information and consume entertainment specifically targeted to us, and, with increasing frequency, visit businesses and neighborhoods recommended to us by these invisible algorithms. That is, not only does technology improve the lives of the elite, it increasingly separates them from those whose lives are being made worse by these same technologies.

Consequently, because these ‘comfortable classes’ experience of technology is a positive one, the fictional reference points upon which they tend to draw might be the utopian futures of the early Star Trek series, for example. So, although we have no shortage of a dystopian visions – from Altered Carbon and Blade Runner to The Handmaid’s Tale - that have increasingly become reality, that reality is becoming increasingly invisible. Margaret Atwood famously stated that her Handmaid’s Tale included only things which have already happened, and a contributor by the name of Glosswitch at New Statesman emphasizes that the novel has already come true – “just not for white western women.” The danger of such fictions therefore becomes precisely that they are believed to be an alternate future,
that which has not yet – or will never – come to be, the depiction of another world, rather than a description of a reality that already is. Such fictions are a double-edged sword, in that they can serve as powerful warning and yet seem too radical, too unrealistic for readers increasingly insulated from their visions due to the technologies that increasingly segregate us.

Conclusion

I began thinking about this article as I taught a class I designed, “Living in a Science Fiction World,” which dealt with social, political, and legal issues through the lens of science fiction. Teaching this course for the first time in the first few months of 2017 was a fascinating experience in many ways. Around this time, texts such as 1984, The Handmaid’s Tale, and It Can’t Happen Here sold out among retailers such as Amazon, and a plethora of thinkpieces followed, describing the increased popularity of these fictions. It is at that moment that I was confronted with the question of what fiction can truly do to make the world a better and more equal one. In this paper, I have outlined the ways in which works of science fiction in various ways obscure, muddle, and confuse our assumptions about technology and the world that it shapes, to our detriment. But it is also important to emphasize the power that (science) fiction has to improve the world. Since the 2016 election, for example, we have seen a strong upsurge in powerful activist art, and strides made in inclusivity and representation in the media. As we celebrate the power of art to create positive change, therefore, we should not neglect a consideration of the ways fiction itself can serve as a powerful technology that shapes the range of possibilities within our world.

Works Cited


Eubanks, Virginia. Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor.


Rushkoff, Douglas. “Survival of the Richest: The wealthy are plotting to leave us behind.” *Medium*.