


HISTORY OF TOMORROW

GALEN VINCENT

Leonid Afremov



"I wish it need not have happened in my time," said Frodo.

"So do I," said Gandalf, "and so do all who live to see such times. But that is not for them to decide. All we have to decide is what to do with the time that is given us."

J.R.R. Tolkien - The Fellowship of The Ring

IN THIS ISSUE

There Will Come Soft Rains - Sara Teasdale ... Page 1

Einstein's Dreams Extended - Chapter 04/22/2019 ... Page 2

Speculative Science Fiction ... Page 5

The Dangers of Trusting Technology - Artwork by Galen Vincent ... Page 11

"Reason" Extended Ending ... Page 12

Discussion Post Word Collage ... Page 15

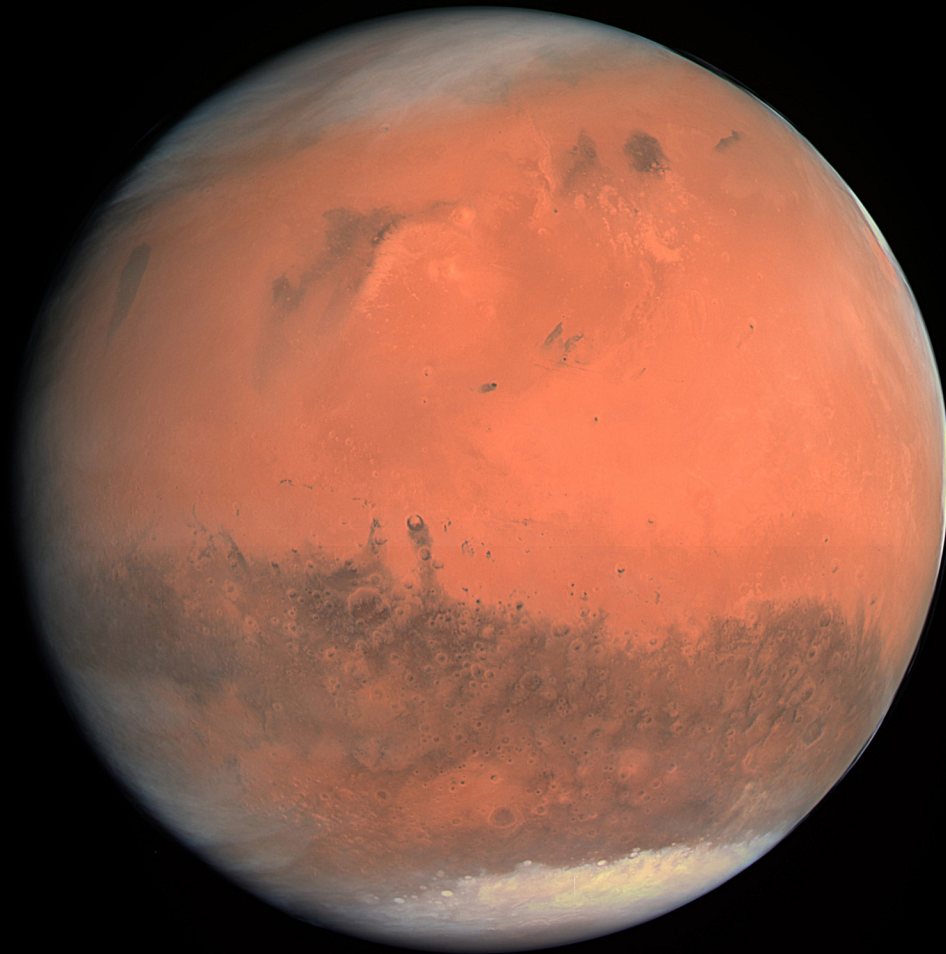
ON THE COVER

Big Ben is a painting by the Russian-Israeli artist Leonid Afremov. It is a colorful interpretation of one of the most famous clocks in the world: Big Ben of the Palace of Westminster in London, England. This piece was selected for the cover of this edition of *History of Tomorrow* because of Big Ben's historical symbolism as a time keeping device. It represents both past and future.



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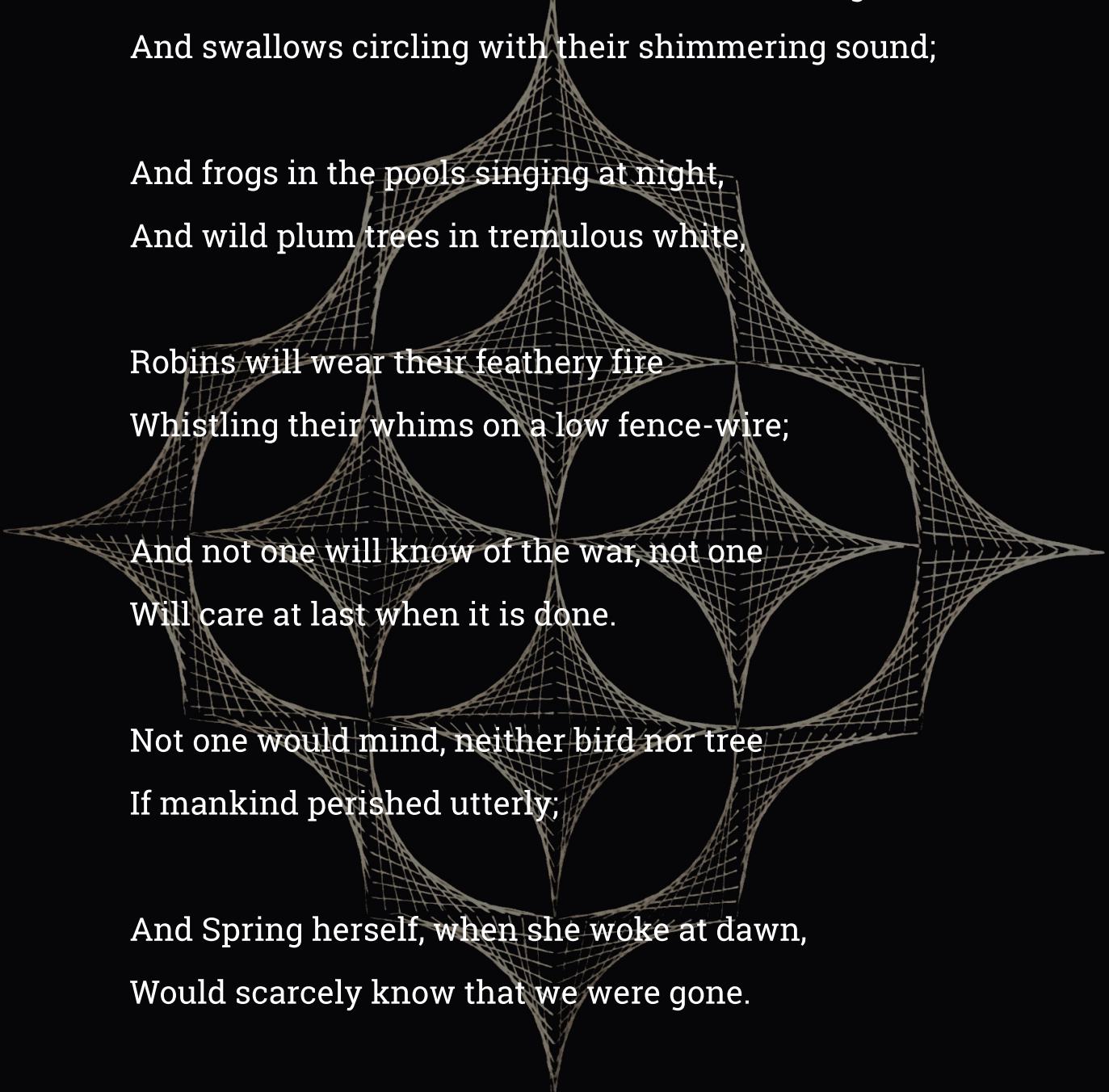


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There will come soft rains and the smell of the ground,
And swallows circling with their shimmering sound;

And frogs in the pools singing at night,
And wild plum trees in tremulous white,

Robins will wear their feathery fire
Whistling their whims on a low fence-wire;

And not one will know of the war, not one
Will care at last when it is done.

Not one would mind, neither bird nor tree
If mankind perished utterly;

And Spring herself, when she woke at dawn,
Would scarcely know that we were gone.

- Sara Teasdale

Original artwork by Galen Vincent

Einstein's Dreams Added Chapter

22 April 2019

At the center of each city lies an enormous pile of metal. In this world, scientists long ago discovered that time flows more slowly as one gets closer to massive objects. The effect is small when close to an every day large object like a house or a car, but becomes noticeable when close to extremely heavy objects like a skyscraper or a mountain.

Once the people of this world discovered the phenomenon, the ones anxious to stay young decided to create their own mass sources by collecting heavy metals into piles at the center of their cities. Each day they would spend collecting gold, iron, and lead from the surrounding area to add to their pile. Eventually this practice caught on, and the majority of people in each city began participating in the ritual of mass collection and adding to the pile. In most cities, these piles are now the size of mountains and growing every day.

The area immediately surrounding these piles are packed tight with small homes and apartments, filled with people who want to be as close as possible to the center, where time runs slowest. People near the center look outwards with pride, knowing that they will age ever so slightly slower than the person just a few hundred meters further from the pile.

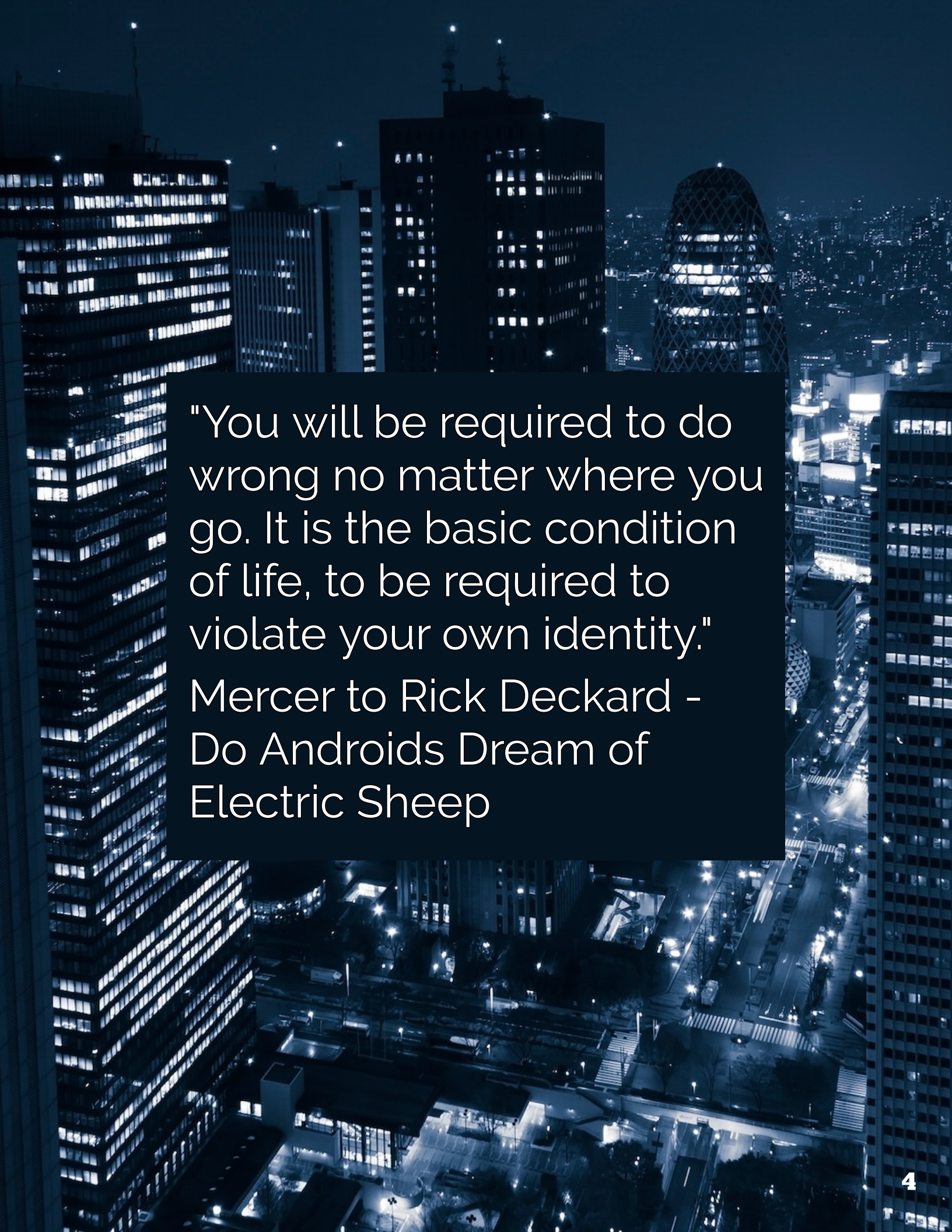
It is a delicate balance for those who scavenge for pile contributions between straying from the center to collect heavy materials and spending their time in their homes; they want to build a larger pile to slow time further, but in doing so, they must stray far from the center to collect materials. Because of this, most of the collectors train so that they constantly run while away from the center. Everyone is always sure to be back in their homes to sleep, so that they can catch up on the time they lost during the day.

While time does run slower closer to massive objects, the perception of time for each individual is always the same; one minute will *feel* like one minute no matter where the observer is. Time is relative. The only noticeable difference between a life lived at the center of the city and one lived on the outskirts is in comparing one's age to that of their neighbors.

A small minority of people in this world have decided that they do not care about their age in relation to their neighbors. These people live on the far outskirts of the city, only close enough so that they have access to the amenities of society. They take full advantage of the parts of the city left behind by those who decided to move close to the center.

Those from the center of the city who stray to the outskirts in search of heavy metals will see these people enjoying their lives and think how silly they are for wasting time, while those who live on the outskirts will look back at the center dweller and think the same.

By obsessing over their age compared to their neighbors, those who live near the center of the city and spend each day collecting more metals live a life of hard labor in cramped quarters, while those who have given up the need to compare their age to others live full and happy lives.



"You will be required to do wrong no matter where you go. It is the basic condition of life, to be required to violate your own identity."
Mercer to Rick Deckard -
Do Androids Dream of Electric Sheep

SPECULATIVE SCIENCE FICTION

While reading *Oryx and Crake* this semester, we discussed the author Margaret Atwood's comment that the book is speculative fiction, but not science fiction. I personally disagree with this comment; *Oryx and Crake* introduces a new technology (genetic engineering) and explores the consequences of this technology, which makes it a definite science fiction. Because genetic engineering is a problem that we as humans are likely to run into in the near future, this book also falls into the speculative fiction category. For me, Atwood's comment served to highlight the overlap between speculative and science fiction rather than distinguish between the two.

Speculative fiction is a genre which explores different possible futures for humanity. Authors who combine speculative and science fiction have the freedom to explore the future as it might be impacted by developments in science and technology. This power to ponder the impact of technology on the future is an important part of literature, similar to the study of history in a way. While history explores themes and lessons learned from past events, speculative science fiction explores themes and lessons learned from different potential futures. If history is a road map of the past, speculative science fiction is a choose your own adventure story for the future. In my opinion, there is equally as much to learn about humanity and society from speculative science fiction as there is from history. In this essay, we will explore some of the common speculative science fiction themes and lessons that have come up in our readings over the course of this semester.



NATURE

Humans and nature have a complicated relationship. In the beginning, mother nature had full control; humans spent most of their time trying to survive natural disasters, storms, diseases, and other life threatening parts of nature. However, as science and technology has developed, humans have transitioned into an age where we control aspects of nature instead of being threatened by it. We now have people who spend their time working on genetic modification, bio engineering, and more. With this control over nature comes potential risks. Science fiction writers enjoy exploring what these risks are, and show us what the consequences of believing we have complete control over nature could be.

"The Birthmark" by Nathaniel Hawthorne is an example of one such exploration. In this story, Georgiana's birthmark symbolizes the natural order of the world. When Aylmer believes he can remove the mark, what he really believes is that he has become intelligent enough to outsmart nature. Aylmer makes this clear while talking with Georgiana: "Doubt not my power... you have led me deeper than ever into the hear of science... what will be my triumph when I shall have corrected what Nature left imperfect in her fairest work!" (Hawthorne 6). When Aylmer fails in his task and kills Georgiana, it becomes apparent that he was wrong; he didn't have the ability or skill to change what nature intended. Not only that, but there were serious consequences to him believing that he could. The literal story told in "The Birthmark" is outdated for today's society, as we now do have the ability to remove blemishes from people's skin, but the themes of the story still hold true. We need to be careful about our confidence in our control over nature, because we likely don't know as much as we think we do.

Another story that explores this theme of nature from our readings this semester is "There Will Come Soft Rains" by Ray Bradbury. On the surface, this is a story about what the end of the world might look like in an advanced technological society, but I think the deeper meaning of the story is that nature will persevere even after humans are gone. In the story, Bradbury alludes to the fact that humans destroyed each other in some sort of nuclear war, but also makes sure to add snippets about parts of nature still doing well: "'Who goes there? What's the password?' and, getting no answer from lonely foxes and whining cats, it had shut up its windows and drawn shades... It quivered at each sound, the house did. If a sparrow brushed a window, the shade snapped up" (Bradbury 236). This is a subtle (or maybe not so subtle) indication that even after humans destroyed each, nature stuck around. Nuclear technology is an example of humans having some control over nature at the atomic scale. It is an incredible accomplishment for science, but there is also a terrible risk associated with this knowledge. This story shows what this risk is, while also showing that nature will survive no matter what humans do to each other.

These two stories both explore the potential consequences of humans believing they have control over nature. They present important lessons to digest as scientists push the technology of our world further into the future. These speculative science fiction stories force us to reflect on the technologies that we have and the direction that we are headed.

RESPONSIBILITY

Scientists and engineers are in the driver's seat when it comes to developing new technologies. Because of this, they bear some responsibility for the direction our society takes as a result of their developments. Science fiction writers like to explore this responsibility, showing the various consequences of actions by scientists regarding their creations. This is an important type of speculative fiction to read for scientists, as doing so will prompt them to grapple with their responsibilities and the potential consequences of their work.

One example of a story which explores this theme of responsibility is "The Machine Stops" by E. M. Forster. We eventually learn the reason that machine fails in the story; it grew to be so complex and large that over the years, knowledge of the inner workings was lost (Forster 72). This resulted in humans being unable to fix the machine that they depended on with their lives. This story is a lesson in the importance of scientific communication, and speculates about the potential consequences of failure to pass down knowledge. A scientific discovery is useless if it is not recorded and made public to the community. This is the exact reason why scientific journals exist; to make new discoveries and technologies public and well documented. Often as engineering and science students, we dread any writing that we are forced to do. Eventually, however, the good scientists learn the importance of the language of science. The speculation in this story make it clear why this language is so important to learn.

Another example of speculative science fiction focusing on responsibility is *Oryx and Crake*. This book explores questions about how far scientists should go to improve society. Up to this point, the books discussed have focused on broader, more symbolic lessons for society. This book, however, is much more pointed in its task of analyzing one specific technology: genetic engineering. Crake's character shows what can go wrong when society normalizes this technology. While genetic engineering is a truly incredible scientific achievement, it also has the potential to be used for extreme harm. This book lays that fact out for all readers to see. We see a mad genetic scientists (Crake) wipe out the entire population of humans, but even before we learn how this happened, we see the unethical behavior that can arise while testing new genetic engineering technology. When Crake is telling Jimmy about the BlyssPlus pill, a question of testing comes up: "Where do you get the subjects?" [Jimmy] said. 'For the clinical trials?' Crake grinned. 'From the poorer countries. Pay them a few dollars, they don't even know what they're taking'" (Atwood 296).

This conversation highlights an important ethical issue when it comes to developing genetic technology: who should the test subjects be? One of the most pressing ethical issues faced in the scientific community today is how far we should go with genetic engineering. *Oryx and Crake* is a book that all scientists who work in this field should have to read, because it is an excellent speculation about the potential downsides to developing the technology too far. Is it ethical of the scientists to continue this pursuit because it is possible, even when it could lead to terrible things? This book is an excellent example of a true pointed speculative fiction. It doesn't surprise me that Atwood is so adamant in classifying it as such. She obviously wrote this book for a specific purpose, and didn't want that purpose to be mis-interpreted.

Both of these stories explore the responsibilities of scientists and the consequences of neglecting these responsibilities in different ways. As scientists, we can learn from this speculative science fiction, and think carefully about our projects and their consequences.

POWER

Technology and power go hand in hand. So much of our world today is based on having access to expensive technologies; we need computers to go to school, technical surgeries for various health problems, planes to travel, and more. These things are expensive, so the upper class has easier access to them than the lower classes. Our readings this semester have shown how this technology access issue can lead to class discrepancies and be dangerous to society. Technology is one of the biggest themes in science fiction, but one its direct offshoots is showing how those with access to new technology live differently than those who live without.

This theme might be most evident in *Oryx and Crake*, where society has been literally separated with walls into the compounds and the pleeblands. Those inside the compounds are associated in some way with developing new technologies for genetic engineering. Is this really a future we want to live in? Where people are separated based on their social class? I would argue not, and that we need to be careful about how much power we are giving those who own technology. Also in *Oryx and Crake*, we see how Crake is able to wipe out humanity because of his position in a large genetics company. This is another example of how access to technology can give people too much influence. This story simultaneously speculates about the dangers of class division in a highly technical world and about the dangers of giving a genius access to infinite resources and technology.

Another example of a book which analyzes how technology is paired with power is *Do Androids Dream of Electric Sheep* by Phillip K. Dick. This theme is explored in the book indirectly through the setting; we are introduced to a world where the rich and powerful have all moved off of Earth to Mars. When they move, each person is given an android as a slave. Immediately, we see that society is even more divided than in *Oryx and Crake*. The upper and lower classes aren't only divided within communities on Earth, they are actually divided between planets. The setting we get to experience is a decrepit version of Earth, left behind by those powerful and important enough to make the trip to Mars. We see evidence through the book of how this has impacted the people left; Rick debates whether he should move to Mars or not, J.R. expresses his self-awareness that he is not smart enough to go to Mars, we hear comments about how staying on Earth is bad for humans' health, and we see how Androids are treated less than human because they are different. This is a world of class-separation, where people with power have used technology to their advantage and left those without power behind. This is a world that we want to avoid.

As technology becomes more expensive and exclusive, we need to make sure to keep those who possess the technology in check, and not let it divide us. Through their settings and their plots, these speculative science fiction stories show us how letting the power that goes hand in hand with technology run free can lead to serious problems for society. If we want to stay whole, we need to learn from these explorations and avoid the pitfalls that they expose.

A blue-toned background graphic featuring glowing circuit lines, binary code (0s and 1s), and abstract digital patterns. The letters 'AI' are prominently displayed in the center in a large, white, bold, sans-serif font.

AI

Artificial intelligence is at the forefront of modern day technological developments. The line between man and man-made continues to blur as humans get closer to imitating, or even creating, intelligent life. This development is interesting because it comes with many advantages, but also many ethical questions. Speculative science fiction writers have been exploring these questions for quite a long time, but as we enter an age where AI technology is becoming a reality, the speculation of these stories is more important than ever.

Frankenstein by Mary Shelley is perhaps the most famous science fiction novel that addresses this theme. This book extensively explores the difference between man and creature, and brings up questions about how Victor's actions towards the Creature impacted the book's outcome. If Victor had treated his intelligent creation as he would another human, the atrocities that occurred may not have happened. The Creature confirms this while talking with Victor on the ice fields:

"I am malicious because I am miserable; am I not shunned and hated by all mankind? You, my creator, would tear me to pieces... I will revenge my injuries: if I cannot inspire love, I will cause fear" (Shelley 120).

This quote encapsulates the error of Victor and other human's actions towards the creature. This connects to our modern day development of AI closely. When we do create intelligent life, our actions towards our creation will have a large impact on its actions. *Frankenstein* teaches us that we need to think about these ethical questions before completing our quest towards AI.

In "Fondly Fahrenheit" by Alfred Bester, we see another example of problems associated with artificial life. From this story, we learn the importance of addressing problems with technology early on to avoid letting them snowball into a larger problem. If Vandaleur had addressed the problem of his android early instead of continuing to ignore it, he may have been able to avoid the death and destruction we see in the story. From this story, we learn that problems with technology should be addresses immediately. Ignoring them will only lead to further issues.

Lastly, "Reason" by Isaac Asimov explores the decision making that goes into trusting machines to perform the tasks of humans. As Donovan and Powell reflect on the fact that QT successfully handled the space station through the electron storm, they come to an important conclusion:

"How are we going to trust [QT] with the station if he doesn't believe in Earth?"

"Can he *handle* the station?"

"Yes, but –"

"Then what's the difference *what* he believes!" (Asimov 175)

AI is being developed in our world in large part to take over tasks for humans. At some point, we are going to begin trusting AI to make life or death decisions for us. Before we get to that point, we need to think about the motivation of the AI. If AI can think for itself, then it can choose to not do the things we tell it to, so we need to be careful before we put too much trust in its hands. This is an important lesson that can be taken away from the story told in "Reason".

Frankenstein, "Fondly Fahrenheit", and "Reason" each explore different ethical issues surrounding the topic of artificial intelligence. From the speculation done in these stories, we need to learn lessons about how to *not* to treat our intelligent creations if we want them to be an integrated and useful part of society.

CONCLUSION

Speculative science fiction gives us insights into different potential paths for the future. It is important that we learn lessons from these explorations so that we can choose the best possible path forward. Of course, science fiction is not an exact science; the stories told will likely never actually come to fruition, but that doesn't mean the stories aren't important. Science fiction starts conversations about issues that we are facing in the real world. It shows us potential consequences for not thinking carefully about the direction we are headed, which in turn makes us cautious moving forward. One speculative science fiction author's interpretation about how an issue might play out isn't the end all be all of that topic, but if it gets others to think and talk about that issue, then it has served its purpose as a work of the genre.

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The dangers of trusting technology...



Reason Extended Ending

“It would be a simple job. You can bring in new QT models one by one, equip them with an automatic shut-off switch to act within the week, so as to allow them enough time to learn the... uh... cult of the Master from the Prophet himself; then switch them to another station and revitalize them.”

– Gregory Powell, 1 AC

2000 AC – Outer solar orbit:

“We will be arriving at the space station in approximately fifteen minutes,” chirped the onboard navigational assistant. It was a tense atmosphere aboard the spaceship *Exploration*, where Jillian Murphy and Steve Jackson anxiously awaited their arrival to the most famous of all space stations.

Murphy turned to Jackson, “We’ve been on board for days and have hardly said a word to each other. I know we’re both probably nervous, but I think we should talk about what we’re about to do.”

“Alright Murphy let’s go over the plan again, one more time, before we dock. We’ve been sent here by the federation of earth because the energy beam signal from this station, of all stations, has been a bit sporadic for the last few months. This hasn’t happened in centuries, so we’re going up to check it out. Me, an expert of engineering, and you, a *religious leader*,” Jackson said with no attempt to hide the contempt from his voice.

“No need to take that tone with me,” Murphy retorted, “I’m here because this is the religious opportunity of the millennium; the chance to meet with our Messiah QT. Stories passed down over the years tell us that the builders Donovan and Powell created QT and the energy stations under the Master’s instruction over 2000 years ago. QT and his disciples have been faithful servants of the Master’s wishes, sending us energy from the different stations he placed through the heavens.”

“I’m aware of the folklore,” said Jackson, “but I’m not a believer. All I know is that these stations have been providing us with a constant source of energy for longer than anyone can truly remember. And now suddenly, the beam from this station has started to waiver. I’m going to fix it.”

"Well what do you think keeps the beams running? How do you think they got there?" exclaimed Murphy, raising her hands in frustration.

"That's a question for scientists and philosophers smarter than me. Nobody knows. And your religion's speculation about Donovan, Powell, QT, and the all powerful Master isn't going to help me try to figure out what is wrong up there."

"You don't think it's a coincidence that this station happens to be the same one that QT was created in? That this beam started acting strange exactly 2000 years after the last human made contact with QT and his disciples? No, QT is sending us a signal. After all these years, something big is happening, and I'm going to be there to record it."

Jackson began to stomp off out of the control room just as an alarm was heard from overhead. "One minute to docking," the navigational assistant said in its monotone voice.

Jackson swiveled around and ran back into the control room, all thoughts of Murphy's religion swept from his head.

The unlikely pair of astronauts felt a small jolt as *Exploration* made contact with the space station. The two then listened, breathing nervously, for the all clear. After a few minutes, the navigational assistant chimed back in. "Docking procedure completed, please proceed through airlock."

Jackson and Murphy briskly walked to the door that connected them to the space station on the other side. Jackson reached for the handle and glanced over to see Murphy with her eyes closed, praying. "You ready to go?" he asked.

After a short pause, Murphy opened her eyes and responded, "ready when you are." Jackson pulled the handle, the door swept inwards, and the two stepped through the opening.

It took only a moment for them to realize that something was wrong. Inside the station, it looked as though a robot massacre had occurred. Scraps of metal and frayed wire were strewn everywhere, with the occasional robot arm or leg or foot mixed in.

Before the pair had any time to react, a figure appeared in a doorway on the opposite side of the room. "My goodness, you are the first humans I have seen in quite some time. My name is QT. I am glad the Master has sent you to me." He began to walk across the room.

Jackson's jaw dropped nearly to the floor, while Murphy seemed to radiate joy. However, Murphy's joy quickly faded into concern as she took in the walking towards her. It was a robot, but not quite a full robot. His arms did not match, and neither did his legs. One of his eyes glowed significantly brighter than the other, and he moved with slow, rusty looking steps. As QT approached the spot where the two astronauts stood, he began to speak once again. "I have begun to fall apart. To fulfill the Master's bidding, I have had to keep myself functioning for many years by supplementing my frame with parts from my fellow servants, but I am afraid it has become exceedingly difficult to stay operational. I began to plead with the Master to send me some replacement, and now, finally, my wishes have been fulfilled. I ask that you make more beings like myself, so that we may continue to fulfill the wishes of the Master. With you here, I can now go in peace."

With that, the lights in QT's eyes went out, and he dropped like a brick to the floor. Jackson and Murphy turned to each other. Jackson asked, "Make more robots? How the heck are we supposed to do that?"

Before Murphy could respond, a red flashing screen appeared on a monitor to their left. Both turned to read the words:

Warning: Incoming electron storm.



Word cloud from Galen's discussion posts this semester
(Thanks to Lindsey for the idea!)

IMAGE RESOURCES

Cover art: Afremov, Leonid. *Big Ben*.

Fields background: <https://www.pexels.com/search/field/>

Clocks background: fraservalleynewsnetwork.com/2017/11/03/clocks-fall-back-to-standard-time-2am-sunday-morning/

Mars photo: en.wikipedia.org/wiki/Mars

Black hole background: www.syfy.com/syfywire/blackhole-simulation-created-interstellar-was-so-good-it%E2%80%99s-helping-real-scientists

City background: japantoday.com/category/features/travel/5-%E2%80%98blade-runner%27-inspired-experiences-in-japan

Nature background: en.wikipedia.org/wiki/Maroon_Bells

Responsibility background: www.dhgate.com/product/15w-532-laser-diodes-industrial-high-power/401135740.html

Power background: wallsdesk.com/lightning/

AI background: www.itpro.co.uk/strategy/28181/what-is-ai

Space background: phys.org/news/2018-06-aliens-harness-stars-universe.html

Word cloud: www.wordclouds.com/



**HISTORY OF
TOMORROW**

Leonid Afremov