

Science and Science Fiction Syllabus

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This class will explore the ways that scientific ideas have been used and abused in science fiction. Ideas such as faster-than-light travel, time travel, and alien life are staples of science fiction, but what (if any) basis do they have in actual science? And how have scientific ideas in these areas fed back into the creation of science fictional worlds? Other areas we will explore are genetics, quantum mechanics, and giant monster movies (!) We'll also take a look at whether or not science fiction has predicted the future, and we'll explore the similarities and differences between the "creation" of science and the writing of science fiction.

Jan. 14

Introduction

How are the enterprises of science and science fiction similar, and how do they differ? What are the ground rules for introducing new ideas in each field? And finally, how do the nuts and bolts of writing in science and in science fiction differ and how are they similar? Do scientists have any special ability to write science fiction?

Optional reading for next week:

Robert Heinlein, "Universe"

Jake Kerr, "The Old Equations"

<http://www.lightspeedmagazine.com/fiction/the-old-equations/>

Poul Anderson, "Kyrie"

Jan. 21

Einstein's cosmic speed limit

Einstein's theory of relativity predicts that nothing can go faster than the speed of light, throwing a wet blanket over ideas of galaxy-spanning empires. How have science fiction writers evaded Einstein's speed limit, and with what consequences? Einstein's follow-up theory, general relativity, predicts that time slows down as you go near black holes, an idea featured in written science fiction long before the film *Interstellar*.

Optional reading for next week:

Terry Bisson, "They're Made out of Meat"
<http://www.terrybisson.com/page6/page6.html>

Charlie Jane Anders, "The Fermi Paradox is our Business Model"
<http://www.tor.com/stories/2010/08/the-fermi-paradox-is-our-business-model>

Jan. 28

Alien Life

Aliens! From the fanged monstrosity of *Alien* to the cute and cuddly *E.T.*, aliens have been a staple of science fiction. But how likely is alien life? Some scientists believe it should be plentiful, yet we have detected no sign of it (the so-called "Fermi paradox"). We'll explore how science fiction has addressed this fundamental question (do aliens exist?) and how science fiction writers have imagined alien life adapted to various bizarre environments.

Optional reading for next week:

"Quantum Theory Tugged, and All of Physics Unraveled" (NY Times):
<http://www.nytimes.com/2000/12/12/science/12QUAN.html>

Robert Charles Wilson, "Divided by Infinity"
<http://www.tor.com/stories/2010/08/divided-by-infinity>

Larry Niven, "All the Myriad Ways"

Robert Heinlein, "By His Bootstraps"

William Tenn, "The Brooklyn Project"

Feb. 4

Quantum Mechanics and Time Travel

Quantum mechanics is the most important theory in modern physics, but it also makes the most bizarre claims: Objects no longer occupy a definite location in space, particles act like waves and vice versa, and the act of observing an experiment influences the outcome. What happens when science fiction writers try to write about a theory that is so weird that it seems fictional itself?

Time travel is one of the oldest (maybe *the* oldest) themes in science fiction, but the subject is rife with paradoxes. How has science fiction dealt with

these issues? What happens if you kill your own grandfather before you were born?

Optional reading for next week:

Steven Baxter, “Last Contact”

Robert Scherrer, “Extra Innings”

Nancy Kress, “Beggars in Spain”

Feb. 11

Cosmology and genetic engineering

Cosmology and genetic engineering are two of the hottest topics in science, and sometimes science fiction has barely managed to keep pace with the latest developments. Cosmology is my own research field, so naturally it gets its own lecture, while genetics raises some of the thorniest social and ethical issues, which science fiction has often taken the lead in examining.

Optional reading for next week:

Edward Bryant, “giAnts”

Frederick Pohl, “The Midas Plague”

James Blish, “Surface Tension”

Popular Mechanics, “Miracles You’ll See in the Next Fifty Years”
https://books.google.com/books?id=ANkDAAAAMBAJ&pg=PA112&lpg=PA112&dq=popular+mechanics+miracles+you%27ll+see+in+the+next+fifty+years&source=bl&ots=HqSErNFGGrJ&sig=vNR9xHWRu0N9ERmB_qiRslGumhg&hl=en&sa=X&ei=RTK0VLq3JcamggToloSYAQ&ved=0CCUQ6AEwAQ#v=onepage&q=popular%20mechanics%20miracles%20you'll%20see%20in%20the%20next%20fifty%20years&f=false

Feb. 18

Giant ants, microscopic humans, and prediction in science fiction

From *Godzilla* to *The Incredible Shrinking Man* and *Fantastic Voyage*, science fiction movies are full of giant ants and reptiles, as well as microscopic humans. We’ll screen a short segment from *Them*, one of the iconic giant creature movies. Then we will discuss why you need not fear the giant ants.

Finally, I'll conclude by talking about the predictive value of science fiction.
Does science fiction predict the future? Should it?