Science and Science Fiction in the Classroom: An Update

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• Two DivCHED symposia on Chemistry and Science Fiction
  – 203rd ACS National Meeting in 1992
  – 214th ACS National meeting in 1997
• Book: Chemistry and Science Fiction, Jack H. Stocker, Editor, 1999.
Science fiction in my classroom

• Incorporated the use of science fiction in non-major chemistry classes:
  – Science and Society, 1993
  – Chemistry and Society, 2003

• Focus on short stories rather than novels, with references to motion pictures and television shows

• Aim is to present a wide view of science as incorporated into fiction

• Goal is increased science literacy, not an in-depth examination of the science in the individual readings
Science fiction in my classroom

• Short stories, bibliographies, and related articles distributed on a CD-ROM
• Classroom discussions
• Students are required to write a short science fiction story as part of their assessment for this portion of the course
Stories on my CD-ROM

• Sound of Thunder – Ray Bradbury
  – The classic time travel story
• Ado – Connie Willis
  – Censorship in a PC world
• All You Zombies – Robert A. Heinlein
  – Time travel
• Article of Faith – Mike Resnick
  – A robot asks questions about God
• As Chemist to Chemist – Isaac Asimov
  – A cryptic message from one chemist to another.
• At the Rialto – Connie Willis
  – Quantum mechanics according to a conference in Hollywood
• **Blood Music** – Greg Bear
  – Early nanotechnology
• **Chip Runner** – Robert Silverberg
  – A young boy wants to become a computer
• **Desertion** – Clifford D. Simak
  – Explorers on Jupiter keep deserting for their team
• **Diamond Rain** – Steve Buick
  – A world rotates so quickly that days and nights last four hours each.
• **Divided by Infinity** – Robert Charles Wilson
  – A man finds some unusual books which are fakes, but they are authentic.
• **Earth Hour** – Ken Macleod
  – A wealth man is stalked by an assassin.
• End of the World – Alma Alexander
  – A woman takes a trip to witness the end of the Earth
• Fire Watch – Connie Willis
  – Time travel to the London blitz
• Flowers for Algernon – Daniel Keyes
  – Surgery is used to increase a man’s intellect.
• Golden Apples of the Sun – Ray Bradbury
  – Collecting solar material as an energy source
• Half-Life – Paul Preuss
  – The fictional last days of Marie Curie
• Health Hazard – Howard L. Myers
  – An inhabitant of another planet is having a problem purchasing her favorite Earth food – chocolate.
• History Lesson – Arthur C. Clarke
  – Venusians try to decipher materials from a long dead Earth.
• How To Talk To Girls At Parties – Neil Gaiman
  – Teenage boys go to a party to meet girls
• Instinct – Lester Del Rey
  – Robots labor to recreate the extinct human race.
• Join – Liz Coleman
  – Returning home to visit his family, a man must inform them he has married an alien.
• Last Contact – Stephen Baxter
  – A field of dark energy is devouring the universe
• Light of Other Days – Bob Shaw
  – Images are retained for a long time in slow glass.
• Making Light – James P. Hogan
  – A corporation bids for a contract to make a standard Mark IV universe.
• Nightfall – Isaac Asimov
  – Multiple suns provide constant light. Night comes every 2500 years
• Omnilingual – H. Beam Piper
  – Trying to decipher writings of a long dead Martian race
• Pate de Foie Gras – Isaac Asimov
  – The goose lays golden eggs
• Relativistic Effects – Gregory Benford
  – A 7000-passenger ship traveling from Earth is locked in full thrust
• Samson in the Temple of Science – Harry Harrison
  – Samson, a janitor at a research lab, learns about his origin.
• Schrodinger’s Kitten – George Alec Effinger
  – A Middle-Eastern woman travels through alternate realities.
• Softlight Sins – Peter F. Hamilton
  – A new procedure to punish a criminal deletes his memory and personality.
• Temporal Chirality - Brian Adddle, Michael J. S. Dewar, Hans Krapp, Till E. Spiegel and (in part) Michel Obb
  – A spoof technical paper
• The Beautiful People – Charles Beaumont
  – A teenage girl is approaching the age when she will undergo
    an operation to make her beautiful like everyone else.
• The Clockwork Atomic Bomb – Dominic Green
  – A weapons inspector find devices left over from a war, but the economy of the country is built on them.
• The Cold Equations – Tom Godwin
  – A young girl stows away on an emergency dispatch ship.
• The Curious Case of Benjamin Button – F. Scott Fitzgerald
  – A form of time travel as the main character is born old and ages backward.
• The Feeling of Power – Isaac Asimov
  – Humans, in a future computerized world, have forgotten how to do math. One man figures out how to do paper and pencil arithmetic.
• **The Food of the Gods** – Arthur C. Clarke
  – Animals are no longer slaughtered and all food is now synthesized. A company is producing a new food that has become very popular.

• **The Hammer of God** – Arthur C. Clarke
  – An asteroid is headed toward Earth

• **The Last Question** – Isaac Asimov
  – Can entropy be reversed?

• **The Minority Report** – Philip K. Dick
  – Predicting future crimes.

• **The Monkey’s Paw** – W. W. Jacobs
  – What happens when you make three wishes.

• **The Nine Billion Names of God** – Arthur C. Clarke
  – Buddhist monks have a task to write all the names of God.

• **The Riddle of the Universe and Its Solution** – Christopher Cherniak
  – A computer research project includes content that produces catatonia in anyone who views it.
• The Sentinel – Arthur C. Clarke
  – Prelude to 2001 Space Odyssey
• The Shangri-La Affair – Lavie Tidhar
  – A search for a virus that brings peace
• The Sidon in the Mirror – Connie Willis
  – Life on a burned out star mining hydrogen.
• The Star – Arthur C. Clarke
  – A group of space explorers discover a vault containing records of a civilization that was destroyed when their sun went nova.
• The Variable Man – Philip K. Dick
  – A man from the past helps a future Terran society in a war.
• The Very Slow Time Machine – Ian Watson
  – A time machine travels back in time by one hour every hour.
• There Will Come Soft Rains – Ray Bradbury
  – The story of an automated house
• Thiotimoline (The Endochronic Properties of Resublimed Thiotimoline) – Isaac Asimov
  – A spoof technical paper – actually published.
• Too Bad – Isaac Asimov
  – A human-sized robot capable of infinite self-miniaturization, is called upon to save the life of his cancer-stricken human inventor
• Understand – Ted Chaing
  – An experimental drug is used to boost intelligence
• Waiting for Rain – Mary Robinette Kowal
  – A wine grower needs to pay for rain for his crops.
• We Can Remember It for You Wholesale – Philip K. Dick
  – Story that was the basis for the film Total Recall
• Art and special Effects:

Art has been an important aspect of science fiction, not only the illustrations in science fiction stories and the cover art for science fiction magazines, but a major contribution to the movies and today’s special effects.
• Art and special Effects:
  – King Kong.
    • An article from *Invention & Technology* about the making of the original movie.
  – Star Wizards.
    • An article from *Invention & Technology* about special effects in *Star Wars* and *Close Encounters*
  – To Boldly Paint What No Man Has Painted Before.
    • An article from *Invention & Technology* about Chesley Bonestell who created paintings of other worlds that helped inspire the space program.
• **Jurassic Park:**
  Is Jurassic Park possible? These articles relate to the science behind the story.
  – Ancient DNA
    • Captured in Amber
  – Nanotechnology:
    • Quantum Mechanical Computers
  – Shamans of Small
  – Waiting for Breakthroughs

• **Space Travel:**
  – Isn’t It Ionic?
- **Star Trek:**
  - Beam Me Up
  - Negative Energy, Worm Holes, Warp Drive
  - Quantum Teleportation
  - Star Trek’s Slow Start
  - Where No One Has Gone Before – Chemistry in Star Trek

- **Star Wars:**
  - How Star Wars Surprised the World

- **Time Travel:**
  - Build a Time Machine
  - Quantum Physics of Time Travel
Bibliographies

- Bibliography of Science Fiction (A Bibliography of Science Related Science Fiction) – Connie Willis
- Science Fiction About Physics – Connie Willis
- Science and Science Fiction (Science and Science Fiction, With emphasis on Chemistry and Science Fiction) – David A. Katz
- Science Fiction in the Classroom (Ways to Use Science Fiction in the Classroom) – Connie Willis, David Katz, and Courtney Willis
Science Fiction Web Sites

• **Technovelgy** *(tech-novel-gee!)*
  – The Technovelgy web site which lists inventions, technology and ideas of science fiction writers.
    • Timeline of Science Fiction Ideas, Technology and Inventions
    • Glossary of Science Fiction Ideas, Technology and Inventions
    • Science Fiction in the News: Predictions of science fiction writers that are coming true in today’s world
Center for the Study of Science Fiction

- This is the J. Wayne and Elsie Gunn Center for the Study of Science Fiction at the University of Kansas.
  - News of lectures, conferences, awards, workshops, and competitions
  - Essays on science fiction
  - Links to science fiction websites and other resources including teaching and scholarly resources
  - A listing of a basic science fiction library with links to sources
• **Sci-Fi Science**
  
  – A web site created by a group of professional scientists to explore the true science underlying popular science fiction.

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• AboutSF
  – The Educational outreach arm of the Center for the Study of Science Fiction and is a joint-project of the science Fiction and Fantasy Writers of America and the Science Fiction Research Association.
  • Science Fiction Podcasts! A number of readings of stories
  • Talks and Conventions (mainly in Kansas)
  • Resources for studying science Fiction
  • Reader's guides and teacher resources.
• **The Best Science Fiction Stories Ever Written**
  – A web site by Rusty with an extensive listing of science fiction short stories, a description of each story, and where to find them.

• **Infinity plus**
  – A web site for science fiction, fantasy, and horror stories, extracts, reviews, interviews and more.
Science Fiction Reading List
for CHM 121IN for Spring 2012

• A Sound of Thunder
• Ado
• Blood Music
• Flowers for Algernon
• Health Hazard
• History Lesson
• Join
• Light of Other Days
• Nightfall
• Omnilingual
• Softlight Sins
• The Cold Equations
• The Curious Case of Benjamin Button
• The Last Question
• The Minority Report
• The Nine Billion Names of God
• The Sentinel
• The Sidon in the Mirror
Classroom Discussion/Activity

Focus is on:
- An overview of the story plot
- Where the story takes place
- When the story takes place
- The science in the story
- The plausibility of the science/story
- The impact of the story

Assessment:
- Write a science fiction story
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