Teaching With Science Fiction

Led by Mark B. Adams

Preface:

We live in the age of science, and science fiction is our mythology. Ever since Jules Verne and H. G. Wells founded the genre more than a century ago, science fiction has delighted an ever-expanding worldwide audience with tales about the human future, based on the principles and possibilities of current and future science and technology.

Today, in popular books, films, and television shows, SF themes have become part of our common culture and worldview. Indeed, today’s students generally are much more familiar with SF than are their teachers. SF has often served to popularize rather esoteric scientific ideas, but it has sometimes anticipated later scientific developments with remarkable accuracy, and its authors have inspired many generations of young people to take up careers in science. As such, the genre provides rich opportunities for teaching students about reading, writing, and thinking—about science, society, literature, history, and culture.

In this seminar, we explored the emergence of modern SF and tracked its relation to contemporary scientific and historical developments. After exploring the nature and origins of the genre (with sessions on SF, Jules Verne, and H. G. Wells), we took up common SF themes—“Imagining Mars,” “Utopias,” “Superman,” “The Golden Age,” “Aliens,” “Robots,” “Biofutures,” and “Virtual Realities”—and discussed their relationship to contemporary developments in science and society. Preparation for each week consisted of reading a classic SF novel on the week’s theme and seeing a pertinent film. Each session started with an hour-long powerpoint lecture giving background on the week’s theme, followed by an hour’s discussion of the week’s lecture, novel, film, and theme. The course also served as a workshop on using SF in crafting classroom materials and enriching effective teaching.

The course members were teachers representing a variety of levels (elementary through high school) and a variety of fields (biology, chemistry, history, social studies, English), and the units they developed illustrate both the extraordinarily diverse ways SF can be used in teaching, and also its power in interconnecting diverse kinds of learning. For example, in elementary school teaching, Nancy Baulis finds ways to use it in teaching students about aeronautics by focusing on hot air ballooning; Myrtle Bastian uses Verne’s 20,000 Leagues Under the Sea and its famous Nautilus to explore the Philadelphia connection of his teacher, Brutus de Villeroi, who lived here while helping to develop a Civil War submarine for the Union; Maxine Tumaian uses literature on the mythical Yeti as a hook for teaching about the nature of science, discovery, life on earth, exploration, primates, and the nature of proof; and Christine Lokey finds ways to help students develop language skills and scientific literacy.

The six units produced by high school teachers illustrate the many ways SF can be useful in teaching science, the humanities, and social science—and the complex interconnections between them. Stuart Surrey enriches his chemistry course by using SF (including “Star Trek”) to explore such topics as time travel, the nature of matter, and psychotropic drugs; at the same
school, and coordinating with him, English teacher Deborah Samuel uses common readings to explore current ethical issues surrounding the new biology and its human implications, in the process developing literary skills. Likewise, in a joint unit on “Possible Worlds” at the School of the Future, Elizabeth Harvey explains the scientific background of SF works depicting possible worlds, while Kate Reber explores the structure and functioning of the societies they depict. Wendy Hafford uses works by Aldous Huxley, Robert Heinlein, and the film GATTACA in teaching genetics to biology students. Historian Stephen Shust uses American SF films and books from the 1950s to explore the cultural dimension of Cold War history, with its paranoia, anti-communism, fear of nuclear war, and alienation.

In designing their units, all of the teachers were following the general educational and curricular guidelines of Pennsylvania and the Philadelphia School District. What is clearly demonstrated by their units, taken as a group, is the remarkably broad range of educational goals and agendas that SF can serve. By virtue of its intrinsically interdisciplinary character, and its pervasive cultural popularity, SF can provide the means for exploring the full range of knowledge on which the collective future of our students will depend.

-- Mark B. Adams, Professor, History and Sociology of Science