

Science Fiction and HCI/CHI: Past, Present, and Future

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1 Introduction

Science fiction literature and media have informed, entertained, and inspired the public worldwide for centuries. Science-fiction imagery and storytelling specifically provide much challenging content for human-computer interface designers and analysts.

My own interest in science fiction began in early childhood. When I was about eight, my late brother and I would tell bed-time stories to each other at night in our bunk-beds in a darkened bedroom. I told tales about our teddy bears traveling to distant planets. One planet had a tree on it that would grow new teddy bears, which would emerge like ripe fruits from flowery buds, then drop off the tree and begin running. I also imagined a book of all knowledge that my teddy bear would consult to answer any question (an early imagining of the Internet and Google searches).

When I was about ten years old in 1953 and in the next few years, I would read popular magazine articles about “the world of tomorrow”, look through comic books centered on science-fiction tales, view television shows like “Captain Video” and “Tom Corbett and his Space Cadets,” and see movies like “Forbidden Planet.” They all focused my attention on science-fiction narratives, imaginative imagery, exotic technologies, and future societies.

This multiple-media exposure inspired me to build a large rocket-ship control room in a corner of our family home’s basement in Omaha, Nebraska. The walls were sheets hung from the ceiling, which my parents helped me to set up. The control panels were fashioned out of cardboard boxes, blinking light bulbs, and radio knobs and dials salvaged from broken equipment that I would find in trash bins and junk stores. I did not realize it then, but I was already a budding human-computer interface/interaction/communication designer.

2 A Science-Fiction Taxonomy

Let's fast-forward half a century or more. Now in the early 21st century, of which I once could only dream, we can look back to the past, around us in the present, and into the future from a more self-aware position. It is interesting to consider a taxonomy of human-computer interaction and communication in relation to a possible taxonomy of science fiction, including the traditional genres.

Literature analysts have constructed elaborate family trees of historical patterns and influences. What is science fiction? One blogger, Ron Hogan, places the emphasis culture, society, stories, and change:

"... science fiction is cultural criticism, ...the entire point of science fiction is to imagine social and cultural changes and then work out their ramifications on people's lives." What Newitz identifies as "world-building," then, is essentially laying down the story's parameters... setting up the dominos, let's say, pulling back to show you the pattern, and then cutting away just before the first one gets tipped over. Want to see how they fall? Read the book. When you look at it that way, giving you a peek at the environment isn't that much different from giving you a peek at the storyline."¹

On what did "cyberpunk" science fiction re-focus our attention? On the hardware by which these changes were effected. Taking into account both of these views, we seem to be discussing Claude Lévy Strauss's distinctions of people as tool makers vs. sign-makers. Now, almost all of our human activities are connected to computers, which manage, control, or interact with us through multiplicities of tools and communication media.

If we consider a fairly simple taxonomy of human-computer interaction and communication (HCI), we might simply list:

- Hardware
- Software
- User community
- Content
- Metaphors
- Mental models
- Navigation
- Interaction
- Appearance

Under the subject of science fiction (SciFi), we might list the following types:

- Genre
- Story narrative
- Technology

¹ http://www.mediabistro.com/galleycat/towards-a-taxonomy-of-science-fiction-book-trailers_b7, 18 July 2008

- Society
- Temporal view
- Culture
- Hardware
- Software
- Medium of storytelling

By combining the world of HCI with SciFi, we would get enough complex interweavings of issues, examples, and challenges to understanding to keep many PhD students busy for years. Each storytelling medium, visual and/or verbal, has its charms and capabilities. What I want to focus on is a selected, eclectic view of what some science-fiction movies have chosen to demonstrate regarding HCI in their treatments.

Movies have had the challenge, and luxury, of building physical or computer-animated versions of future hardware, showing metaphors, navigation, interaction and appearance, and implying future software (which is harder to demonstrate in cinema) and mental models. Verbal literature can focus our attention on inner thoughts and details of perception that movies cannot easily demonstrate. Movies, on the other hand, have the burden, or delight, of showing thousands of details of a spacecraft flying by us that the novel might never have had the need or requirement to describe. Of course, movies, also, can convey action, scenery, lighting, and atmosphere, in ways that are difficult for verbal literature to accomplish. A picture is indeed worth a thousand words, and the pictures are flying by us in multi-megapixel detail at 30 frames per second.

Focusing on SciFi and HCI in the movies, we shall look briefly at the following topics:

- Assumptions of the users
- Connection
- Control panels
- Cultural diversity
- Hardware: phones, display terminals, heads-up displays, body suits, etc.
- Information visualization
- Speech/audio
- User-centered design
- Visual displays: transparency

3 A Brief History

The presentation is a sketch, not a rigorous academic analysis. I shall provide some older examples and brief comments on the following:

- Captain Video
- Flash Gordon
- Journey to the Center of Time
- Metropolis

- Neuromancer
- Superman: The Mechanical Monsters
- Voyage to the Planet of Preshistoric Women

Emerging themes include the following:

- What seems futuristic?
- What masculine/feminine themes emerge?
- People vs. machines
- Positive vs. negative views of technology

4 Some Examples from Recent Cinema

I shall provide examples and brief comments on the following:

- 2001
- Aeon Flux
- Avatar
- Brazil
- District 9
- eXistenZ
- Idiocracy
- Matrix, The
- Minority Report
- Star Trek
- Star Wars
- Terminator
- Total Recall
- Tron
- Ultraviolet

5 Some Closing Comments

Even as SciFi movies seem at times to have limited understanding of user-centered design and the “realities” of HCI, some HCI people, correspondingly, have been limited in their own future thinking. This situation suggests each could benefit by having some further contact with or interaction with “the other side” in development teams. I shall provide some examples and briefly comment on the following:

- Apple’s “Knowledge Navigator” demo (about 1992)
- DARPA’s “Augmented Reality” demo (about 2005)

Another closing issue is the relation of SciFi to culture. What are the differences not only of SciFi among Western, Chinese, or Indian cultures, as exhibited in movies or print literature,

but specifically what differences and similarities can one observe in their attention to HCI issues? As Hollywood cinema in general has been influenced by Bollywood in the past decade, so might Hollywood SciFi be affected in future decades. Where might these additional threads of culture take us in the future?

The realm of science-fiction is constantly and rapidly unfolding new forms and new stories. With this brief analysis of the relation of SciFi to HCI, students, professionals, and devoted SciFi addicts can all appreciate new dimensions of achievement and challenge.

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