

The Milky Way: Science and Fiction

M. Moreno

Department of Physics and Nuclear Engineering
Polytechnic University of Catalonia
manuel.moreno@upc.edu

Many inventions, from Buck Rogers' Backpack rocket to robots, lasers, and computers, have first been described in SF stories. But the literature owes an equal debt to science, from which it drew not only inspiration but many of its ideas.

James Gunn, *The Science in Science Fiction* (2005)[1]

Abstract

In this work certain concepts of the relationship, not very flowing, between the Milky Way and modern science fiction are analyzed. We focus on the scientific goals of GAIA mission: the structure and components of our Galaxy (*My Stepmother is an Alien*; *Starship Troopers*; *Independence Day*; *The Hitchhiker's Guide to the Galaxy*); the galaxy stellar component (*The Black Hole*); exoplanets (*Interstellar*; *Les mondes d'Aldébaran*; *Valérian*); Andromeda galaxy (*Tumannost' Andromedy*) and others.

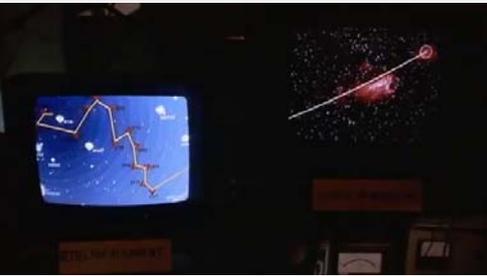
Introduction

In 2001, ESA presented a study entitled *Innovative Technologies from Science-Fiction (SF) for Space Applications* [2]. The main objectives were to review the genre of SF (literature, artwork and films) "in order to identify and assess innovative technologies and concepts described therein which could possibly be developed further for space applications."

SF are full of descriptions of space technologies and physical and astronomical concepts. Usually, authors describes space concepts based on the scientific knowledge available at the time. Often are pure imagination, sometimes based on some semblance of fact. Misconceptions and mistakes are also unfortunately habitual [3][4]. Following the original idea of ESA's study, we focus on aspects related with our Galaxy not considered there.

My Stepmother is an Alien (R. Benjamin, 1988)

An astronomer accidentally sends radio waves to a place about 92 ly from Earth. A femme fatal alien comes to Earth the next day (?).
- Radio signal is visible in (and out) the TV screen!



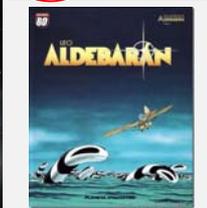
Starship Troopers (P. Verhoeven, 1997)

A galactic scale war against a planet of alien insects.
- Live: the invasion of the alien world Klendathu.



Independence Day (R. Emmerich, 1996)

"The question of whether or not we are alone in the universe has been answered" The hypothetical origin of the aliens is a planet that is beyond the limits of the known universe! "They come from a world 90 000 million light years from Earth".



Tumannost' Andromedy (Andromeda Nebulae)

(I. Efremov, 1957)

Soviet SF novel: a classic. The humankind to conquer vast cosmic distances.
- The name of Andromeda (one galaxy not a nebula) it is only mentioned once. The action takes place in our galaxy.



Les Mondes d'Aldébaran, Bételgeuse et Antares (Léo, 1994-2013)

French SF comic series. Technological advances allows faster-than-light space travel and new planets potentially habitable are discovered.

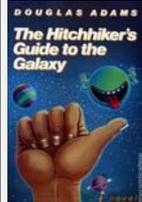
Valérian, agent spatio-temporel (J-C Mezières, P. Christin, 1967-...)

28th century: humanity has discovered how to travel instantaneously in space and time. Earth is the centre of a vast galactic empire.

The Hitchhiker's Guide to the Galaxy (D. Adams, 1979-1992)

"A trilogy of five books"

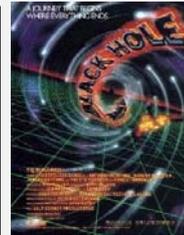
A fictionalised and funny version of the Milky Way.
- Most locations are invented: *Frogstar*, *Axel Nebula*, *Megabranis Cluster*, *The Big Bang Burger Bar*. Many are real: Alpha Centauri, Antares, Barnard's star, Pleiades and Sirius system, Western Spiral Arm, Outer Eastern Rim, ... [5]



The Black Hole (G. Nelson, 1979)

"A Journey that begins where the everything ends"

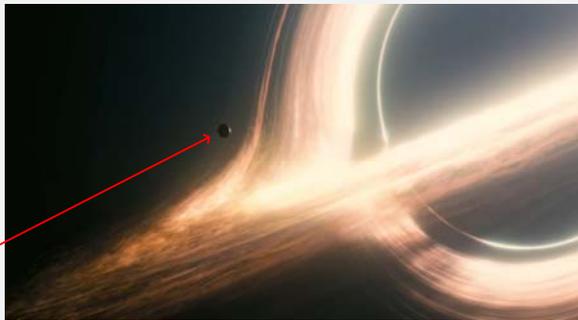
In the edge of a black hole a terrestrial vessel of exploration discovers a lost ship.
- The effects of the gravitational pull of the black hole are not considered.



Internet Movie Database (IMDB): ~ 50 films have titles that coincides with the word "Milky Way" [6]. But nothing to see neither with the astronomy nor with our Galaxy:
- *The Milky Way* (H. Lloyd, 1929): a milkman becomes a boxer
- *La Via Láctea* (L. Buñuel, 1969): pilgrimage on the Camino de Santiago de Compostela
- *The Milky Way* (T. Mian, 2014): a bloody revenge...

Some more galaxies

- *The Big Bang Theory* (2007-..., TV sitcom, s7 e19):
Raj: Penny, two of the brightest stars in the night sky are Altair and Vega. And it is said they were deeply in love but forever separated by the celestial river of the Milky Way. Penny: Oh, that's sad.
 - *A for Andromeda* (1961, TV series)(Fred Hoyle): radio signals received from the direction of Andromeda galaxy contains instructions for building a super-computer
 - *District 9* (2011): aliens ("prawns") are from Andromeda
 - *ET the Extra-Terrestrial* (1982): "three million light years from home" (M33 ?)
- Fictional galaxies [8]:**
- *Space Battleship Yamato* (1975, anime TV series): *The Rainbow Galaxy* (more like a group of planets than a galaxy)
 - *Superman* films: *Xeno Galaxy* (location of *Krypton* planet)
 - *Star Wars* saga (1977-2005): "A long time ago, in a galaxy far, far away..."



Interstellar (Ch. Nolan, 2014)

"The end of Earth will not be the end of us"

A team of astronauts travel through a near wormhole in an attempt to find a potentially habitable planet that will sustain humanity.
- Successful collaboration between a cosmologist and the filmmakers
- Wormhole and black hole are depicted according Einstein's general relativity equations [7]
- Exoplanets so close to a black hole could not exist

Conclusion

At the same time that SF can be used to stimulate thoughts and ideas, the recent advances in the comprehension of our Galaxy (Gaia mission) can be incorporated as elements of fiction.

In front of the growing interest of the citizens for the astronomy, it is palpable and notorious the persistence of certain astronomical illiteracy [9]. Watching films and reading books can help the public not only to understand the advances and discoveries that the makers of fiction, such as scriptwriters, film directors and writers, incorporate into their works, but also to exercise a healthy skepticism and the ability to think critically.

References

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- [2] Raitt D (2001). *Innovative Technologies from Science Fiction for Space Applications*, ESA BR-176 www.itsf.org
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- [5] *Places in the Hitchhiker's Guide to the Galaxy*, Wikipedia
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- [7] Thorne K (2014). *The Science of Interstellar*, W W Norton, New York
- [8] *Galaxies in fiction*, Wikipedia
- [9] Comins N F (2003). *Heavenly Errors*, Columbia University Press, New York