

THE CINEMATOGRAPHY AND SCIENCE FICTION OF TIME TRAVEL

Marko Ruzin

American University of Europe- Skopje, North Macedonia, marko_ruzin@hotmail.com

Abstract: Science fiction is a narrative genre, mainly from literary origins such as literature and comics, but also cinematography and video games. As its name suggests, it consists of telling a fiction based on scientific and technical progress obtained in a more or less distant future and sometimes about a fictional past or in a parallel universe. It can also be about physically impossible progress, at least in the current state of knowledge and science on planet Earth. It thus implements the themes that have become classics of time travel, interplanetary or interstellar travel, space colonization, encounters with aliens, the confrontation between the human species and its creations, including robots and clones, or a planetary apocalyptic disaster. The plot of science fiction stories can take place on Earth, known as utopias, dystopias, counter-utopias, in space, that is, in spaceships, exoplanets, space operas, or combined on earth and in space. From the first science fiction film *From the appearance of the first naive trick films with elements of science fiction "Le voyage dans la Lune, 1902" by George Méliès, then "Time Machine"(1960) inspired by H. G. Wells and Jules Verne, to the record-breaking film with eleven nominations and seven Academy Awards in 2023 Everything Everywhere All At Once inspired by the multiverse, the science fiction film has evolved significantly. Travels through time in the past and future, and through space in parallel universes, have grown into the most attractive themes of film production.*

Keywords: Cinematography, Science fiction, Time travel, Time Machine, Parallel worlds

1. INTRODUCTION

THE HISTORY OF THE CONCEPT OF "TIME TRAVEL"

It was only in the second half of the 20th century, when the narrative process of time travel wore out, that authors became interested in the paradoxes of this phantasmagoric thought. Unreal or real, any time travel, especially in the past, conditionally speaking, can affect the transformation of destinies. It is assumed that anyone who would travel through time faster than mere mortals would know the future and be able to deal with it. Retrograde time travel seems very improbable a priori. This would require abandoning the postulate of causality according to which the effect follows the cause. In that case it must be recognized that the past still exists, and therefore is not really the past. Therefore, violating the postulate of causality would cause paradoxes. For example, the creator of the time machine travels to the past. In such a past, he inadvertently kills his past self, and thus would cancel the creation of the machine. Therefore, it would be impossible to travel back in time, commit suicide, and then exist again. Writing about retrograde travel, David Deutsch says that his thesis does not violate causality. It is about the application of Turing's principle through a virtual reality generator (huge quantum computer) which will allow the observer a parallel interactivity of the past with the present (Deutsch, D. 1997,p.22) Interactivity with this parallel past will not produce a time paradox. It is physically possible according to its author, but however such a trip remains in the realm of speculation for now. (Lewis, D. , 2023, p.87)

2. SCIENCE IS PUSHING THE BOUNDARIES OF TIME TRAVEL

Albert Einstein's special theory of relativity and, as its extended variant, that of general relativity, explicitly allow for some time dilation, akin to "time travel". For example, a traveler moving through space at near the speed of light would travel in just a few "earth hours", which would correspond to a few years. Time that passes more slowly on earth passes much faster in a spaceship at the speed of light. However, this effect allows "time travel" only into the future, and then the elapsed time will be irreversible. Therefore, such an endeavor can only be qualified as a "jump" in time. By the way, it should not be forgotten that today's technology does not allow traveling at a speed close to that of light. In the absence of concrete indications of time travel, there is no need to rule out hypothetical possibilities. (Rina, R. 2023). Stephen Hawking has suggested that the absence of tourists from the future is a strong argument against the existence of time travel. It is actually a variant of Fermi's paradox, with time travelers replacing extraterrestrial visitors. For example, the films inspired by Robert Silverberg's works "Parallel Time" and "Time Deserters" successfully demonstrate this.(Silverberg, R. 2018,p.46) This argument is weakened by the idea that some time gates can be constructed, but would not take the traveler to a date before the gate was created, unless one assumes that there are natural gates in the Universe. Modern ufological thought does not exclude the fact that the UFO manifestations of the 20th and 21st centuries are traces of visitors from the future, not extraterrestrial visitors, which would contradict Hawking's argument. But Hawking believed that if the current laws of physics do not prohibit retrograde travel, it must be possible to find it. As an argument, Hawking cites the principle of the

assumption of chronological protection. He explains this principle by analogy with thermodynamics. The first principle did not prohibit making a refrigerator that would provide electricity, but the second principle of thermodynamics which imposes such a prohibition. This comparison implies that there may be a law yet to be discovered from which the impossibility of such a journey derives. (The Guardian, 2013, p.3) also (Andriamanjatoson, G. 2023) Paul Davies offers another explanation for the absence of time travelers. As he shows in *How to Build a Time Machine*, machines that theoretically allow time travel only go back to the date the machine was put into use, not earlier. (Davies, P., 2002) Certain experiments carried out at the beginning of the 21st century give the impression of a retrograde effect, but the scientific community interprets them differently. For example, Marlan Scully's experiment, which was inspired by the EPR paradox (short for Einstein-Podolsky-Rosen) and requires the use of Young's slits, suggests that on the quantum scale, in the future, a particle will determine her past. This highlights the difficulties of qualifying the notion of time on a quantum scale, but by no means does this experience constitute a macroscopic and usable manifestation of reverse causality. (Visser, M. & Sayan K. & Dadhich, N. 2003) The program "STL effect", experimented by Dr. Ronald Mallett, aimed to observe the violation of causality by means of a neutron through a photonic crystal that slows down light. The neutron would reappear in the device before decaying. The report was published in November 2006 and received support from several universities in the United States. (Mallett, R. & Henderson, B., 2007) Hypotheses about time travel devices such as Frank Tipler's theoretical device assume a construction that would allow retrograde time travel. The Tipler Cylinder, dubbed the "Tipler Time Machine", is a hypothetical object theorized to be a potential means of time travel. (Walters, K., 2023) However, the results showed that Tipler's cylinder can only allow time travel if its length is infinite or if there is negative energy. However, the device introduces energies of doubt even into the theoretical possibility of such a device. If it is realized however, and made rotating the cylinder is long enough and dense enough and spins fast enough about its longitudinal axis, then a ship flying around the cylinder in a spiral path can travel backwards in time or forwards, depending on the direction of movement of the vessel. (Del Monte, L.A. 2013) However, the length, density, and speed required are so great that ordinary matter, as we know it today, is not strong and dense enough to build it. It is speculated that cosmic strings (the objects themselves in theory) could act as this rotating cylinder. Engineer John William Dunne claims that dreams allow virtual time travel: "Is it possible that dreams, in general, all dreams, dreams of everything in the world, are composed of images of past and future experiences, mixed in more or less equal proportions?" He based this theory on a study of his own dreams, some of which he interpreted as omens: a premonition of the eruption of Mount Pele, in Martinique, or of the London-Edinburgh mail train accident. However, the official time travel theory does not recognize dreams as part of time travel. (Sfetcu, N., 2019) J. R. R. Tolkien (John Ronald Reuel Tolkien) drew on this thesis in some of his unfinished novels: *The Lost Way* and the club papers on the notion published in volumes 5 and 9 of the *History of Middle-earth* (Flieger, V., 1997)

3. CINEMATOGRAPHY AND TIME TRAVEL

The authors of science fiction, through their rich imagination and inspirations, have created numerous hypothetical variants resulting from time travel. Due to the risks of changing events from the past, the genre of time travel in some works manifests itself as *uchronie*, that is, a genre of science fiction that relies on rewriting history through changing the past. Likewise, the retro-futuristic aesthetic, or Steampunk, projects the future from 19th-century inspirations, which includes time travel, designed with an eye to the past. (Jeter, K.W. & Blaylock, J., 1980) Christopher Nolan's film *Interstellar* (2014) depicts time travel according to Einstein's theory of general relativity. A team of astronauts traveling in the gravitational field of a black hole experience a time warp and live for the equivalent of several hours, decades on Earth. The same time disturbance is suffered by the aging astronaut who remained in the main ship. Therefore, this type of time travel is essentially a time "jump" that leaves no possibility of returning to the past or retrograde travel. However, the end of the film shows a real time travel - or rather "out of time". Gravity is rumored to be the only force that can cross time dimensions, allowing the protagonist to deliver a message. Therefore information to his daughter when she was a child, before her interstellar journey, and thus to himself at that moment of interpreting a message is such that he does not know that he himself will transmit it from the future. The possibility of time travel openly sports the principle of causality by breaking the link between what was and what will be, with metaphysical implications whose consequences are proportional to the greater or lesser ease of this kind of travel. In *The Hitchhiker's Guide to the Galaxy*, by Douglas Adams, the author points out that correctly changing the verb that describes time travel is a much worse problem than time paradoxes. For example, when someone has just made a leap into the past, there must be a grammatical tense that describes an event that will come in the time of the universe, already realized in its own time. In Adams' universe many grammatical tenses are invented to overcome this problem. In the medium-length film *La Jetée* (1962), then the feature film *12 Monkeys* (1995) and the series of the same name (2015-2018), a team of scientists conducts an experiment in which a person

is sent into the past to stop it from spreading of the deadly virus. A condition for a person to escape from dementia is to have a strong emotional attachment to the scenes of this past. In the end, it is revealed that the main character, when he was a child, actually witnessed his own death, and it is an adult man from the future. It was this scene that possessed him to take certain actions to avoid death. (Douglas, A.,1978)

In the medium-length film *La Jetée* (1962), then the feature film *12 Monkeys* (1995) and the series of the same name (2015-2018), a team of scientists conducts an experiment in which a person is sent into the past to stop it from spreading of the deadly virus. A condition for a person to escape from dementia is to have a strong emotional attachment to the scenes of this past. In the end, it is revealed that the main character, when he was a child, actually witnessed his own death, and it is an adult man from the future. It was this scene that possessed him to take certain actions to avoid death. In the British series *Doctor Who*, the Doctor travels through time, and space, sometimes alternately and in combination, on board the TARDIS otherwise the red telephone booth. Likewise, the series "In the Heart of Time" (*Au cœur du temps*) 1966-1967 is entirely devoted to time travel. In *Star Trek*, time travel is a recurring theme in the series, and in the movies. In *The Terminator* (1984), an android is sent back in time to kill future human resistance leader John Connor's mother, Sarah Connor, before he was born. At the same time, the humanoid soldier is sent to protect her. The epilogue of the story is surprising because the soldier is actually John Connor's father, conceived during a night of love with Sarah Connor. This paradox is repeated several times in the following parts of the franchise, to the point of absurdity, when in *Terminator Genesis* the Terminator T-800 persistently asks Kyle Reese and Sarah Connor if they got together ("Did you make out?!") This sexual act is *sine qua non* for everything that follows. In *Back to the Future* (1985), the possibility of destroying the universe due to the violation of physical laws is raised by Doc. The meeting of the two Jennifers is followed by a simple uneasiness. Biff disappears when he travels back in time to 1955. In the series "Quantum Code" (1989-1993), the main character, Dr. Samuel Beckett, finds it possible to travel through time during his own life. He jumps from epoch to epoch in the second half of the 20th century. In "Timescape" (1992), strange time travelers visit a hotel in Ohio that is still under reconstruction and demand to reserve rooms at any price. They travel through time to witness the great disasters that lie ahead.

The film "Les Visiteurs" teleports ancient characters into their modern counterparts, and this sometimes generates stormy meteorological explosions that lead to merging into one character. In some films, time travel is for the good, as in "Flight to the Blue End" (1985), where the boy risks his life to save his aviator grandfather. In others time travel is also used in a harmful way as in the case of the serial killer Jack the Ripper in the film "That was Tomorrow" (1979) or as in "The Time Machine" (1978) when the government prevents people from changing the future. The principle of breaking physical laws is repeated in the film *Timecop* (1994), according to which, if someone touches their double from the past or future, a violent reaction is created that transforms both persons into a mass of decaying flesh. In *Harry Potter and the Prisoner of Azkaban* (2004), Hermione, with Harry's help, uses time warp to save Rubeus Hagrid and Sirius Black's Hippogriff from a Dementor's kiss of death. In Mamoru Hosoda's 2006 film *Toki o Kakeru Shōjo*, high school girl Makoto travels through time several times. In the series "Lost" (2004-2010), several characters among the protagonists travel through time. They become participants in events that happened thirty years ago, of which they were not aware. One of the characters, Daniel Faraday, who is part of Kahan's team in search of Benjamin Linus, comes face to face with his own mother, who was younger than him at the time. She perceives him as a threat and kills him, not knowing that it is her future son. Later, her mother, Eloise Hawking, aware of the tragedy, knows that she cannot avoid fate, because, "the universe regulates its own trajectory" that is, fate. Daniel Faraday, otherwise a physicist by profession, simplifies the event with the comment "what happened happened"! This statement also includes what happened in the past, which was caused by a character from the future. Therefore, the future event is inevitable, just as the journey to the past is inevitable).

4. CONCLISON

In the past one hundred and twenty years of the development of the science fiction film, the share of science fiction literature, the development of quantum physics, which is often used by the creators of NF in the cinema, was great. On the other hand, NF cinematography has influenced science and more realistically implements the dreams of Stephen Hawking and Hugh Everett who put forward the scientific hypotheses of time travel and parallel worlds. Science fiction cinematography, which was initially considered a frivolous film venture, is today a leading artistic commercial genre in this domain.

REFERENCES

Deutsch D. (1997) *The Fabric of Reality*. Penguin Books, , ISBN 0-14-027541-X. <https://www.daviddeutsch.org.uk>/<https://www.thebeginningofinfinity.com>

- David Lewis, (2023) Voyage dans le temps : Rêve de science-fiction ou réalité théorique ? 1 septembre 2023, <https://objetsscientifiques.com/voyage-dans-le-temps>, David Lewis, a renowned theorist, according to his research, defines time travel as a gap between "inner time and outer time"
- Rina R. (2023) Voyager dans le temps, bientôt possible ? Ce qu'en dit la science. Le 22 novembre 2023, <https://www.lebigdata.fr/voyage-temps-theories>
- Silverberg, R. (2018) „*Les Temps parallèles et Les Déserteurs temporels*“, Sciences,, p.46
- The Guardian, (2013), Stephen Hawking's big ideas made simple (www.theguardian.com), <https://www.theguardian.com/+news/series/made-simple+science/black-holes>, The Guardian, septembre, 2013/ Gabrielle Andriamanjatoson, le 4 novembre 2023 Une nouvelle théorie explique pourquoi le voyage dans le temps est impossible- <https://dailygeekshow.com/theorie-physique-voyage-temps>
- Davies, P.(2002) *How to Build a Time Machine*, Penguin Books, ISBN 0-14-100534-3 , Penguin eBooks, ISBN: 9780141930428
- Visser, M. & Sayan K. & Dadhich, N. (2003). „*Traversable wormholes with arbitrarily small energy condition violations*”. Physical Review Letters. 90 (20): 201102.1—201102.4. Bibcode:2003 PhRvL.. 90t1102V. PMID 12785880. arXiv:gr-qc/0301003 doi:10.1103/ PhysRevLett.90.201102.)
- Mallett. R. & Henderson, B. (2007) *Time Traveler: A Scientist's Personal Mission to Make Time Travel a Reality*, ed. Basic Books, (<https://www.hachettebookgroup.com/titles/dr-ronald-l-mallett/time-traveler/9781568583631/?lens=basic-books>)
- Keneth Walters Voyages dans le temps : Seront-ils un jour réalité ? 28 octobre 2023, https://www.citeboomers.com/voyages-dans-le-temps-seront-ils-un-jour-realite/#google_vignette
- Del Monte, L.A. (2013) *How to Time Travel: Explore the Science, Paradoxes, and Evidence Broché* , ed. Louis A. Del Monte, ISBN-10 : 0988171848, ISBN-13 : 978-0988171848 [https:// louisdelmonte-com.translate.google.com/translate?hl=fr&_x_tr_pto=sc](https://louisdelmonte-com.translate.google.com/translate?hl=fr&_x_tr_pto=sc)
- Nicolae Sfetcu (2019) Voyage dans le temps, January 2019 DOI:10.13140/RG.2.2.11801.88162, https://www.researchgate.net/publication/330638484_Voyage_dans_le_temps
- Verlyn Flieger, (1997) *A Question of Time: J.R.R. Tolkien's Road to Faërie* A study of the relationship between Dunn's theory and Tolkien's texts is presented in *A Question of Time: J.R.R. Tolkien's Road to Faërie* is a scholarly book by Verlyn Flieger, first published in 1997. This book explores the theme of "Time" and "Time-travel" in J.R.R. Tolkien's writings V. Flieger, *A Question of Time* Kent State University Press paperback (2001), ISBN 087338699X (1997).
- Tim Powers and James Blaylock (1980) Created in the 1980s by the trio of friends K. W. Jeter, Tim Powers and James Blaylock, who respectively created - *Morlock Night* (1979) and - *Machines infernales* (1987), *The Ways of Anubis - Les Voies d'Anubis* (1983) and *The weight of his gaze- Le Poids de son regard* (1989) and finally *Homunculus* (1986) and *Le Temps fugitif* (1992). This genre is characterized by its taste and its retrofuturistic aesthetic where steam engines and other anachronistic inventive objects are needed, then some humor and numerous references, including the world of Jules Verne. Since steampunk can be applied to all kinds of universes, the genre has developed rapidly, transcending the boundaries of literature to enter popular culture.
- Adi Foord (2023) Explorer la réalité du voyage dans le temps : faits scientifiques et science-fiction- <https://issues.fr/explorer-la-realite-du-voyage-dans-le-temps-faits-scientifiques-et-science-fiction/> Adi Foord, professeur adjoint d'astronomie et d'astrophysique, Université du Maryland, comté de Baltimore. The Conversation, 17 nov. 2023
- Del Monte, L.A. (2013) *How to Time Travel: Explore the Science, Paradoxes, and Evidence Broché* , ed. Louis A. Del Monte, ISBN-10 : 0988171848, ISBN-13 : 978-0988171848 [https:// louisdelmonte-com.translate.google.com/translate?hl=fr&_x_tr_pto=sc](https://louisdelmonte-com.translate.google.com/translate?hl=fr&_x_tr_pto=sc)
- Nicolae Sfetcu (2019) Voyage dans le temps, January 2019 DOI:10.13140/RG.2.2.11801.88162, https://www.researchgate.net/publication/330638484_Voyage_dans_le_temps
- Adams, Douglas (1978) *The Hitchhiker's Guide to the Galaxy*: is a comedy science fiction franchise created by Douglas Adams. Originally a 1978 radio comedy broadcast on BBC Radio 4, it was later adapted to other formats, including novels, stage shows, comic books, a 1981 TV series, a 1984 text adventure game, and 2005 feature film. <https://www.amazon.com/Hitchhiker-The-Hitchhiker's-Guide-to-the-Galaxy-Hexagonal-Phase>. *BBC Radio 4*, 28 February 2018. *The Ultimate Hitchhiker's Guide*, a collection of the five books in the series written before Adams's death, a leatherbound volume published in the United States by Portland House, a division of Random House, in 1997