



## Fifth-Dimension Narrativity: Time, Love and Sacrifice in Christopher Nolan's *Interstellar*

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### Abstract

Fifth-dimension narrativity refers to stories whose events are shaped by time dilation, allowing characters in higher dimensions to move and interact across any point in time nonlinearly. This concept, explored in both physics and fiction, challenges our conventional understanding of time, proposing it as a tangible, manipulable dimension that enables simultaneous access to the past, present, and future. Just as physicists theoretically navigate time as a physical dimension, authors use this agency to distort or stretch narrative timelines, purposefully destabilizing linear progression. Christopher Nolan's *Interstellar* (2014) perfectly illustrates this scientific concept, employing the theoretical fifth dimension as a narrative tool to affirm the profound power of human love and sacrifice. This paper will introduce fifth-dimension narrativity as a narrative tool that powerfully portrays universal emotions like love and sacrifice when confronted with the ultimate adversary: time itself. The paper will also explain how love, in the movie, is presented not merely as an emotion, but as a fundamental, trans-dimensional force capable of stimulating ultimate sacrifices for survival, turning the fifth dimension into a stage where human connection dramatically overcomes physical limitations and shapes destiny.

**Key words:** Christopher Nolan, Fifth-Dimension Narrativity, *Interstellar*, Love, Sacrifice, Time Dilation

سردية البعد الخامس: الزمن، الحب، والتضحية في فيلم "بين النجوم" لكريستوفر نولان

### المُلخَص

تُشير سردية البعد الخامس إلى تلك القصص التي تتشكل أحداثها بفعل تمدد الزمن، حيث تكتسب الشخصيات التي تحتل أبعاداً عليا القدرة على التنقل والتفاعل عبر أي نقطة زمنية بطريقة غير خطية. يتحدى هذا المفهوم المثير، الذي يتم تناوله في الفيزياء والروايات على حد سواء، الأفكار الراسخة عن مفهوم الزمن، مقترحاً إياه كُبعداً ملموساً وقابلًا للمناورات الزمكانية، مما يتيح الوصول المتزامن إلى الماضي والحاضر والمستقبل. ومثلما يتأمل الفيزيائيون نظرياً في كيفية الإبحار عبر الزمن كبعد مادي، يستغل الكتاب بالمثل هذا التحكم الإبداعي لتغيير المسار الزمني في السرد، مُحدثين بذلك إنهياراً متعمداً للسرد الخطي المعتاد للأحداث. يُعد فيلم "بين النجوم" *Interstellar* للمؤلف والمخرج كريستوفر نولان (2014) تجسيداً مثالياً لهذا المفهوم العلمي. تهدف هذه الورقة

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إلى تقديم سردية البعد الخامس كتقنية مؤثرة في تصوير المشاعر الإنسانية مثل الحب والتضحية، في مواجهة الخصم الأكبر وهو الزمن نفسه. ستوضح الورقة أيضاً كيف يُصوّر الحب في الفيلم لا كمجرد عاطفة، بل كقوة أساسية عابرة للأبعاد، قادرة على إستنفار أقصى درجات التضحية من أجل البقاء. وهكذا، يتحول البعد الخامس إلى ساحة سردية تتجلى فيها قدرة الروابط البشرية على التغلب بشكل درامي على القيود المادية وصياغة المصير.

الكلمات المفتاحية: كريستوفر نولان، سردية البعد الخامس، فيلم "بين النجوم"، الحب، التضحية، تمدد الزمن

### **Fifth-Dimension Narrativity: Time, Love and Sacrifice in Christopher Nolan's *Interstellar***

In physics, the idea of a fifth dimension goes beyond our usual understanding of four-dimensional spacetime. Our familiar spacetime consists of three dimensions of space—length, width, and height—plus one dimension of time. Revolutionary theories, including Einstein's 'Relativity', and 'Time Dilation', Kip Thorne's "Black Holes" and the "Kaluza-Klein Theory", hypothesize that our universe might exist as a four-dimensional "cosmos" that is embedded within a larger five-dimensional "bulk." Within this larger, hypothesized bulk, fundamental forces like gravity could potentially operate under different rules that can heavily affect the progression of time and hence bring about two (or more) simultaneous, but varying, timelines (Overduin, 1997, p. 304). Beyond its profound implications for physics, the fifth dimension in fiction provides fertile incubation for narrative and philosophical experimentation, allowing authors to investigate multifaceted themes such as the complex, non-linear nature of causality, the subjectivity of memory, and the multiplicity of human experiences. Benjamin Schulz (2025) contends that storytelling itself functions as a kind of "fifth dimension," (para 4) producing timeless narrative units that possess the unique power to continuously reinterpret the past, reshape the present, and project vivid visions of the futures, thereby creating a distinct space where time and meaning are continuously restructured.

I introduce fifth-dimension narrativity to refer to a narrative whose events are fundamentally structured around the principles of time dilation, positing time itself as a tangible dimension within a five-dimensional spacetime. Unlike conventional linear narratives, this approach embraces a nonlinear temporal progression, where characters inhabiting a higher-dimensional structure possess the agency to cross time and communicate with people at any point of time. Their movement between distinct spatial-temporal settings— from the present to the past and vice versa— is facilitated by either gravitational time dilation (due to strong gravity) and/or velocity time dilation (due to high speed).

Christopher Nolan, the author and director of *Interstellar* (2014), utilizes the scientific concept of the fifth dimension primarily as a narrative tool to underscore the profound bond of human love and the critical importance of sacrifice. This article examines the movie's fifth-dimension narrativity, represented mainly by a posthuman

structure (the Tesseract), and which serves as the connection between present and past where the abstract notion of love gains tangible power. *Interstellar* adopts a scientific hypothesis in which gravity can extend across various dimensions, including time, and within its narrative framework suggests that love itself might function as a tangible force capable of transcending the boundaries of conventional physics. Hence, this article contends that *Interstellar* portrays love not just as an emotion, but as a trans-dimensional force capable of defining the sacrifices needed for survival. It (the article) does so by examining how Cooper's bond with his daughter, Murph, enables him to manipulate gravity across spacetime from a higher dimension (the fifth dimension) to send her the information needed to save humanity.

Acknowledged for its scientific accuracy, *Interstellar* received an Academy Award (Oscar) for Best Visual Effects, alongside six Saturn Awards including Best Science Fiction Movie. The movie transcends the typical science fiction genre, serving as a powerful expression of the human spirit. The movie efficiently weaves intricate scientific theories, such as relativity and time dilation, with profound human narratives of love and loss. This skillful integration encourages viewers to reflect upon the profound connections that unite us across the physical dimensions of space and time. It is precisely this blend of scientific complexity and emotional depth that grants *Interstellar* its universality.

## **Theoretical Framework**

### **Time**

Central to the argument in this article is the concept of time. Humanity has consistently strived to comprehend and even control time. To this end, humanity has, throughout history, devised numerous instruments to monitor time's flow, evolving from "simple sundials and water clocks to advanced pendulum devices and, most recently, highly precise atomic clocks" (Ajimoti, 2024, para 3). While these inventions are crucial for both measuring and experiencing time, a perspective shared by some philosophers and scientists suggests that time's existence is independent of such tools, being instead an inherent aspect of our perception of universal events, "time is woven into the fabric of our existence— we measure it, perceive its passage, remember the past, and anticipate the future. Yet, pinning down its essential nature has challenged thinkers for millennia" (Ajimoti, 2024, para 5).

Time, a fundamental aspect of existence, is perceived and interpreted in various ways by different disciplines. Time, from a scientific perspective, is simply defined as the "progression of events from the past to the present into the future" (Ajimoti, 2024, para 2). It is a fundamental concept used to describe events in three-dimensional space. However, it is not that simple, "time seems to follow a universal, tick-tock rhythm, but it doesn't" (Scheffel et al. , 2013, p. 23). Albert Einstein, on his friend's death, states, "Now he has departed from this strange world a little ahead of me. That signifies nothing. For

those of us who believe in physics, the distinction between past, present, and future is only a stubbornly persistent illusion” (Mar, 2017, p. 469). For Einstein, the distinction between past, present, and future is merely a "stubbornly persistent illusion" for those who understand the laws of physics. This view stems from his Theory of Relativity, where all moments exist simultaneously with no distinction between past, present, and future.

Culturally, humanity's understanding of time spans from linear to cyclical perceptions. Western thought often sees time as a straightforward progression, contrasting with Eastern philosophies like Hinduism, which emphasize cyclical patterns of rebirth (Richardson, 2006, p. 605). Religiously, time is frequently linked to creation, divinity, and the subjectivity of perception. The Qur'an, for example, noticeably contrasts earthly time with divine time, a concept that mirrors the relativistic effects of time dilation: “And verily, a day with thy lord is as a thousand years of your reckoning.” (Surah al-Hajj, Ch.22: V.48). The Quran addresses the same idea in another verse, “He will plan the Divine Ordinance from the heaven unto the earth, then shall it go up to Him in a day the duration of which is a thousand years according to what you reckon.” (Surah As-Sajdah, Ch.32: V. 6) These verses suggest time moves faster on Earth than in a divine realm, much like gravitational time dilation near black holes. Similarly, Christianity links time to divine creation. The Bible emphasizes the same idea of time dilation, “*With the Lord, a day is like a thousand years, and a thousand years like a day*” (Peter 3:8).

Narratively, time is not merely a linear progression of plot points; “it is a flexible element shaped by the storyteller to guide audience experience and convey meaning” (Ricoeur, 1981, p 169). Authors and moviemakers employ a wide range of techniques to stretch, compress, or reorder time, often mirroring or exploiting our understanding of how time functions both psychologically and physically. Time is a key component of narratology. Scheffel et al. (2013) see time as “a dimension of the narrated world ... and an analytical category which describes the relation between different narrative tiers.” (p. 1) Paul Ricoeur (1981) contends that present, past, and future, which mirror the human experience of time, is intimately related to the narrative ability to reflect the same experience (p. 170). Martin Heidegger (1971) states that it is through narrative that "we are able to bring past experiences or future events into the present and make them part of present existence" (p. 17). Heidegger argues that the linear progression of time often found in narratives does not reflect how time flows within human consciousness” (p. 25). For him, time is a unified entity where the present, past, and future are dynamically interconnected.

### **The Theory of Relativity**

Einstein's Theory of Relativity completely changed our understanding of space, time, and gravity. It is divided into two main parts: Special Relativity and General Relativity. Einstein's Special Theory of Relativity is based on two fundamental ideas: the laws of physics are the same for everyone moving at a steady speed, and the speed of light

is always constant, no matter what. These simple concepts lead to groundbreaking results. For instance, Einstein showed that time is not universal; it slows down for objects in motion relative to a stationary observer. This means if you were traveling incredibly fast, your clock would tick a bit slower than someone standing still (Greene, 2004, p. 45-48). Then, General Relativity showed the connection between time and gravity. Instead of a force, Einstein proposed that time is not a separate, absolute entity but is deeply interwoven with space to form a four-dimensional fabric called "spacetime" (Greene, 2004, p. 78). One of the most important predictions of this theory is "gravitational time dilation", which states that "time passes more slowly in stronger gravitational fields. This means that clocks that are close to a massive object, like a planet or a star, will tick slightly slower than clocks in weaker gravitational fields further away" (Greene, 2004, p. 99).

### **Time Dilation**

In physics, time dilation is defined as "the difference in the elapsed time as measured by two clocks, either due to a relative velocity between them (as described by special relativity) or due to a difference in gravitational potential between their locations (as described by general relativity" (Cheng & Chia, 2018, p. 24). For instance, astronauts on the International Space Station experience time dilation, aging slightly slower than individuals on Earth. This phenomenon, often illustrated by the thought experiment known as the "Twin Paradox", clarifies how time passes differently for those moving at extremely high velocities. Consider two identical twins: one remains on Earth, while the other undertakes a rapid journey into space and returns. Due to their different experiences, the space-traveling twin's "clock" (his aging process) runs slower than his Earth-bound sibling's. Consequently, upon their reunion, the twin who ventured into space will genuinely be younger, an effect precisely confirmed by scientists using highly accurate atomic clocks (Csaki, 2005, p. 37). Overall, time dilation underscores the complex relationship between speed, gravity, and the subjective nature of time, fundamentally challenging our conventional understanding of its measurement and perception.

### **Kaluza-Klein Theory**

The Kaluza-Klein theory, proposed by Theodor Kaluza in 1919 and later refined by Oskar Klein, is an attempt to unify two fundamental forces of nature: gravity and electromagnetism. Its central idea is that our universe might have more than the four dimensions we perceive (three spatial dimensions and one time dimension). Specifically, it postulates "the existence of a fifth spatial dimension that is curled up or compactified to an incredibly tiny size, making it unobservable to us directly" (Salam & Strathdee, 1982, p. 320). Essentially, Kaluza proposed that electromagnetism is not a separate force, but rather a manifestation of gravity acting in a curled-up, invisible extra dimension.

**Kip Thorne's Black Hole Theory**

Kip Stephen Thorne, a Nobel laureate in physics, is renowned for his profound contributions to Black Hole Theory, particularly within the framework of Albert Einstein's General Theory of Relativity. Thorne's work has drastically changed our understanding of these mysterious cosmic objects. Thorne emphasizes that black holes are not simply incredibly dense objects, but rather areas of extremely distorted spacetime. Michio Kaku in *Physics of the impossible: A scientific exploration into the world of phasers, force fields, teleportation, and time travel* (2008), summarizes the main tenet of Thorne's theory, "if you could fall straight through to the black hole, there would be another universe on the other side. This is called the Einstein-Rosen Bridge, first introduced by Einstein in 1935; it is now called a wormhole" (Kaku, 2008, p. 43). Thorne's theory suggests that an extremely strong gravitational force can bend spacetime so severely that it creates a shortcut between two very distant locations in the universe. This theoretical shortcut is known as a wormhole. Such a wormhole could allow for almost instantaneous travel across vast stretches of three-dimensional space, and even potentially through time, enabling travel to the past. However, the major problem for this theory is that creating and stabilizing such a wormhole would demand "an enormous amount of energy, far beyond what our current technology can realistically produce" (Kaku, 2008, pp. 46-49).

**Fifth-Dimension Narrativity**

Fifth-dimension narrativity refers to a narrative whose events are fundamentally structured around the principles of time dilation. This type of narrativity features a nonlinear temporal progression, where characters inhabiting a higher-dimensional structure possess the agency to cross time and communicate with people at any point in time. In both physics and fiction, the concept of the fifth dimension offers a remarkable departure from our conventional understanding of time. In theoretical physics, the fifth dimension is often posited as a way to make time a tangible, manipulable dimension. This allows for the theoretical possibility of traversing through the past, present, and future simultaneously. Similarly, in the realm of fiction, authors have a power similar to this theoretical fifth dimension. Authors can distort, squeeze, or stretch the timeline of their narratives, deliberately destabilizing the conventional linear flow of events. This authorial agency to manipulate time within a story mirrors the physicist's theoretical ability to navigate time as a physical dimension.

In fiction/movies, the "fifth dimension" is often portrayed as a vast, explorable space or even a spiritual realm. Based on my reading/watching of novels/movies whose events are shaped by the tangibility of time in physics, I found that authors tend to use the concept of "fifth-dimension" for narrative purposes, exploiting scientifically-based ideas to enrich the narrative rather than striving for scientific accuracy. In a narrative, the "fifth dimension" is often depicted as: 1) a special place where characters can see all segments

of time at once— the past, present, and future connected together tangibly; 2) a place where they can affect past events, not always directly, but by slightly influencing things from a higher dimension; 3) a realm of supernatural travel between two points in time that ordinary humans cannot understand; and/or 4) a way for the story to visually explain abstract ideas, like how gravity works by bending space and time.

The concept of fifth-dimension narrativity can be traced in several novels like Madeleine L'Engle's *A Wrinkle in Time* (1962), Joe Haldeman's *The Forever War* (1974), Robert Charles Wilson's *Spin* (2005), and Martin Vopěnka's *The Fifth Dimension* (2009). In *A Wrinkle in Time*, "tessering" acts as a shortcut through a "fifth dimension," allowing characters to instantly traverse vast distances, though the emotional weight comes from the potential for significant time to pass on Earth during their journeys. Similarly, Haldeman's *The Forever War* uses extreme time dilation as soldiers jump through "collapsars," creating an ever-growing temporal and cultural gap between them and their home, highlighting themes of alienation and the human cost of war. Wilson's *Spin* centrally features a temporal barrier that dramatically accelerates time outside Earth, forcing humanity to confront an existential crisis as billions of years pass externally while only decades pass subjectively, prompting an endeavor for scientific solutions and a reevaluation of life's meaning. Finally, Vopěnka's *The Fifth Dimension* directly portrays a hidden higher spatial dimension that, when perceived, gives the characters profound insights into a deeper, more complete reality, exploring philosophical ideas about perception and consciousness. Across these works, both time dilation and the "fifth dimension" serve as powerful narrative devices, transcending mere scientific curiosities to create stories that challenge conventional perceptions about time and explore the human experience within an expansive cosmos.

Movies that explore the "fifth dimension" often blend hard science with big questions about existence and reality. While *Interstellar* (2014) is a well-known example, other movies also deal with time dilation (where time passes differently) and higher dimensions that allow characters to manipulate time. For instance, *Donnie Darko* (2001) offers a more thoughtful look at higher dimensions and how they affect time. The movie's complex story about a "tangent universe" and a manipulated timeline suggests a deeper understanding of cause and effect. The main character can see and change events across a warped timeline, seemingly guided by something that understands time completely. *Coherence* (2013) shows how a space event can mess with time, leading to different versions of reality appearing at the same time. Even though it does not directly mention a "fifth dimension," the movie clearly shows multiple timelines existing together and interacting. Similarly, *Time Trap* (2017) features a cave where time moves much faster inside than outside due to a strange, localized force. Just a few minutes in the cave can equal decades outside. This mysterious event and its big impact on time hint at a break or a specific spot where a higher dimension affects space and time, causing time to move in a very unusual way.



In narratives that explore the profound implications of the mysterious "fifth dimension," characters typically transcend conventional psychological clichés, undergoing significant existential and perceptual transformations. Those experiencing extreme time dilation, like Cooper in *Interstellar*, often feel a deep sense of temporal displacement and profound emotional loss as their loved ones age rapidly in comparison. This can either stimulate them to complete their missions or leave them with deep emotional loss. Conversely, characters who engage with or inhabit a "fifth dimension" develop altered perceptions of reality, often gaining an almost omniscient understanding of universal and personal issues. This heightened awareness, however, frequently comes with heavy sacrifices, as they bear the immense responsibility of securing a better future for humanity or for those they cherish.

### Interstellar

Nolan's *Interstellar* is a cinematic odyssey that goes beyond conventional narrative, mixing scientific theories with emotional drama. One of the most creditable aspects of the movie is its commitment to scientific accuracy, mainly in its depiction of black holes and time dilation. The movie's scientific advisor, Kip Thorne, contends that the portrayal of the wormhole and the black hole, Gargantua, strictly follows the principles of General Relativity (Thorne, 2024). Thorne's involvement resulted in the creation of some of the most realistic visualizations of cosmic phenomena ever seen in cinema. The depiction of black holes, dying earth, Einstein's time dilation, and many other cosmic phenomena serves as a vital plot device in the narrative. In this respect, Damodar Bhusal in "Between Science and Cinema: Christopher Nolan's Auteurist Vision in *Interstellar*" (2024) writes, "working with physicist Kip Thorne, Nolan's team created the most scientifically accurate visualization of a black hole ever attempted in cinema. The swirling accretion disk and the subtle light distortions aren't merely spectacular—they're teaching tools that make Einstein's equations visible to the audience. ... The contrast between the dust-choked Earth scenes and the pristine space sequences creates a visual argument about humanity's relationship with the cosmos. (p. 119)

The movie's thorough examination of relativity and time dilation introduces a non-linear narrative, a departure from traditional storytelling. In *Interstellar*, time plays a crucial role as events unfold at different paces for several characters, creating continuing time shifts. The Tesseract, a futuristic fifth-dimension structure, becomes focal to the story, allowing Cooper to go back into the past and communicate with his daughter, Murph, through gravity. Even as the movie explores complex scientific ideas like wormholes, black holes, and curved spacetime, it never forgets its human aspects. The strong bond between Cooper and Murph serves as an emotional basis, ensuring that the grand scientific principles remain deeply connected to their human experience.

### Summary

The movie begins in the future where Earth is experiencing a profound agricultural and ecological crisis, primarily due to climate change—resulting in food scarcity. This society is characterized by the absence of wars and technological development, with agriculture being the sole human endeavor. The movie's opening effectively conveys a sense of global disaster that threatens human existence. The protagonist is Joseph Cooper, a widowed ex-NASA pilot who now works in farming along with his family, including his 15-year-old son Tom, 10-year-old daughter Murphy (Murph), and his father-in-law, Donald.

As a child, Murphy suspects her room is haunted when books mysteriously fall from shelves, forming patterns that resemble Morse code. She and her father, Cooper, decipher this gravitational message, which leads them to a secret NASA base. There, they meet Professor Brand, the agency's director and an old friend of Cooper's. Prof. Brand reveals that NASA has discovered a wormhole that offers a unique opportunity to travel vast distances to unexplored parts of the galaxy, providing a chance for humans to survive by settling on a new planet.

NASA's previous "Lazarus" missions had already located three planets that could potentially support life. These planets orbit the giant black hole "Gargantua" and are named Miller, Edmund, and Mann, named after the astronauts who explored them. Prof. Brand, convinced Earth is beyond saving, reveals NASA's secret: they plan to build a ship, the "Endurance," to help humanity escape and establish a new civilization. He then asks Cooper to pilot the Endurance through a wormhole to examine the limited data the Lazarus astronauts sent back about these possible new worlds.

Professor Brand outlines two plans for the Endurance. Plan A involves the crew gathering crucial data and returning to Earth, enabling humanity to construct massive space stations for evacuation through the wormhole to a new, habitable world. If the Endurance cannot return, or if the large-scale exodus (immense evacuation) from Earth fails, Plan B works. Under this possibility, the crew will use 5,000 frozen human embryos to establish an entirely new civilization on a habitable planet, effectively repopulating humanity on that planet.

The Endurance crew, consisting of pilot Cooper, Dr. Amelia Brand (Professor Brand's daughter), Romilly the physicist, Doyle the geographer, and AI robots TARS and CASE, travel through a wormhole to reach Miller's planet. Their arrival quickly reveals a major obstacle: the planet's extreme proximity to a black hole causes a drastic effect on time, where one hour on the surface of this planet equals seven years on Earth. Cooper, Amelia, Doyle, and CASE venture down, finding the planet unsuitable for life. It is covered by a vast, shallow ocean constantly struck by enormous waves, a direct result of the black hole's powerful gravity. During their exploration, Doyle tragically dies, struck

by one of these immense waves, causing a delay. When the surviving members finally get back to the Endurance, they are shocked to discover that 23 years have passed for Romilly, who has been waiting for them on the spacecraft.

Critically short on fuel, the Endurance team faces a difficult decision between Edmund's and Mann's planets, eventually choosing Mann's. Mann's planet, however, is an isolated world, frozen and filled with ammonia, seemingly inhabitable. Meanwhile, on Earth, Murphy, now a NASA scientist, tries to solve the gravitational equation that could make the evacuation possible. On his death bed, Prof. Brand confides in Murphy, admitting his belief that resolving the equation demands data from a black hole's singularity, which he considers impossible to acquire. Therefore, Prof. Brand concluded that humanity was doomed on Earth and had secretly put all his hope in Plan B from the beginning, a crucial detail he did not reveal to Cooper.

After deceiving the crew about his planet's habitability, Mann attempts to kill Cooper in an attempt to seize control of the Endurance and return to Earth. Cooper manages to call for help and is rescued. Mann then dies when the craft burns up with him inside. With critically low fuel following this incident, Cooper and Amelia devise a brave plan: they will use the immense gravitational pull of the black hole, Gargantua, to push the Endurance toward Edmund's planet. Once they gain enough speed by orbiting the black hole, Cooper and TARS manually detach themselves from the Endurance and are pulled directly into the black hole, where they find themselves inside a five-dimensional structure called Tesseract.

Within the Tesseract, where time itself becomes a tangible dimension, Cooper finds himself immersed in a boundless array of memories from his daughter Murphy's childhood bedroom. He can look through the bookcase, observing her at various ages, desperately attempting to communicate by pushing books from the shelves to spell "Stay" in Morse code. Years later, Murphy, now a scientist, re-examines her childhood drawings and the peculiar "signs." She finally comprehends that her father was the mysterious "spirit" conveying messages through the bookcase all along. Using gravitational waves, Cooper transmits the black hole data collected by TARS to the grown-up Murphy. With this crucial information, Murphy successfully completes Professor Brand's equation, ultimately facilitating Earth's evacuation and ensuring humanity's survival.

After leaving the Tesseract, Cooper finds himself in a very large space station orbiting Saturn. This station is called "Cooper Station," named to honor his daughter, Murphy. He finally gets to see Murphy, but she is an old woman now. With her own family around her, she is close to the end of her life. She asks her dad to go and find Amelia, who has already started the important job of settling Edmund's planet. With this final wish from his daughter, Cooper leaves to find the distant world where he left Amelia and the frozen human embryos that are humanity's last hope.

### Time, Love, & Sacrifice

Nolan's *Interstellar* is more than just a science fiction film; it is a deep exploration of humanity's fight for survival against global threats. The movie brilliantly exploits complex ideas about time, love, and sacrifice as the very foundations for existence and meaning. Nolan cleverly incorporates the way time passes differently (a key part of Einstein's relativity) not just to move the story forward, but to highlight how powerful human connections are and how our difficult choices have lasting effects. Within this vast timeline, love is shown as a force powerful enough to defy physics, acting like an actual dimension that can cross space and time, guiding the characters through impossible situations. This strong belief in the power of love drives characters to make great personal sacrifices, willingly giving up their own futures and personal relationships for the greater good of saving humans.

The timeline of the movie is manipulated through the interplay between time and impending threats governed by the physics of time dilation. In a conversation with Murph, an adult now, Prof. Brand echoes his primal fear:

**Prof. Brand:** Every rivet they drive in could have been a bullet. We've done well for the world here. Whether or not we crack the equation before I kick.

**Murph:** Don't be morbid, Professor.

**Prof. Brand:** I'm not afraid of death, Murph. I'm an old physicist - I'm afraid of time. (Nolan, 2014, 1:24: 16)

Professor Brand's deepest fear is not about his looming death, but about time simply running out. As a physicist, he understands that time is not just a straight path; it is a powerful force controlling what is possible and what is not. His real dread is that humanity won't find the solution to the gravity equation in time to save itself. The "equation" is not therefore a math problem; it is the only way to save humanity, and time itself is the relentless force working against them.

In *Interstellar*, time is portrayed as an antagonist, threatening humanity's very existence. The frequent quoting of Dylan Thomas's poem, "Do Not Go Gentle into that Good Night," (1951) powerfully reinforces this theme, inviting everyone to bravely fight against the looming end. This poem's message perfectly matches the movie's main themes of survival, love, and the ongoing search for answers even in the darkest moments, much like the poem itself, which is often seen as a powerful call to resist death. But considering *Interstellar*, I argue that the poem is about the struggle against time, though initially about fighting darkness; Professor Brand explains, "I'm not afraid of death. ...I'm afraid of time." (Nolan, 2014, 1:24: 16) For Cooper and his daughter Murph, the poem refers to their attitude with separations, reunions, and the sacrifices required to ensure humanity's survival. By weaving "Do Not Go Gentle" into *Interstellar*, Nolan brilliantly combines cinema and literature, delivering a timeless message that urges us to persevere when confronted with overwhelming challenges.

The 'Endurance' in *Interstellar* is far more than just a spaceship; its clock-like design serves as a powerful symbol deeply connected to the movie's central themes. This appearance visually represents the impact of the passage of time, a major challenge for the crew. The movie heavily features time dilation, especially near the black hole Gargantua, where just hours for the astronauts equal decades or centuries on Earth. The ship's continuous rotation constantly reminds viewers of this time difference, highlighting the crew's huge sacrifices and the rapid loss of time. Furthermore, the ship's name, "Endurance," perfectly matches its design and difficult task, symbolizing the self-reliance and perseverance needed for such a perilous mission. It must withstand cosmic dangers and the vastness of space. Thus, the 'Endurance' is not just a spacecraft; it is a testimony to the human endeavor, our ability to fight against overwhelming threats, and the firm belief that humanity, like the perpetual spins of the spacecraft, can endure beyond its limits, driven by the hope for a better future.



Before Cooper leaves for his mission in *Interstellar*, his relationship with his daughter, Murph, is shown as profoundly deep and intellectually connected, creating the emotional aspect of the entire movie. Unlike her elder brother Tom, who is more focused on farming their dying land, Murph follows Cooper's natural curiosity and his yearning for scientific inquiries. This shared interest creates a strong bond between them, seen in their joint efforts to understand strange things happening in Murph's bedroom. Cooper supports her scientific inquiries, and it is through these shared experiences— like finding the drone and later discovering the secret NASA base— that their connection becomes unbreakable.

The goodbye scene between Cooper and Murph before he leaves for his mission is the most heartbreaking and crucial scene in the entire movie. The scene starts with Murph's desperate attempts to prevent Cooper from taking the mission, her pleas for him to "stay" echoing her feeling that he might not come back. She truly believes the "ghost" in her room is sending a message for him to stay. Cooper, however, considers it as a child's fancy, convincing himself that he must accept this mission for humanity's future. His

attempts to comfort her, by giving her his watch and explaining the concept of time dilation—"By the time I get back, we might even be the same age" (Nolan, 2014, 00:39:58)—are intended to mitigate her fears and promise a future reunion; but they involuntarily highlight the cruel reality of the sacrifice he is undertaking.

The supremacy of the scene lies in Murph's prompt comprehension of the true implications of time dilation: "You have no idea when you're coming back... No idea at all!" (Nolan, 2014, 00:40:12) When Murphy realizes what is happening, her initial rejection turns into agony and despair. She throws the watch, a symbol of their bond, back at Cooper and pulls the covers over her head, completely rejecting him. This defiant act, her refusal to even look at him as he leaves, breaks Cooper, making his departure an agonizing ordeal. Cooper, walking out of the door, calls out "I love you, forever!" (Nolan, 2014, 00:40:38) This summarizes the painstaking cost of his heroic endeavor. This heart-breaking goodbye scene becomes the driving force behind Cooper's entire journey. His promise to return, no matter how distant or unlikely, is deeply rooted, serving as the emotional fuel that pushes him through the wormhole and across galaxies. It is an apt reminder of love, sacrifice, and the harsh reality of the choices made when facing humanity's end.



<https://youtu.be/yMpdgnUYVNo?si=LaMauz1974tz16So>

The emotional gap of the departure is profound, as Cooper and his team launch into space, leaving Earth behind. The team's first destination, Miller's Planet, terrifyingly shows gravitational time dilation, a core concept in Einstein's General Relativity. Upon landing on this water-covered world, the crew immediately confronts its intense gravity, which drastically slows down time: every hour spent on the planet's surface equates to seven years passing on Earth. The movie brilliantly builds tension through its soundtrack. Hans Zimmer's instrumental music adds a distinct ticking sound in the background, making the audience feel like a countdown clock is constantly running. This sound powerfully emphasizes the movie's message that time is an extremely priceless and limited resource.



<https://youtu.be/60h6lpnSgck?si=fU57wYqGnnXCI42T>

The situation quickly worsens as they find the planet is a shallow ocean, constantly struck by mountain-sized waves. Amidst this danger, a crucial error causes them to lose valuable time and equipment. What feels like only a few hours for Cooper, Brand, and Doyle on the planet's surface turns into over two decades for Romilly, who has been waiting patiently back on the Endurance. This shocking discovery upon their return to the spacecraft is one of the movie's most heartbreaking moments, as Cooper suffers from the realization that his children have grown up without him. When they finally leave the planet, Cooper understands that his daughter is now the same age he was when he departed. The following conversation between Cooper and Brand gives utterance to the concepts of time dilation and fifth dimension and their impact on human's future in the movie:

**Cooper:** And we're stuck here till there won't be anyone left on Earth to save.

**Brand:** I'm counting every minute, same as you, Cooper.

**Cooper:** Don't you have some clever way we jump into a black hole and get back the years?

**Brand:** Time is relative; it can stretch and squeeze, but it can't run backwards. The only thing that can move across dimensions like time is gravity.

**Cooper:** The beings who led us here ... they communicate through gravity ... Could they be talking to us from the future?

**Brand:** Maybe ...

**Cooper:** Well, if they can -

**Brand:** Look, Cooper, they're creatures of at least five dimensions - to them time may be just another physical dimension. To them the past might be a canyon they can climb into and the future a mountain they can climb up ... but to us it's not, okay? (Nolan, 2014, 1:15:43)

Helpless to keep his promise to his daughter while time is running out on Earth, Cooper explains to Dr. Brand the burden of being a father, "When you become a parent, one thing becomes really clear. And that is you want to make sure your children feel safe, and it rules out telling a 10-year-old that the world's ending" (Nolan, 2014, 1:16.34). Heartbroken, Cooper watches two decades of video messages from his children, sent across the vastness of space. Tom's messages detail his growth into adulthood, including his marriage, fatherhood, and final acceptance of Cooper's prolonged absence. His resignation when he says, "You said you'd come back... I gave up" (Nolan, 2014, 1:21.30) highlights the loss of hope for his dad's return. The camera focuses on Cooper's face, capturing his growing anguish as he confronts this irreversible separation, culminating with Murph's message, "You're somewhere out there... and now I'm the same age you were when you left," (Nolan, 2014, 1:22.44) and "I don't even know if you're still alive" (Nolan, 2014, 1:23.01). Masterfully directed by Christopher Nolan, the scene utilizes close-ups to reveal the subtle shifts in Cooper's emotions— from hope to shock, grief, and regret— while the children's aging in the recordings emphasizes the merciless pass of time. The visual contrast between the pixelated videos and the vast, empty space outside the *Endurance* further "underscores Cooper's profound isolation" (Bhusal, 2024, p. 119), ultimately blending science fiction with intimate human drama to explore the irreversible pass of time and the enduring power of love.



<https://youtu.be/MoLkabPK3YU?si=oONFk8K3ynDyyX1v>

Back on Earth, as Cooper ventures into space, his family faces severe environmental conditions: food shortage and massive dust storms. Meanwhile, his daughter, Murphy, now a NASA scientist, is working with Professor Brand to solve the complex gravity equation. This contrast highlights how time unfolds differently: for Cooper, minutes pass, while for Murphy, decades of longing move quickly and painfully. In what feels like a few hours to Cooper, his children have aged considerably. What should have been his future with them is now a collection of memories he was not a part of. This fact is so profoundly moving because it captures a universal human experience: the realization that life moves on in your absence. We all experience this feeling when we reconnect with old friends, revisit old places, or return from a long journey— we find that things have changed, or perhaps we ourselves have changed. It is not about being in a different place, but about the merciless passage of time that inevitably leads to a sense of fundamental loss.



Back to their mission, the Endurance crew is now critically low on fuel because of the delay on Miller's Planet, forcing them to choose between Mann's or Edmund's planets. The debate between Cooper and Brand about this choice is a crucial moment, filled with scientific, emotional, and philosophical meanings. Cooper, being practical and a bit cynical about the data, first favors Mann's Planet. He bases his decision on what seem like stronger scientific readings from the Endurance's scans and Mann's own messages. The tension between Brand's faith in love as a force that transcends dimensions and Cooper's pragmatic empiricism creates "a dramatic conflict while raising profound questions about the relationship between human experience and scientific understanding" (Bhusal, 2024. p. 119):

**Cooper:** She's in love with Wolf Edmunds.

**Romily:** (to Brand) Is that true?

**Brand:** Yes. And that makes me want to follow my heart. But maybe we've spent too long trying to figure all this with theory .

**Cooper:** You're a scientist, Brand.

**Brand:** I am. So, listen to me when I tell you that love isn't something we invented, it's observable, powerful. Why shouldn't it mean something?

**Cooper:** It means social utility— child rearing, social bonding.

**Brand:** We love people who've died ... where's the social utility in that? Maybe it means more, something we can't understand, yet. Maybe it's some evidence, some artifact of higher dimensions that we can't consciously perceive. .... Love is the one thing we're capable of perceiving that transcends dimensions of time and space. Maybe we should trust that, even if we can't yet understand it (Nolan, 2014, 1:25:05 - 1:27:22).

Brand's strong belief in choosing Edmund's Planet stems from her deep conviction that love and human connection are powerful guiding forces. For her, love is not just a feeling, but an undeniable part of being human that might be a better sign of a habitable world than cold, hard facts. The discrepancy between Cooper's logic and Brand's intuition highlights a core conflict in the movie: balancing scientific proof with instinctive feelings. This suggests that love might actually hold the key to understanding time's mysteries. The debate ultimately foreshadows the painful betrayal on Mann's Planet and the later discovery of Edmund's true potential, proving Brand's faith in love was right and emphasizing the movie's theme of love as an essential force in the universe.

On Mann's planet, Nolan introduces Dr. Mann as a foil character to the Endurance crew. *Interstellar* explores the theme of good versus evil through Dr. Mann, the sole survivor of the earlier Lazarus missions. Before they find him, Dr. Brand describes Dr. Mann as "one of the bravest humans ever to live" and "remarkable" (Nolan, 2014,

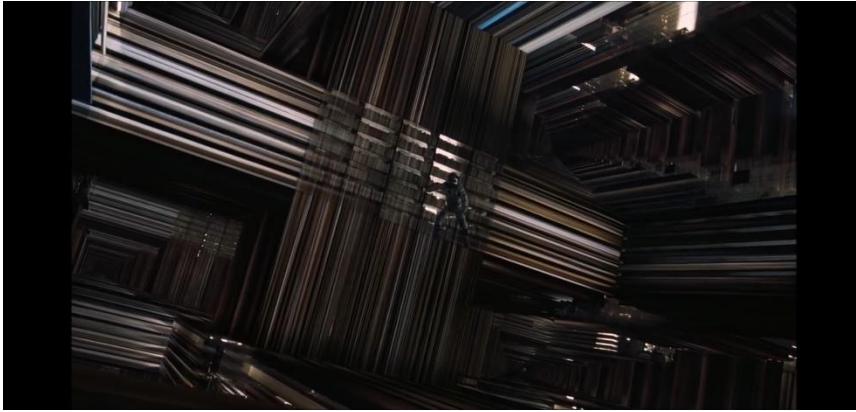
00:27.54). However, as Mann's true nature is revealed, his supposed bravery turns into cowardice. Dr. Mann deceived the space crew by transmitting misleading reports from his planet, making it appear perfectly habitable for humans. To conceal the truth, he then intentionally damaged his robot, preventing it from exposing the actual, catastrophic conditions. Upon the crew's arrival, he shows weakness and exhaustion to earn their trust. Later, driven by desperation, he attempted to assassinate Cooper during an excursion, aiming to command their spacecraft for himself. This shocking revelation of Dr. Mann's betrayal, which reflects the darker side of human nature, stands in contrast to the firm faith of the other astronauts. The exposure of Mann's deceit not only marks a crucial turning point in the story but also offers a critical examination of the limits of human endurance and morality when faced with extinction. His actions, fueled by fear and a desperate will to survive, powerfully highlight the fragility of the human spirit.

Cooper's choice, on the contrary, is a deliberate act of altruism, arisen from his unwavering commitment to humanity's future and his love for his children on Earth. He understands that for humanity to survive, Brand must reach Edmund's Planet, as it represents the last hope, even if it means confronting the terrifying mysteries of a black hole's gravitational pull alone. This pivotal moment shows Cooper's willingness to sacrifice his own life for the greater good, bluntly highlighting the moral gap between him and Mann.

Cooper's self-sacrificial act is purposeful. Instead of being crushed by the immense pull of the black hole Gargantua, Cooper is rescued by future humans who then construct a Tesseract. This limitless, five-dimensional environment allows him to communicate with his daughter, Murph, via her old bedroom bookshelf at any moment in history. With their superior knowledge of dimensions, these future humans created this Tesseract for Cooper, recognizing his strong bond with Murph as the critical element to connect with her across vast distances and different times. Significantly, Cooper cannot physically enter or alter past events directly. Instead, he experiences time as a tangible dimension he can navigate. He learns he can influence the past using gravity, manipulating objects like books and dust, and even encoding quantum data onto a watch hand. Inside the Tesseract, Cooper is surrounded by countless versions of Murph's childhood timeline, and his ability to pinpoint the exact moments for communication is driven by his memories and love for her, suggesting this bond is not coincidental but fundamental to existence. Cooper tells TARS, "Love, TARS [...] it's the key" (Nolan, 2014, 02:30:30). For Cooper, then, Dr. Brand was not simply telling prophesies when she said, "Love is the one thing we're capable of perceiving that transcends dimensions of time and space" (Nolan, 2014, 1:27:50).

Scientifically, the Tesseract scene plainly shows the practical side of General Relativity. Here, time itself becomes a physical dimension that can be observed and even interacted with. Yet, what truly makes this complex idea emotionally powerful is the

inclusion of human feeling, specifically a father's unwavering love for his daughter. The Tesseract serves as an ingenious narrative device, effectively visualizing the fifth dimension not merely as an abstract idea but as a tangible space. This unique construction enables the movie's core causal loop (circular timeline) to unfold (Akbar, 2025. p. 100). Within the Tesseract, Cooper transforms into the "ghost" from Murph's past, delivering the vital information that guarantees humanity's future, thereby ensuring the eventual existence of the advanced beings who created the Tesseract. This circular chain of events centers entirely on the Tesseract's distinct properties, establishing it as the cornerstone of the plot's time-travel mechanics.



<https://youtu.be/Rvns5DaW-ug?si=RG8pjQruZHhJVCrp>

*Interstellar* brilliantly suggests that love is a message powerfully conveyed through recurring visual motifs. Cooper's wedding ring consistently symbolizes his enduring family commitment, a tangible link that guides him through cosmic distances and time dilation. Similarly, Murph's jacket, strikingly similar to her father's, signifies a profound continuity of spirit, purpose, and intellectual inheritance, embodying her dedication to his mission and demonstrating how love fosters a legacy across generations. Finally, Dr. Brand's emotional attachment towards Edmund's ID badge highlights love's intuitive wisdom; despite logical counterarguments, her emotional bond proves crucial for humanity's survival. Collectively, these objects—the ring, the jacket, and the ID badge—crystallize the movie's main argument about transcendental love.

Toward the movie's end, the reunion between Cooper and Murph is an intensely emotional resolution, marked by a realistic bittersweetness that highlights the immense passage of time separating them. After his miraculous rescue near Saturn, Cooper is taken to Cooper Station, a massive space colony—a testament to Murph's life's work in solving the gravity equation. He finds his now elderly, frail daughter on her deathbed. The age contrast is noticeable as Cooper, having experienced minimal time dilation within the black hole and Tesseract, appears almost the same age as when he left, while Murph is over ninety, surrounded by her descendants, who are strangers to him.

Murph, who successfully saved humanity, acknowledges her father's critical role, whispering, "I knew you'd come back, because my dad promised me" (Nolan, 2014, 2:41:15). Knowing her time is short and willing to spare him the pain of watching her die, Murph, with wisdom gained from a full life, gently urges him to leave, "No parent should have to watch their own child die. I have my kids here for me. You go" (Nolan, 2014, 2:41:36). This profound act of selflessness from Murph allows her father to pursue his true calling. Understanding the solitary burden Dr. Amelia Brand now carries, Murph encourages Cooper to complete the larger mission, "Brand is out there, alone" (Nolan, 2014, 2:42:55). This clear directive, born from both necessity and empathy, indicates that Cooper's ultimate purpose is not to dwell on the past but to pursue humanity's interstellar journey and potentially reunite with the last remaining pioneer, securing a future beyond Cooper Station.



<https://youtu.be/nqcRa20mPEc?si=1sLhbO71nOBVhBfY>

## **Conclusion**

*Interstellar* has firmly established itself as a landmark in cinematic history, widely regarded as one of the most significant science fiction movies ever made. Its remarkable scientific accuracy, compelling story, stunning visuals, powerful performances, brilliant soundtrack, and flawless execution in every aspect have rightfully given it a place among the most iconic movies. It offers a rich movie experience that prompts viewers to consider the deep connections between science, emotion, and humanity's role in the universe.

The concept of a fifth dimension, while rooted in theoretical physics, serves as a powerful narrative device in science fiction, allowing authors and filmmakers to visually represent abstract ideas about time, gravity, and causality. In *Interstellar*, the fictional fifth dimension, as seen in the Tesseract, moves beyond strict scientific accuracy to provide a framework for characters to interact with the story's universe in ways that transcend our everyday four-dimensional limitations. This urges audiences to perceive reality as fluid, where past, present, and future can interact. Ultimately, *Interstellar* uses the fifth dimension as a powerful emotional and thematic engine, particularly through the Tesseract, to show how love can inspire profound sacrifice and physically manifest across spacetime via gravity, arguing for the enduring power of human connection to shape destiny.

Despite its strong scientific basis, *Interstellar* has received some criticism for how it handles certain ideas, especially its ending with the fifth dimension and love as a transcendental force. Some critics argue that these elements reduce the movie's scientific credibility, moving into speculative areas that weaken its overall authenticity. However, other critics argue that these aspects actually highlight the movie's main message: the "permanent power of human connection and emotion" (Burnett, 2022, p 69). This blend of scientific accuracy and imaginative story encourages viewers to consider the relationship between factual knowledge and human experience.

Despite its immense cosmic scale, *Interstellar's* screenplay is profoundly shaped by its character development. Examining its characters offers a direct look into the movie's very soul, as each individual's journey is uniquely integrated into the expansive story of space exploration. Cooper epitomizes pure determination and love, pushing the narrative with his relentless drive not just for survival, but to guarantee a future for his children. His path, defined by significant sacrifices and astonishing discoveries, mirrors the broader theme of human resilience against seemingly impossible obstacles. The emotional depth of Cooper's bond with his daughter, Murph, forms a strong emotional basis for the entire story, allowing viewers to deeply connect with the human experience amidst the universe's vastness. Other characters like Amelia Brand, a scientist navigating both intellect and emotion, and Professor Brand, who embodies the intricate balance of hope and despair, further enrich the narrative. Their collective struggle, interrupted by personal losses and scientific ambition, illuminates the complex nature of human motivation against the backdrop of space's infinite mysteries.

*Interstellar* powerfully demonstrates that the drive to explore is fundamental to human nature, highlighting our inherent curiosity and resilience against the unknown. This cinematic masterpiece goes beyond typical narratives to offer a profound examination of both the universe and the human spirit. It exemplifies cinema's capacity to perfectly blend genres and inspire deep thought, all while engaging the audience's senses and sparking their imagination. By combining elements of science fiction, family drama, space adventure, and scientific speculation, *Interstellar* transforms complex physics into a profoundly resonant story about the very essence of what it means to be human.

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