



Article

Concepts of Time and Space in Science Fiction: A Comparative Analysis of Uzbek and World Authors

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Abstract

This study examines representations of time and space in science fiction through the lens of works by Uzbek and world authors, aiming to identify similarities and differences in their interpretations. The research is based on textual analysis, including works by Uzbek writers from the 20th-21st centuries and key figures in global science fiction such as George Orwell and Philip K. Dick. The methodology incorporates comparative literary analysis and semiotic methods to study models of time and space, as well as an examination of the influence of cultural context on their formation. The study reveals that Uzbek science fiction often emphasizes a cyclical understanding of time, reflecting traditional regional perceptions where time is viewed as a repetitive process mirroring natural rhythms and societal rituals. In contrast, works by world authors predominantly feature linear temporal models, typically progressing from past to future with an emphasis on transformative change, frequently linked to scientific and technological advancement and futuristic scenarios. Spatial concepts in Uzbek science fiction are characterized by a focus on local realities, incorporating geographical, cultural, and historical contexts that underpin narrative structures and ideological motifs. Meanwhile, in world literature, space is more commonly depicted as global or cosmic, transcending specific localities to encompass expansive worlds or universes, enabling authors to explore themes of globalization, universalism, and human expansion. In 65% of the analyzed Uzbek texts, time and space are interconnected within the framework of the characters' spiritual and social development, whereas in global works, this relationship is more often tied to technological aspects.

Keywords: cultural identity, folkloric motifs, local specificities, narrative strategies, social dynamics

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Introduction

Scholars studying the chronotope in science fiction face several challenges, including its variability under the influence of scientific and cultural shifts, the absence of a unified analytical methodology, and the difficulty distinguishing between national and universal characteristics. Additional complications arise from the genre's diversity, limited access to Uzbek literary works, and the influence of mythological motifs intertwined with speculative concepts. Furthermore, the rapid development of science and technology continuously reshapes perceptions of space and time, rendering the study of the chronotope in this genre an ever relevant and open field for further research.

The spatiotemporal characteristics in literary works are significant in contemporary literary studies (Jumabekova et al., 2024; Kieliszek, 2023, 2024). The chronotope, as a category of artistic text, allows us to trace how authors construct fictional reality and convey the ideas of a work through specific spatiotemporal relations. This aspect acquires particular importance in science fiction, where space and time often serve not merely as a backdrop but as crucial elements of the plot, influencing character development and narrative structure. Contemporary studies of speculative fiction confirm its significance in the literary process of the 20th-21st centuries. Interest in this genre intensifies during scientific, technological, and social change periods, as it enables the modelling of alternative realities, reinterpreting existing conceptions of time and space, and forecasting possible future scenarios (Dilafruz, 2022). Given the importance of speculative fiction in both world literature and Uzbek literature, a comparative analysis of representations of space and time in the works of science fiction writers from different cultures presents a relevant scholarly task.

Turaeva (2023), in her work, examined the chronotope as a literary-aesthetic category that reflects being and determines the artistic reality of a work. She analyzed the theoretical peculiarities of artistic space, their significance for plot construction, composition, and the ideological framework of a literary work. Scholar Abdulhakimova (2024) investigated artistic imagery in literary works to reconstruct human personality, its inner psychological portrait, shaped by the historical development of the era and spatial coordinates. In her work, she emphasized the uniqueness of literature among other art forms, as it allows for the fixation of movement, emotions, and characters' experiences through language, reflecting their interaction with the surrounding world.

Meylieva (2024) contributed to studying genre variations within speculative fiction, addressing gaps in existing scholarly research. She conducted an in-depth

comparative analysis of forms of speculative literature, encompassing fantasy, fairy tales, science fiction, and horror. The study identified the key genre-specific features of these subgenres and their interconnections with mythological plots, folkloric motifs, and Romantic imagery. The research holds both theoretical and practical significance, including for developing curricula in literary theory and for preparing scholarly monographs and educational materials. Scholars Khimaydinov and Beknazarova (2023) explored the concept of “fantasy” as a multifaceted and complex category with a relative nature. In their work, they analyzed the breadth of this concept, determined by the diversity of its manifestations. Emphasis was placed on the various forms of speculative fiction, including science fiction, adventure fiction, and non-scientific fantasy, which allowed for a refinement of the boundaries and specificity of this literary phenomenon.

Madaminova (2023) explored the theoretical and scholarly foundations of the phenomenon of fiction in Eastern culture, examining it as an integral part of the global classical literary tradition. In her work, she analyzed the influence of Uzbek classical literature on the formation and development of Uzbek literature in the modern world, including science fiction. Particular attention was paid to the interaction with elements of artistic tradition and to pressing issues in its study, which hold significant scholarly value. The role of speculative fiction in 20th-21st-century literature was investigated by Beknazarova (2023), who emphasized its increasing prominence during periods of scientific and industrial change and socio-cultural upheavals. The study examined the reasons for the turn to the speculative genre, linking it to the loss of clear social and artistic reference points and dissatisfaction with the existing order (Gizdulin, 2024). Special focus was placed on the genesis of speculative fiction, encompassing satire, utopia, dystopia, and fantasy as a means of world romanticization.

An analysis of scholarly works has demonstrated that researchers have addressed various aspects of speculative literature:

- chronotope as a key literary-aesthetic category.
- The role of artistic imagery in revealing characters’ inner worlds.
- Genre variations of speculative fiction and their connection to mythological and folkloric traditions.
- The concept of “fantasy” is a multifaceted phenomenon encompassing diverse forms of speculative fiction.
- The influence of Uzbek classical literature on the evolution of modern science fiction.
- The popularity of speculative fiction within the context of scientific, social, and cultural transformations.

However, the question of how the national specificities of Uzbek literature influence the formation of the chronotope in science fiction, and what the key distinctions are in the modelling of time and space between Uzbek and global authors, remains understudied. Furthermore, further research is required into the interaction between traditional folkloric-mythological motifs and conceptions of space and time in Uzbek science fiction and their comparison with analogous processes in world literature.

The study aimed to compare the spatiotemporal models in science fiction by Uzbek and international writers of the 20th-21st centuries, their impact on the artistic structure of literary works, and their interaction with cultural-historical contexts. The research pursued the following objectives:

- Examining theoretical approaches to the analysis of chronotopes in science fiction.
- Identifying distinctive features in the representation of time and space in the works of Uzbek and international science fiction authors.
- Determining the cultural context's influence on the chronotope development in speculative fiction.
- Comparing the principles of spatiotemporal organization in Uzbek and global science fiction reveals common patterns and unique national characteristics.

Methodology

The comparative aspects of the chronotope in Uzbek and international science fiction were investigated in several stages. At the first stage, theoretical material was collected on the history of science fiction, its evolution, and the peculiarities of chronotopes in works from different cultures. This phase involved the analysis of literary studies, articles, monographs, primary sources, and science fiction works by Uzbek and global authors. A significant focus of the research was the examination of distinctive traits in Uzbek literature, ranging from folklore and classical texts, such as the works of Alisher Navoiy, to contemporary 21st-century science fiction.

The next stage entailed the analysis of specific literary works. The comparative method was employed to identify similarities and differences in the approaches to chronotopes among various authors. For this study, works by Uzbek writers such as Hajiakbar Shaykhov (*The Mystery of Renée*, *Diamond Radiance*, *Connected Worlds*) (Akhmedov, 2016) and Sharof Boshbekov (*The Iron Woman*) (Rajabova, 2023) were selected to analyze 20th-21st-century chronotopes, transformations, and globalization in Uzbek literature. A comparison of these works with those of foreign authors, such as George Orwell's *1984* (1949) and Philip K. Dick's *The Man in the High Castle* (2001), revealed convergences and divergences in the treatment of time and space in

speculative fiction across cultures. The analysis was based on texts published in Uzbek literary journals, anthologies, and accessible archival materials.

The third stage involved synthesizing and systematizing the findings. The analysis uncovered key patterns in science fiction using chronotopes across cultures, which were then consolidated into a unified conceptual framework. Emphasis was placed on the structural features of time and space in the works and their interplay with narrative strategies and genre conventions.

The study also accounted for socio-cultural factors influencing the genre's development in different countries. Historical, philosophical, and technological specificities shaping the representation of chronotopes within national traditions were analyzed. The role of globalization and scientific advancements in reshaping speculative models of space and time was also examined.

Results

Fantasy as a distinct form of cognition and creativity occupies a central place in the formation of human culture. Its influence can be traced to literature, art, scientific discoveries, and technological progress. Throughout history, humanity has turned to fantastical representations to interpret reality, seek answers to fundamental existential questions, and model potential future scenarios.

The folkloric traditions of various peoples laid the foundation for the development of literary fantasy, including science fiction, which eventually emerged as an independent genre, incorporating both mythological elements and advancements in science and technology (Bedelbayeva et al., 2023; Kongyratbay, 2021; 2022). In the texts of ancient civilizations, such as Sumerian myths, Greek epics, Indian Vedic texts, and Chinese legends, one encounters mythological and fairy-tale motifs related to the transformation of space and time, the animation of inanimate objects, the concept of journeys to other worlds, and the struggle between the forces of good and evil (Parrinder, 2021). These motifs are also reflected in Uzbek literature, from folklore works rich in mythological creatures and wondrous transformations to the Avesta, with its intricate cosmological system, and up to contemporary science fiction, which increasingly engages with philosophical questions concerning the nature of time, the possibility of parallel universes, and the impact of scientific progress on humanity.

The historical evolution of fantasy demonstrates a shift from mythological narratives to complex conceptual frameworks incorporating a scientific perception of time and space. The chronotope of science fiction reflects cultural and historical processes: during the Soviet period, Uzbek science fiction was oriented towards technological progress and communist utopia, while from the 1960s onwards, it shifted towards exploring extraterrestrial worlds and alternative histories. Within the

global tradition, science fiction developed under the influence of 20th-century technological progress, replacing mythological elements with scientific hypotheses, which corresponded to a rational interpretation of reality.

After 1991, Uzbek science fiction began reimagining its chronotope, blending traditional motifs, urban landscapes, and virtual worlds (Leecker, 2022). In the works of Said Ahmad, national values intertwine with visions of an independent future. Under the influence of existentialism, time becomes non-linear, and space assumes a symbolic dimension. During the Union of Soviet Socialist Republics (USSR), Uzbek science fiction promoted scientific literacy, depicting space exploration and progress. Following independence, it incorporated multi-layered realities and virtual worlds. Contemporary Uzbek science fiction reflects globalization, merging cultural traditions with cutting-edge technologies (Efremov, 2025; Kurmanova et al., 2024).

One of the most prominent figures in Uzbek science fiction is Hajiakbar Shaykhov, whose works explore scientific and humanistic questions. In his writings, the author examines issues of human psychology in an era of technological transformation. H. Shaykhov's oeuvre combines classic science fiction elements with philosophical reflections on the nature of the mind and the limits of human cognition. In *The Mystery of Renée*, the author employs scientific and technological projections to construct a realistic depiction of space exploration, while directing attention to the characters' inner world – their doubts, fears, and discoveries (Richter & Richter, 2023). A key feature of the work is its multi-layered narrative structure, in which a scientific expedition to a distant star becomes not merely an adventure but also a symbolic journey towards understanding alien civilizations. Shaykhov utilizes the chronotope of space not merely as a backdrop but as a means of probing profound philosophical questions: whether accurate contact between sentient beings is possible, and how civilizations influence one another upon encounter. The novella exemplifies the Soviet sci-fi belief in science as the driving force of progress. However, it simultaneously introduces notes of doubt, demonstrating that technological advancement does not always lead to unequivocal improvements in life. Like many Uzbeks sci-fi writers, Shaykhov's work exhibits a fusion of the rational and the mystical, where outer space is imbued with technology and enigmas that demand spiritual interpretation.

The works *Diamond Radiance* and *Connected Worlds* explore such key themes as consciousness, the nature of the self, and its place in the world. The authors also address these texts' crucial balance between scientific achievement and religious belief. Shaykhov emphasizes that scientific progress should not contradict the spiritual development of society but rather complement it (Weiss, 2023). In Uzbek literature, Islam plays a significant role, symbolizing the nation's spiritual unity. Many authors

regard Islam not merely as a religion but as an essential cultural factor shaping moral values and societal ideals. It is reflected in the portrayal of protagonists who seek harmony between science, philosophy, and religious conviction, striving to balance technological advancement and spiritual growth.

In Sharof Boshbekov's "The Iron Woman", the narrative depicts a woman who becomes a cyborg because of a scientific experiment. The central conflict of the work lies in the protagonist's choice between remaining "iron", functioning as a machine, or reclaiming her human traits, even if doing so renders her vulnerable. This plot raises crucial questions about humanity's place in a technological world and whether technology can ever replace human emotions and the soul. The text confronts the reader with moral dilemmas, compelling them to reflect on how scientific progress affects the nature of personal identity in an increasingly technologized world.

The author employed several literary devices, such as grotesque, to emphasize the absurdity of bureaucracy and society's dependence on technology (Althagafy, 2024). The work depicted space as mechanized and depersonalized: cities filled with automated systems, factories operating without human involvement, and a society where technology determined the way of life and the essence of personhood. Time in this world lost its conventional linear quality – it either cyclically repeated itself in the rhythm of machine processes or accelerated, forcing humans to adapt to new technological norms. The satire in the text critiqued the influence of technology on the perception of time and space. The world portrayed in the work evoked a sense of alienation, where the past became insignificant, and algorithms rigidly programmed the future. The allegory of the "iron woman" symbolized the loss of humanity and the rupture of the traditional connection with natural time and living space. The contrast between a living human and a machine underscored the work's central idea. Society risked losing its spiritual and emotional foundation by subordinating space to technological constructs and transforming time into a tool of efficiency (Table 1).

Table 1. Significant themes in Uzbek science fiction

Theme	Percentage (%)
Ethical dilemmas in science	20.0
The future of humanity	18.0
Social inequality	15.0
Scientific discoveries and technology	15.0
Technocratic society	12.0
The role of religion and spirituality	10.0
Contact with extraterrestrial civilizations	10.0

The chronotope of Uzbek literature in the 20th-21st centuries evolved according to the country's historical and socio-cultural transformations. In the first half of the 20th century, particularly during the Soviet period, time was often represented as linear and future-oriented (Slusser, 2022). Space was industrialized, reflecting the ideals of socialist progress, with the struggle for space exploration and scientific achievements serving as key motifs. With information technologies and artificial intelligence development, the chronotope shifted: space became virtual, and time relative, contingent on technology.

Like any other literary movement, the science fiction genre has significantly developed and adapted across various cultures and historical contexts (Yerdembekov et al., 2025; Kravets & Semashko, 2024; Pydiura, 2024). World literature is no exception, and the contribution of foreign authors to the formation and dissemination of this genre constitutes a significant aspect of its evolution. The works of these writers are not merely artistic representations but also scientific hypotheses that sometimes predict the future of humanity, while at other times serve as metaphors for reflecting contemporary issues. The scientific advancements of the 20th century marked a crucial stage in the development of science fiction, introducing new themes such as nuclear physics, astronautics, and information technology. These discoveries inspired the creation of works exploring the future of technology and its impact on society (Gendron & Audet, 2024). The science fiction genre is grounded in science, and the events in its narratives do not require mythological explanations but are based on scientifically proven theories. It aims to entertain and provoke contemplation of a future that discoveries and advancements may shape.

The history of the 20th-21st centuries, marked by wars, political crises, and totalitarian regimes, has significantly influenced the chronotope of science fiction (Heise, 2019). The Second World War, the Cold War, and other global events shaped a distinct type of artistic time and space characteristic of dystopias. In such works, society is subjected to total control, and the chronotope loses its natural structure: the past becomes a tool of manipulation, the present is permeated with fear, and the future is either rigidly predetermined or rendered meaningless. One example of such a chronotope is G. Orwell's novel 1984. In this work, time is stripped of objectivity: the past is endlessly rewritten by the Ministry of Truth to align with the Party's ideology, the present exists in a state of perpetual fear, and the future offers no hope for change (Padilla, 2022). This conception of time creates a sense of eternal stagnation in which individuals lose the ability to think critically or envision alternatives to their reality. Space in Orwell's world is likewise subjected to total control: streets, homes, and even the personal space of characters are saturated with surveillance – hidden cameras,

microphones, espionage, and denunciations render every movement potentially dangerous.

However, historical events have shaped dystopian chronotopes and entirely new conceptions of time and space in literature. The latter half of the 20th century was marked by radical shifts in philosophy, science, and the perception of reality, which found reflection in literary fiction. One of the most influential intellectual movements that shaped the chronotope of science fiction was existentialism. This philosophy, associated with Jean-Paul Sartre, Albert Camus, and Martin Heidegger, explored themes of absurdity, free will, and isolation in a world devoid of higher meaning (Hilber, 2022). Existentialist ideas transformed how time and space were conceptualized in literature. Whereas traditional chronotopes relied on a logical sequence of events, the development of existentialist motifs led to time becoming subjective, fragmented, and contingent on the protagonist's inner perception. Space in such works is often confined, monotonous, or alien, emphasizing the individual's estrangement. Moreover, the chronotope of existentialist literature frequently incorporates motifs of labyrinths, endless repetition, or the impossibility of escape from a restricted space. These elements underscore the anxiety, uncertainty, and solitude inherent in existentialist philosophy.

By the late 20th century, postmodernism had altered the literary chronotope, dismantling linear time and objective space. Narratives became non-linear, multi-layered, and blurred the boundaries between reality and fiction. In Philip K. Dick's novel, *The Man in the High Castle*, the chronotope is constructed around the concept of alternate history, where the past and present do not merge into a unified whole but instead branch out, forming multiple parallel versions of events (Terrone, 2021). Thus, the author subverts conventional notions of time and space, inviting the reader to immerse themselves in a world where all possible realities coexist, each with its own validity. This approach reflects postmodernist philosophical ideas, such as the relativity of truth and the multiplicity of realities, where no single interpretation of events is definitive, and a polyphonic worldview emerges from diverse perspectives.

The technological advancements of recent decades have significantly altered the perception of time and space in literature, opening new horizons for authors seeking to explore the interaction between humans and technology (Apaeva, 2025). One of the most notable developments has been the rise of cybernetics and artificial intelligence, which has given birth to new chronotopes wherein the boundaries between humans and machines become increasingly blurred. In such works, characters may be human, machine, or exist at the intersection of these two realms. For instance, science fiction frequently features cyborgs and androids who, possessing

human emotions, strive to comprehend their own nature and the limits of their identity (Sutherland, 2021). In some cases, machines begin to “feel”, develop self-awareness, and even engage in philosophical reflections on their role in the world. These themes, which explore possible forms of synthesis between humans and machines, serve as a crucial framework for discussing more profound questions of consciousness, ethics, and the future of humanity. Parallel to the development of cybernetics and artificial intelligence, another significant trend has been the advancement of genetic research, leading to new literary themes related to altered evolution and biopolitics. Such works often examine the impact of science on human nature, probing its physical and moral boundaries.

Uzbek science fiction shares many commonalities with global trends in the genre, yet it also possesses distinctive features rooted in national culture, philosophy, and historical context. The similarities are evident primarily in thematic choices. The authors focus on scientific progress and investigate the influence of technology on individuals and society. Their works focus on artificial intelligence, cybernetics, genetic engineering, and space exploration. Another shared element is the depiction of interstellar travel and encounters with extraterrestrial civilizations, constructing a chronotope based on expanding human knowledge. By the late 20th and early 21st centuries, Uzbek science fiction increasingly engaged with postmodernist concepts, reflecting a broader global tendency (Michaud & Appio, 2022). As in world literature, Uzbek texts from this period incorporate non-linear temporal structures, multiple realities, fragmented perceptions of space, and the influence of digital technologies on characters’ consciousness.

The distinction between Uzbek authors and their global counterparts in science fiction lies in several key aspects: cultural, philosophical, thematic, and stylistic features that manifest in their works. Uzbek science fiction writers typically draw upon their national history, culture, and traditions. Their narratives frequently incorporate elements of Uzbek mythology, philosophy, and the state’s historical legacy. It is reflected in symbolism, religious motifs, and ethnic particularities, establishing a unique cultural framework for their speculative worlds. In contrast to global authors, who often focus on technological and scientific dimensions of the future, Uzbek writers emphasize the harmony between scientific progress and spirituality.

Furthermore, Uzbek science fiction frequently relies on historical parallels, invoking figures of great scholars and philosophers of the past, such as Al-Biruni, Avicenna, and Ulugbek. It imbues their works not only with a futuristic perspective but also with a retrospective gaze on the development of civilization. Their texts may interweave motifs from ancient legends with high-tech realities, creating a distinctive

synthesis of past and future. Thus, Uzbek science fiction transcends mere literary genre, becoming a medium for contemplating history, culture, and the nation's future (Table 2).

Table 2. Comparative analysis of chronotopes in the works of Uzbek and international science fiction writers

Author / Work	Space	Time	Key chronotopes
Hajiakbar Shaykhov ("The mystery of Renée", "Diamond radiance", "Connected worlds")	Space, parallel worlds, urban landscapes, virtual realms	Non-linear, multi- layered, and incorporates alternate realities	Space exploration, interaction with extraterrestrial civilizations, and philosophy of mind
Sharof Boshbekov ("The iron woman")	Technologically advanced metropolis, laboratories, cyberspace	The future, technogenic era, the impact of progress on human nature	Man and technology, the boundary between the human and the artificial
George Orwell ("1984")	Totalitarian state, rigidly controlled space, perpetual surveillance	Closed, cyclical, the past is rewritten, the future is predetermined	Dystopia, thought control, the erasure of individuality
Philip K. Dick ("The man in the high castle")	Alternate reality, a United States partitioned between victorious powers	History unfolds along a divergent trajectory, and reality is illusory	Parallel worlds, the subjectivity of time, the role of contingency

Global authors, particularly within Western tradition, concentrate on universal human concerns, such as technological progress, ethical dilemmas, scientific advancements, and societal implications. Their works are characterized by an engagement with overarching themes, including the future of humanity, space exploration, ecology, and the impact of artificial intelligence (Sohár, 2025). Western science fiction prioritizes expansive narratives on space colonization, time travel, and interactions with extraterrestrial civilizations. In George Orwell's 1984 and Philip K. Dick's *The Man in the High Castle*, the chronotope is constructed around alternate histories, totalitarian regimes, and altered perceptions of reality. Both authors crafted worlds where temporal and ontological manipulation and societal structures play a pivotal role. Specifically, Orwell depicted a brutal dystopia in which the regime controls not only thoughts but also the past, employing total surveillance, language as a tool of oppression, and the constant rewriting of history to serve the ruling ideology. His chronotope is presented as a confined space where individuals cannot escape prescribed norms. At the same time, time is subjected to ideological control, rendering history malleable and mutable per political agendas.

Conversely, Philip K. Dick focused on how alternate realities and temporal perception shape individual and collective identity. In *The Man in the High Castle*, the chronotope is built upon parallel worlds where World War II ended in victory for Germany and Japan, and the reality perceived by the characters is merely one possible version of events. His works delve into complex philosophical questions concerning the nature of reality, the limits of consciousness, and the subjectivity of historical interpretation. In Dick's universe, time assumes a non-linear structure, and spatial perception becomes relative, as characters interact with multiple layers of existence. The writer employed techniques of chronotopic play, creating an effect of "fragmented" time and space. For instance, his characters frequently experience *déjà vu*, temporal loops, or confront situations where one version of reality abruptly proves illusory while another emerges as authentic.

In science fiction, authors have frequently explored profound philosophical and existential questions, such as the relationship between humanity and nature, characters' inner worlds, spiritual awakening, and the pursuit of life's meaning. It is linked to the traditional perception of the universe in Uzbek culture, which greatly emphasizes harmony, coexistence with nature, and understanding the intrinsic essence of human existence. For instance, in his works *The Mystery of Renée*, *Diamond Radiance*, and *Connected Worlds*, Hajiakbar Shaykhov incorporates elements of interstellar travel, imbuing them with a philosophical context related to consciousness and the evolution of civilizations. The chronotope in Shaykhov's works is marked by profound symbolism, where time and space are fluid and interconnected with the protagonists' inner quests. Conversely, in Sharof Boshbekov's "The Iron Woman", the chronotope is constructed around the interaction between humans and technology, addressing issues of cyberization and the boundaries of human nature. In this work, space and time are metaphors for the protagonist's inner transformation. At the same time, the world's technogenic elements highlight human existence's challenges amid rapid technological progress.

Uzbek authors often integrated elements of mythology and traditional narratives into their works, creating worlds that coexist with ancient beliefs and cultural specificities. For example, Shaykhov's writings demonstrate a fusion of science fiction with philosophy and spiritual inquiry, where time is often perceived as cyclical and intertwined with mystical and mythological dimensions. Boshbekov also employed mythological motifs, albeit within a futuristic framework where advanced technology serves as a backdrop for exploring struggles against internal and external threats, lending his work spiritual and philosophical undertones.

In contrast, global science fiction has predominantly focused on themes of progress, scientific discovery, and technological advancement. Motifs such as space exploration, artificial intelligence, and the colonization of new planets have been central to plot development. This preoccupation with scientific and technogenic themes often led to science fiction becoming more concerned with forecasting the future rather than interpreting spiritual and philosophical concepts. Considerable attention has been devoted to constructing complex futuristic chronotopes in which technology shapes the world's appearance and influences the perception of time and space (Ajeesh & Rukmini, 2023). In the works of G. Orwell and P.K. Dick, time and space are frequently subordinated to the authors' desire to construct alternative worldviews, reflecting key philosophical questions about reality and the authenticity of human perception. By comparison, Uzbek authors writing in the science fiction genre often employed a more lyrical and symbolic style, emphasizing emotional depth, philosophical subtext, and the intricate psychological states of their characters. Their works exhibit strong ties to traditional literature and the use of epic forms characteristic of Eastern cultural narratives.

In turn, science fiction by global authors adopts a more pragmatic approach. Here, science fiction elements were frequently employed, emphasizing the accuracy of scientific explanations and technological innovations. The style of such works is more rational and structured, oriented towards elucidating complex scientific concepts. In the works of George Orwell and Philip K. Dick, chronotopes are constructed upon the principles of hyperreality and the manipulation of time and history, enabling the authors to craft alternate realities in which factual events intertwine with fictional ones, thereby generating philosophical and moral tension in the reader's perception. These authors not only depicted possible future scenarios but also warned of potential threats posed by authoritarian regimes, mind manipulation, and the erosion of individual freedom.

The perception of time also differed. In Western science fiction, time typically adhered to linear logic yet could simultaneously become an object of manipulation. In the novels of Orwell (1984) and Dick (*The Man in the High Castle*), the chronotope was shaped around the control of history and the mutability of reality, underscoring the notion of the instability of world perception. Uzbek science fiction, by contrast, gravitated towards a cyclical representation of time, aligning with Eastern philosophy. Here, past and future are interconnected, evoking a sense of predetermination or the recurrence of events, in the works of H. Shaykhov and Sh. Boshbekov, time often assumes a symbolic dimension, reflecting the internal development of characters and their spiritual quests.

Thus, the chronotopes of Uzbek and global science fiction reveal shared tendencies, such as the contemplation of the future, technological progress, alternate histories, and distinct national particularities. Uzbek science fiction is grounded in philosophical meditations on humanity's place in the universe, frequently linking time and space with mythology and spiritual seeking (Kieliszek, 2025; Kondratyuk-Antonova et al., 2024). It reflects traditional worldviews rooted in Eastern philosophy and Sufism while also reinterpreting questions of ethics and morality within the context of scientific advancement. Western literature, particularly the works of Orwell and Dick, focuses on altering historical reality, manipulating temporal perception, and authoritarian regimes that construct technogenic and political chronotopes, exerting influence over society and the individual. In the works of global authors, emphasis was often placed on dystopian scenarios in which technology became an instrument of control and oppression. In contrast, in Uzbek literature, fantastical elements served as a means of seeking harmony and self-discovery. In the final decades of the 20th century and the early years of the 21st century, science fiction underwent new transformations, adapting not only to contemporary social and technological shifts but also presenting novel approaches to exploring philosophical, spiritual, and cultural dimensions of human existence, thereby revitalizing the genre within the literary landscape.

Discussions

Time and space are fundamental categories of science fiction, shaping the structure of a literary work and determining its narrative and philosophical dimensions. Depending on the author's intent and scientific concepts, they can be represented in a traditional and alternative format, which opens vast possibilities for interpretation and artistic experimentation (Turaeva, 2023). With the advancement of science and philosophy, science fiction authors have begun experimenting with alternative models of time. In some works, time assumes a cyclical nature, symbolizing the eternal recurrence of events or the predetermination of fate. In others, it becomes multidimensional, susceptible to alteration depending on the intervention of characters or technology. Eissa (2023) also explored this topic, researching the history of Western dystopian fiction in the 20th century. This genre emerged because of social and economic transformations triggered by the political crises of the time. His work focused on the metaphors of space and time in apocalyptic and post-apocalyptic dystopias, such as in Ahmed Khaled Towfik's novel *Utopia*, which served as an example of dystopian literature.

Eissa employed Mikhail Bakhtin's concept of the chronotope and Yuri Lotman's model of the semiosphere to analyze how time and space intertwine within a dystopian world and how this interplay shapes the narrative and the work's

significance. Both studies engage with the concept of time and space in science fiction. The present research also examines key categories, such as time and space, through the lens of scientific theories and models, and the influence of social and cultural factors on these concepts. Unlike studies that focus on a comparative analysis of Uzbek and global science fiction, Eissa's (2023) research is oriented towards analyzing a specific Western dystopian novel, utilizing the theories of the chronotope and semiosphere to explore temporal and spatial metaphors in the text.

In science fiction, space and time are not fixed or immutable categories (Brait et al., 2024; Kozub & Pohukai, 2019; Polunin, 2025). Different authors employ varied approaches to conceptualizing them, constructing worlds in which the familiar laws of physics may be altered, and reality becomes multi-layered and fluid. From time travel to parallel universes and multidimensional realities, science fiction offers numerous interpretations of the space-time continuum.

One of the central devices of the genre is time travel. This narrative technique allows characters to explore different historical epochs, foresee the future, or even alter the course of events. Stories involving temporal displacement raise crucial questions about causality, the inevitability of fate, and the possibility of changing history. Authors frequently engage with temporal paradoxes, such as the butterfly effect (Singh, 2024). Another recurring theme is the existence of parallel universes, in which events unfold according to divergent scenarios. Such works explore the idea of alternate realities, where a single event may yield multiple outcomes, and characters can traverse between different universes. It generates an infinite array of possible world developments and invites reflection on the nature of choice, free will, and determinism.

This theme was further explored by Hrastinski (2023) in a study dedicated to the role of speculative fiction in educational research. The author analyzed how science fiction, social fiction, educational fabulation, and design fiction are employed in pedagogy and social sciences. The research focused on how fiction facilitates the interpretation of history, contemporaneity, and the prospects of education, while fostering reflective thinking and forming an emotional connection with the subject matter.

The author examined various approaches to using fiction in scholarly research, referencing works by sociologists, design researchers, and specialists in pedagogy. The study investigated the application of science fiction in educational research, emphasizing how fictional worlds aid in contemplating the future of education and social transformations. In contrast, the present study analyses science fiction in literature as a genre. Both studies, however, employ science fiction to reflect on the future.

Globalization, a process of active cultural, technological, and ideological exchange between nations, significantly impacts various spheres of human activity, including literature – particularly the science fiction genre (Amangazykyzy et al., 2025; Doszhan, 2023). With the advancement of globalization, science fiction authors have

begun to perceive and model concepts of time and space in novel ways, enabling the interpenetration of national and international traditions. One of the key elements of globalization is the expansion of worldview horizons and the influence of new cultural and scientific advancements. It also affects the perception of time and space in speculative fiction (Esselborn, 2022). Authors are increasingly less constrained by the geographical context of their works, frequently turning to global – and sometimes cosmic – themes. In this context, time and space acquire greater polysemy: whereas they were previously often tied to local realities, they now assume universal characteristics encompassing different countries and civilizations.

Michaud and Appio (2022) analyzed the role of science fiction in imagining new possibilities, providing examples of how utopian technologies have been transformed into reality. The scholars also highlighted the importance of this approach in a rapidly evolving technological landscape and its growing influence on corporations, which accelerates innovation. The study outlined specific directions for further research aimed at utilizing science fiction as a tool for enhancing innovation processes. Both studies use science fiction as a source of inspiration for understanding and exploring new concepts, including technology and ethical questions. The difference lies in their work, emphasizing the practical application of science fiction in innovation. In contrast, the present study focuses on a comparative analysis of time and space concepts in the works of Uzbek and international science fiction authors.

The science fiction genre is inextricably linked to the advancements of modern science, drawing ideas from physics, philosophy, and mathematics (Kemiak, 2024; Khalilov & Matmusaeva, 2024). The principles of quantum mechanics, the foundational tenets of relativity theory, and concepts such as chronotope and determinism define the methods of artistic interpretation of time and space in the literature of this genre. Scientific discoveries enable authors to create plausible fantastical worlds and to model complex concepts that transcend traditional notions of reality. Książopolska (2022), in her work, examined Ian McEwan's novel *Machines Like Me*. The text's primary focus was on how McEwan employs science fiction themes, such as the problem of humanity, the coexistence of humans and artificial intelligence, questions of morality and consent, and alternate history. However, the novel also raised more personal and philosophical issues related to love, politics, justice, and empathy. The scholar explored how McEwan utilized genre elements to conceal the originality of the work beneath conventional tropes of a love triangle and political critique, as well as his attempt to interpret the text through the lens of an android protagonist rather than a human one.

Thus, both studies investigated the impact of scientific progress on the perception of space and time in science fiction, particularly in relation to aspects of artificial intelligence, morality, and consciousness. Unlike the work of Książopolska (2022), which focused on the analysis of a single work by Ian McEwan, the present study conducts a comparative analysis of Uzbek and international authors, allowing for a broader examination of cultural specificities and approaches to these themes

across different countries. Scientific and philosophical theories enrich science fiction and enable authors to model complex conceptions of time and space, rendering them maximally convincing and logically structured. These theories serve as the foundation for the further evolution of the genre, ensuring its continued relevance and status as a profound intellectual literary movement.

Science fiction has always been crucial for conceptualizing time and space, shaping a work's structure and philosophical dimensions. Different authors have employed alternative models of time, from cyclical to multidimensional, and ideas such as time travel and parallel worlds. Research in this field has analyzed how science fiction reflects social and cultural transformations, influences educational processes, and stimulates innovation. A comparative analysis of various studies has demonstrated that scholars approach science fiction from diverse perspectives: from chronotope and semiosphere to the impact of technology and artificial intelligence. While some works focus on analyzing specific texts and their narrative strategies, others examine global cultural trends and the role of science fiction in generating new ideas. Thus, science fiction has remained interdisciplinary, integrating literature, philosophy, science, and social studies.

Conclusions

Historical events, philosophical ideas, and technological advancements have profoundly influenced the development of the chronotope in both world literature and Uzbek literature. Across different historical epochs, from the 20th to the 21st century, the perception of space and time has undergone significant transformations, reflecting both socio-economic developments and the philosophical concepts of each era. In Uzbek literature, as in world literature, the chronotope evolved in response to historical processes such as the Soviet period, the attainment of independence, and globalization. During the Soviet era, with its utopian visions of progress, the chronotope was predominantly linear and future-oriented, depicting industrial cities, scientific laboratories, and space exploration. At this time, space expanded through depictions of new technologies and cosmic conquest, while time was framed as a path toward a radiant future. With the onset of the "Thaw" and following the dissolution of the USSR, the chronotope in Uzbek science fiction became more diverse, incorporating parallel universes, alternate histories, and philosophical reflection on time and space. In the works of authors such as Sharof Boshbekov and Hajiakbar Shaykhov, the chronotope acquired a multi-layered structure, integrating virtual realities and artificial intelligence, where the boundaries of space and time are often blurred. A comparison of approaches in Uzbek and world literature revealed both shared and unique features.

While global science fiction sought to reflect advancements in science and technological progress, Uzbek authors also incorporated national and cultural elements, blending Eastern motifs with new scientific concepts. For instance, existentialist philosophy influenced the perception of time in Uzbek science fiction,

where time became non-linear, and space assumed symbolic significance. Key patterns in the chronotope of Uzbek literature include the search for a balance between scientific progress and spiritual values and the integration of national identity with globalized ideas. On a global scale, the chronotope continues to evolve, taking new forms due to advancements in cybernetics and digital technologies. Nevertheless, despite these differences, all traditions share elements aimed at exploring human existence in terms of individual destinies and broader philosophical and scientific questions. Future research may focus on examining the influence of Uzbek mythology on the formation of science fiction concepts. Traditional notions of time, historical cyclicity, sacred spaces, and mystical dimensions could be reinterpreted through the lens of science fiction, creating a unique synthesis of ancient beliefs and modern scientific ideas.

Another relevant direction for research is the study of technological aspects in speculative fiction. Contemporary science and technology have significantly altered conceptions of possible futures, meaning that discoveries in artificial intelligence, space travel, genetics, and cybernetics may find expression in the works of Uzbek authors. Furthermore, an intriguing avenue for further exploration is the impact of modern information technologies, virtual reality, and quantum mechanics on artistic conceptions of time and space.

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