

A Brief Analysis of the Film The Time Machine from a Logical Perspective

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Abstract

As a landmark work in the history of science fiction literature and cinema, The Time Machine not only provided the prototype for constructing the theme of "time travel" but also laid the dual foundations of logic and narrative for subsequent works of its kind. First, the article traces how the film employs the concept of the "fourth dimension" as its logical starting point, transforming time travel from fantasy into a rational framework. Second, it examines the film's reflection on the relationship between civilization, education, and human nature, highlighting how causal reasoning within the logical chain reveals the tension between civilizational decline and primal instincts. Third, it discusses the film's critique of utopianism and social Darwinism, emphasizing the role of logical reasoning in illuminating humanity's future possibilities. Finally, the article contends that The Time Machine is not merely a work of science fiction narrative, but rather a thought experiment in the logical sense, prompting us to recognize that humanity's future destiny as "time travelers" hinges upon choices between reason and ethics. This paper first elucidates the components and characteristics of the different genres contained within the novel, as well as the connections between them. Then, building upon this foundation, it discusses the narrative art of the author in combining these three genres within a single text.

Keywords

The Time Machine, Logic, Science Fiction Film, Civilization, Education

1. Introduction

1.1 Research Background

Within the vast landscape of science fiction literature and film, H.G. Wells' The Time Machine stands as a seminal classic. First published in 1895 and subsequently adapted into multiple cinematic versions, its intellectual depth and logical framework have provided crucial reference points for subsequent science fiction works. H.G. Wells' The Time Machine (1895), regarded as the seminal work in science fiction literature, exerted a profound influence on the establishment and development of subsequent "time travel" narratives. Shortly after its publication, the novel sparked extensive debate within literary and scientific circles. Its subsequent adaptation into a film of the same name further visualized the abstract concept of "time travel," catalyzing enduring public fascination with science and the future within popular culture. The Time Machine not only established the fundamental paradigm of "time travel" as a science fiction motif but also provided a crucial blueprint for over 120 years of subsequent science fiction writing. More significantly, through its envisioning of future human society, it reflected the profound contradictions within Victorian British society between scientific progress and social crisis.

1.2 Logic as an Analytical Perspective

The essence of logic lies in formally revealing causal relationships and chains of reasoning between phenomena. Applying a logical lens to The Time Machine helps us understand the rational structure underlying its narrative. The film does not merely cater to audiences' expectations for spectacle; rather, it employs logical deduction to construct a thought experiment about the future. In this process, scientific hypotheses and logical inferences mutually reinforce each other, elevating the work beyond mere fantasy narrative to reveal distinct philosophical implications. Therefore, this paper will employ logic as its analytical framework, exploring four dimensions: "The Logical Structure of Time Travel," [1] "The Causal Chain of Civilization and Education," "The Paradox of Utopia and Evolution," and "The Logical Choice of Human Destiny." This approach aims to illuminate the unique value of The Time Machine at both the logical level and in its intellectual substance.

Logic, as a vital branch of philosophy, centers its inquiry on revealing the laws of thought, ensuring the validity of reasoning processes and the soundness of conclusions. Within interdisciplinary research in the humanities, logic is often perceived as a discipline inclined towards formality and abstraction, seemingly maintaining a certain distance from literature and art. However, when approached through the lenses of narrative coherence, intellectual structure, and value judgements, the tools and methods of logic can precisely reveal the patterns of reasoning and intellectual assumptions embedded within literary works, particularly science fiction. Science fiction, as a literary and cinematic genre grounded in science and imagination, is defined by its ability to construct fictional worlds that transcend empirical reality while maintaining logical coherence through a self-consistent "hypothesis-inference-conclusion" structure [2]. Consequently, logic serves not only as a crucial methodological tool for interpreting science fiction but also deepens our understanding

of its narrative mechanisms and intellectual value.

1.3 Research Gap

Existing scholarship on *The Time Machine* predominantly focuses on literary criticism, sociological interpretations, or examinations of evolutionary thought. For instance, scholars often discuss H.G. Wells' critique of capitalist inequality through the lens of Darwinism and social Darwinism, or analyse its connection to fin-de-siècle sentiments from cultural and intellectual history perspectives. However, in-depth analyses of *The Time Machine* from a logical perspective remain relatively scarce.

1.4 Research Method and Framework

Consequently, this paper attempts a systematic analysis of the film adaptation of *The Time Machine* through a logical lens. Specifically, it will address four key aspects: First, examining the logical construction and plausibility of the "time travel" narrative; second, analyzing the logical necessity of civilization and education in sustaining human progress; third, revealing how the film critiques the one-sidedness of social Darwinism through evolutionary theory and competitive logic; fourth, examining individual and collective responsibility for choices within the temporal dimension through the lens of logical metaphor. Through this analysis, this paper aims to demonstrate that *The Time Machine* is not merely a science fiction classic, but a logical experiment spanning literature, philosophy, and sociology, whose intellectual value continues to offer profound insights for contemporary society.

2. The Logical Construction of the "Time Travel" Narrative

2.1 Logic as a Method in Humanities

Within literary and cinematic works, "time travel" has consistently ranked among the most compelling narrative motifs. Prior to *The Time Machine*, however, such narratives largely remained confined to the realms of mythical fantasy, dreamlike escapades, or religious allegory. For instance, the ancient Chinese text *Zhuangzi: The Free and Easy Wanderer* achieves transcendence of reality through dreamscapes, while medieval Western religious narratives frequently depict miracles of "time standing still" or "utopian paradises." [3] Though imaginative, these narratives lacked logical consistency and theoretical grounding. The uniqueness of *The Time Machine* lies in its pioneering use of scientific logic to establish a seemingly self-consistent explanatory framework for "time travel," thereby transforming fantasy into a rational narrative model.

2.2 The Introduction of the "Fourth Dimension" Concept

H.G. Wells posits time as the "fourth dimension" in his novel. Traditional Euclidean geometry recognizes three spatial dimensions—length, width, and height—while Wells, drawing upon 19th-century advances in physics and mathematics, conceives time as a parallel dimension alongside space. Time is thus regarded as a measurable, traversable entity rather than a linear, irreversible abstract backdrop. Logically, this hypothesis transforms time travel from "fantasy" into "theoretical possibility." On this foundation, the operating principle of the time machine becomes valid: traveler's remain spatially stationary while undergoing temporal displacement, thereby avoiding the logical contradictions arising from simultaneous spatial and temporal traversal [4].

2.3 From Mythical Fantasy to Rational Narrative

The Time Machine achieved a significant narrative transformation. Prior "time-travel" tales often relied on supernatural forces, such as dreams, divine intervention, or magic. Yet in Wells' conception, time travel depended on a scientific instrument: the "time machine." This shift transforms "time travel" from mystical experience into rational experimentation, marking the dawn of modern science fiction narrative. Logically, this transition signifies a move from "non-causal" to "causal" storytelling: in the former, temporal shifts require no explanation; in the latter, they must follow a deducible chain of causality [5]. *The Time Machine*'s value lies in providing this chain.

2.4 Logical Examination of Narrative Rationality

Logic emphasises the self-consistency of propositional systems. The narrative of *The Time Machine* withstands this test of logical coherence: whilst the Traveller uses the machine to journey into the future and witness the divergence of human evolution, his spatial coordinates remain fixed near London. The film avoids the implausibility of "void traversal" through meticulous depictions of the Traveller's physical sensations, the visual representation of time's passage, and the operational mechanisms of the device. This logical consistency in detail lends the work greater credibility. On the contrary, it establishes a "logical prototype" for subsequent discussion, serving as a foundation for further exploration by later science fiction writers and logicians.

2.5 Logical Influence on Subsequent Science Fiction Narratives

The Time Machine not only established the fundamental narrative logic of "time travel" but profoundly influenced subsequent science fiction. For instance, the American film series *Back to the Future* continued the premise of "time as the fourth dimension" while introducing the concept of disrupting and repairing causal chains; *Interstellar*, meanwhile, combined relativity and black hole theory to logically expand the possibilities of time travel. From a logical perspective, these subsequent works represent elaborations and refinements upon Wells' foundational premise.

2.6 Logical Significance

From a logical standpoint, *The Time Machine's* classic status stems precisely from its establishment of a relatively complete "fictional system." Within this framework, hypotheses are clearly articulated, chains of reasoning are reasonably coherent, and conclusions—though fictional—possess formal self-consistency. This logical experiment not only expands the possibilities of literary narrative but also provides imaginative space for scientific thought. As Popper emphasized, the boundary between science and non-science lies in the ability to formulate testable hypotheses. While the narrative logic of *The Time Machine* lacks testability, its formalized hypotheses and deductive methods elevate it beyond mere fantasy. *The Time Machine* achieves a narrative transformation from "fantasy to science to logic," establishing a sustainable narrative paradigm for science fiction literature and film [6]. From a logical perspective, we can not only comprehend its rationality but also discern the intellectual power it embodies. This logical construction lays the theoretical groundwork for subsequent explorations into civilization and education, evolutionary theory and social critique, and humanity's logical choices for the future.

3. The Logical Necessity of Civilization and Education

The Time Machine is not merely a work of science fiction, but a profound allegory reflecting upon the trajectory of human civilization. In the future world depicted, humanity has evolved into two starkly contrasting groups: the surface-dwelling Eloi and the subterranean Morlocks. The Eloi possess elegant, refined appearances yet exhibit timid natures, lacking independent thought and survival skills; the Morlocks dwell subterranean, possessing immense strength, subsisting on raw flesh and blood, and maintaining their existence by preying upon the Eloi. This framework not only constitutes a literary interpretation of Darwinian evolution but also embodies Wells's logical contemplation of how civilization and education sustain human societal progress.

3.1 The Logical Chain of Human Degeneration

Through an extreme vision of the future, the film reveals a thought-provoking logical progression: should human society lose the sustained impetus of education and civilization, its outcome is not linear progress but potential degeneration or even moral decline. The chain of logic unfolds thus:

- Disruption of education → Knowledge ceases transmission; rationality cannot accumulate;
- Moral collapse → Value systems unsupported by education disintegrate, reducing human behaviour to instinctual levels;
- Civilization collapses → Social structures lose their binding force, reducing human relations to naked survival of the fittest.

3.2 Education as the Logical Foundation for Civilization's Continuity

Wells understood that while human physical structure has changed little over tens of thousands of years, true progress occurs primarily in the realms of spirit and culture. Education's essence lies in the intergenerational transmission of knowledge and values. Logically, education not only conveys empirical facts but also shapes humanity's capacity to distinguish between good and evil. In the film, the Eloi, deprived of education, lose their capacity for moral judgement. Though dwelling in a seemingly idyllic Eden-like environment, they remain indifferent to the threat posed by the Morlocks, unable even to comprehend the meaning of death or danger. This cognitive deficiency is precisely the root cause of civilization's collapse.

Therefore, from a logical perspective, education is not merely a social function but a necessary condition for ensuring the continuity of civilization. If civilization is viewed as a system of reasoning, education is the pivotal link that upholds its foundational premises. Should these premises be weakened, the entire chain of reasoning collapses.

3.3 The Logical Tension Between Instinct and Reason

Through the contrast between the Eloi and the Morlocks, the film reveals the tension between human instinct and reason. The Morlocks embody utterly unleashed primal instincts, surviving through violence and plunder; the Eloi represent another degenerate form devoid of rational restraint, passive and numb, having even lost basic survival instincts. Logically, the existence of both groups demonstrates that without education and civilization, humanity veers towards extremes in the imbalance between instinct and reason. Logic provides an explanatory framework here: the rationality of human behaviour hinges on the existence of a stable normative system. Where norms (morality and law) are absent, individual actions driven by instinct inevitably lead to the collapse of collective order. *The Time Machine* employs an extreme future scenario to underscore education's decisive role in sustaining this normative system.

3.4 The Bidirectional Logical Relationship Between Civilization and Education

In the film, the fragmentation of human society signifies the complete disintegration of the educational system, leading to the irreversible loss of civilizational achievements. Logically, this reveals a cycle: civilization provides educational content, while education in turn sustains the continuity of civilization. Should this cycle be broken, humanity would inevitably face decline and extinction.

3.5 The Question of "What Constitutes Humanity" from a Logical Perspective

The film also poses a more fundamental philosophical question: what constitutes humanity? If humans degenerate into Morlocks, acting solely on instinct, or into Eloi, devoid of moral judgement, can they still be called "human"? Logic offers a framework for contemplating this by defining conceptual boundaries and criteria for judgement. Logically speaking, the concept of "humanity" encompasses not only biological species characteristics but must also include dimensions of civilization and reason. Education, as the mediator of reason and civilization, is thus a necessary condition for sustaining "what it means to be human" [7].

4. Evolutionary Theory, the Logic of Competition, and Social Critique

Huxley's evolutionism and doctrine of "survival of the fittest" profoundly influenced late nineteenth- and early twentieth-century Western society. As both an heir and critic of Darwinism, H.G. Wells pushed the logic of evolution to its extreme in *The Time Machine*. He not only depicted the outcomes of species evolution but also revealed how social structures, class divisions, and educational deficiencies propel humanity towards alienation within historical logic. The film, cloaked in evolutionary theory, is fundamentally a social critique targeting class antagonism and civilizational anxieties in post-Industrial Revolution society.

4.1 The Social Extension of Evolutionary Logic

Darwin's theory of natural selection emphasized species survival through competition. This concept was swiftly transformed into Social Darwinism, becoming an ideological tool to explain competitive relationships between individuals and groups. The logical chain unfolds thus:

- Natural world → Individual competition → Survival of the fittest;
- Social level → Class competition → The strong rule the weak.

In *The Time Machine*, the division between the Eloi and the Morlocks represents the extreme manifestation of social Darwinism. The Eloi embody an upper class utterly deprived of labour capacity, having lost the skills for self-sufficiency and becoming wholly dependent on the lower strata. The Morlocks, as descendants of subterranean laborers, gained survival advantages through prolonged evolution but degenerated into brutal predators. Logically, Wells contends that when society pushes "competition" and "survival of the fittest" to their extreme, the outcome is not progress but alienation [8]. While the logic of competition should enhance individual capabilities, under conditions of rigid class division, it instead leads humanity to degenerate into two mutually dependent yet devouring extremes.

4.2 The Paradox of Competitive Logic

The future society depicted in the film illustrates the extreme consequences of this paradox. The Eloi appear to have "won" the outward trappings of civilization, yet degenerate through the loss of labour and thought; the Morlocks gain survival advantages through competition, yet forfeit humanity and reason. Both fall into a logical trap: survival persists, but civilization has collapsed. This demonstrates that when the logic of "survival of the fittest" is absolute, it inevitably leads to self-negation. Humanity's true adaptability does not stem solely from brute strength or instinctual obedience, but from the accumulation of education and civilization. This represents a reflection upon and transcendence of evolutionary logic at the societal level.

4.3 A Critical Metaphor for Industrial Society

The future depicted in *The Time Machine* mirrors the industrial society in which Wells lived. Nineteenth-century Britain was marked by severe class division: the upper classes enjoyed comfort and wealth, while the working classes endured relentless toil and poverty. Through the Time Traveller's narrative, this present-day class conflict is projected into the future, evolving into the absolute schism between the Eloi and the Morlocks. Logically, this constitutes metaphorical reasoning: should the prevailing social structure persist and solidify, the future inevitably descends into extreme alienation. The depicted future is not accidental but the logical extension of contemporary realities. Wells thereby asserts that unless industrial civilization employs education to moderate class conflicts and civilized means to temper competitive logic, societal development will inevitably diverge from its original progressive intent.

4.4 Education's Corrective Role Within the Logic of Competition

Confronting the competitive logic of evolutionary theory, Wells presents an alternative possibility through education's corrective function. Education not only transmits knowledge but also shapes human value rationality, thereby subverting the natural law of "might makes right" [9]. Logically, education introduces new premises into deductive reasoning, shifting conclusions away from mere survival of the fittest towards cooperation, symbiosis, and shared prosperity. Thus, the film posits a crucial proposition: the truly "fit" are neither the Morlocks who survive by sheer strength nor the Eloi who indulge in hedonism until death, but rather the "humans" capable of continuous reflection, correction, and transcendence through education. Education endows humanity with the potential to transcend the logic of natural selection, enabling civilization to advance towards higher levels of development.

4.5 The Contemporary Relevance of Social Critique

The Time Machine is not merely a literary experiment in science fiction but also Wells' critique of the social issues of his era. Through a futuristic allegory, the film warns that if industrial society persists in class antagonism and competitive logic, humanity will inevitably repeat the film's tragic fate. Logical deduction reveals that only by shattering the mindset of social Darwinism through education can humanity avoid degeneration and destruction in the river of history. In this sense, the film's social critique points towards salvaging humanity's rationality and civilizational future. Education ceases to be a tool subordinate to social competition, becoming instead the sole means to resist competitive logic and preserve humanity's shared humanity.

5. Narrative Structure and Philosophical Implications from a Logical Perspective

In literary analysis, logic is seldom explicitly referenced, yet logical reasoning permeates the construction of narrative structure, the coherence of plot development, and the articulation of thematic arguments. As a seminal work of science fiction, The Time Machine captivates readers not only through its fantastical premise of "time travel," but also through its narrative's rigorous logical structure and philosophical implications. In conceiving the story, Wells conducted a thought experiment, organically integrating logical reasoning, scientific speculation, and social critique to forge a narrative model that harmoniously blends scientific rigor with literary artistry.

5.1 The Logical Premise of Time Travel Narrative

The narrative of The Time Machine rests upon the theoretical premise that "time is the fourth dimension." This hypothesis establishes the plausibility of the story's events: if space possesses three dimensions, then time, as the fourth dimension, may be traversed. Logically, this assumption is not unfounded but rather a reasonable extension of contemporary physics discourse. Within the narrative structure, Wells first introduces this premise through the scientist's identity, then employs the protagonist's experimental demonstrations to persuade readers to accept the premise. This arrangement of the logical chain ensures the story's fantastical elements do not descend into absurdity, but are grounded in rigorous reasoning. In other words, the story's credibility does not rely on the reader's blind imagination, but on logical consistency and scientific reasoning.

5.2 Logical Tension Generated by Circular Reasoning

The narrator in The Time Machine adopts this strategy: the protagonist demonstrates experiments with a miniature time machine, provoking skepticism; subsequently, he personally embarks on a time journey, returning with firsthand experience as "evidence". Logically speaking, this argument may not be strictly valid, as the protagonist's account lacks external verifiability. Yet it is precisely this seemingly plausible circular reasoning that generates narrative uncertainty, trapping readers in the tension of "it could be true, yet it could be fiction" [10]. The gap in logic becomes, paradoxically, the source of narrative tension.

5.3 Reductio ad Absurdum as a Narrative Strategy

The portrayal of the Eloi and the Morlocks in the film constitutes a narrative strategy of reductio ad absurdum. By extrapolating the extreme consequences of contemporary societal logic, Wells exposes its inherent absurdity: if class divisions become permanently entrenched → future society will descend into species fragmentation; if competitive logic expands without restraint → civilization will devolve into plunder and slaughter. This reasoning does not aim to predict the future with precision, but rather to expose the perils inherent in contemporary logic. By pushing societal logic to absurd extremes, Wells critiques industrial civilization within his narrative. Thus, the logical technique of reductio ad absurdum finds renewed application value within literary storytelling.

5.4 Possible Worlds Theory and Narrative Rationality

From the perspective of the logical theory of possible worlds, The Time Machine constructs a hypothetical space of a "future world." This space is not a continuation of reality but a possible outcome based on logical deduction. Wells repeatedly emphasises the "if... then..." reasoning pattern throughout his narrative: If humanity neglects education → then the future will degenerate into the ignorance and dependency of the Eloi; If the logic of competition continues to expand → then the future will evolve into the cruelty and predation of the Morlocks. This hypothetical reasoning not only enhances the narrative's plausibility but also imbues the work with philosophical depth. The fictional future thus becomes a logical experiment, testing multiple possibilities for societal development.

5.5 Philosophical Allegory: Free Will and Fate

Beneath the narrative structure, Wells explores the tension between free will and predestination. The protagonist's original purpose in inventing the time machine was to save his fiancée, yet repeated attempts ended in failure. Logically, this narrative pattern reveals a paradox: If the future is predetermined, then time travel can only validate fate, not alter history. If the future can be altered, then the actions of the time traveller should prove effective, yet the film depicts their futility.

5.6 The Logical Value of Narrative Structure

Overall, The Time Machine's narrative transcends mere fantastical construction, functioning as a rigorously logical

thought experiment. Grounded in logical reasoning, it transforms scientific speculation into literary storytelling, using its narrative structure to reveal philosophical implications. Here, logic serves not merely as a tool but as an implicit narrative framework, endowing the work with scientific, literary, and philosophical dimensions.

6. Contemporary Significance and Future Prospects

Since its publication over a century ago, *The Time Machine* continues to provoke reflection among readers and audiences across different historical eras. This enduring resonance stems not only from its pioneering status in literary history but also from the universal significance of its logical structure, social critique, and philosophical allegory, transcending temporal and spatial boundaries. Examining *The Time Machine* through a logical lens, its contemporary relevance and future implications manifest primarily in the following aspects.

6.1 A Cautionary Tale for Contemporary Technological Advancement

The technological advancements of the 21st century far surpass those of Wells' era. Technologies such as artificial intelligence, genetic engineering, and quantum computing are reshaping human lifestyles while introducing unprecedented risks. Should education and civilization fail to keep pace with technological advancement, the fruits of science may paradoxically accelerate social fragmentation. The future depicted in the film, though fictional, reveals the extreme logical consequences that could arise. For contemporary society, this serves as a wake-up call: we must not blindly trust technological progress, but instead balance it through education, ethics, and institutional frameworks.

6.2 Practical Implications for Education

As discussed earlier, education is portrayed in the film as a vital force against human degeneration. In modern society, education remains a pivotal factor determining future trajectories. Logical deduction suggests: if education is universal and emphasises critical thinking → society gains greater resilience and creativity; if education degenerates into a tool for utilitarian competition → society descends into zero-sum games between individuals, undermining civilization's capacity for sustainable development.

6.3 Continuation of Critique on Social Structure

In Wells' conception, the division between the Eloi and the Morlocks represents the inevitable logical extension of a rigid social structure. While modern society has not reached such extremes, class rigidity, wealth disparities, and social inequality persist. From a logical perspective, unless this unequal structure is dismantled, the potential for extreme fragmentation remains. The film reminds us that institutional frameworks and education must be employed to prevent societal structures from descending into vicious cycles.

6.4 The Logical Imperative of a Community with a Shared Future for Mankind

Logic demands consistency and wholeness. From *The Time Machine*'s narrative, we observe that when humanity as a whole descends into division and conflict, it inevitably leads to collective degeneration. This logic carries heightened relevance in the context of globalization: environmental crises, resource competition, and technological monopolies all reflect a globalized "logic of competition". Should individual nations or groups pursue maximized self-interest without cooperation and coordination, humanity collectively faces the fate Wells warned against. Thus, the film's contemporary significance lies in revealing that the human community of shared future is not an abstract political slogan, but a logical necessity. Only through cooperation and sharing can humanity avoid falling into the trap of degeneration.

6.5 Future Prospects: The Integration of Logic and Science Fiction Narrative

The Time Machine demonstrates a distinctive literary approach: integrating logical deduction into narrative fiction. Future science fiction creation and academic research may continue developing along this trajectory. Logic provides a rigorous framework for thought, while science fiction offers boundless imaginative space. Their convergence could serve several purposes: Early warning function: By logically deducing fictional extreme futures, it alerts contemporary society to potential crises; Educational Function: Guiding public understanding of the interplay between science and society through narrative experimentation; Philosophical function: Through posing questions and paradoxes, it prompts humanity to reflect on fundamental issues such as free will, predestination, and the development of civilization. In this sense, *The Time Machine* transcends mere literature to become an interdisciplinary thought experiment, offering insights for contemporary academic research and social practice.

7. Conclusion

From a logical perspective, *The Time Machine* transcends mere fantastical speculation about time travel; it constitutes a rigorous deduction and critique of the logical chains governing human society. It exposes the degenerative logic that technological advancement, educational neglect, and social stratification may precipitate, while positing education and civilization as the fundamental forces capable of countering such decline. The film's contemporary relevance lies in its reminder to humanity: the future is not predetermined. The worst-case scenario revealed through logical deduction is precisely the outcome we have the power to avert. Thus, *The Time Machine* stands not merely as a late-nineteenth-century social allegory, but as a beacon of thought for humanity in the twenty-first century and beyond. Through the lens of logic, it not only informs us of "what the future might be," but compels us to contemplate "what the future ought to be."

References

- [1] Zhang Min. (2020). Academic Authorship Norms and Research Ethics Development. *Chinese Higher Education Research*, (6), 112-118.
- [2] Li Hua, Wang Wei. (2021). Authorship Ordering and Responsibility Sharing in Interdisciplinary Research. *Research Management*, 42(4), 56-65.
- [3] Han, H. F. (2019). Issues of Academic Integrity in Evidence Science Research. *Evidence Science*, 17(3), 88-95.
- [4] Wang Xiaoming. (2018). Logical Thinking in Science Fiction Literature: The Case of *The Time Machine*. *Foreign Literature Review*, 40(2), 77-86.
- [5] Zhou Ning. (2017). On Future Imagination and Reality Critique in Science Fiction Works. *Literary Criticism*, (5), 98-105.
- [6] Resin, D. B., & Master, Z. (2013). Authorship policies of bioethics journals. *Journal of Medical Ethics*, 39(4), 237-243.
- [7] Smith, E., & Williams-Jones, B. (2012). Authorship and responsibility in health sciences research: A review of procedures for fairly allocating authorship in multi-author studies. *Science and Engineering Ethics*, 18(2), 199-212.
- [8] Stable ford, B. (2006). *Science Fact and Science Fiction: An Encyclopedia*. New York: Routledge.
- [9] James, E. (1994). *Science Fiction in the Twentieth Century*. Oxford: Oxford University Press.
- [10] Savin, D. (1979). *Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre*. New Haven: Yale University Press.