

Artificial Intelligence and Cosmic Transformation in Isaac Asimov's "The Last Question"

Assist Lect. Rasha Raheem Tawfeeq

Diyala Education Directorate

Ministry of Education

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Summary:

Asimov's work is examined in relation to his notion of the end of the universe through metaphysics and transformation. Through Asimov's groundbreaking work in "*The Last Question*" among other texts, the research explains how themes of 'entropy', 'cosmic renewal', 'time', and 'human-machine awareness' are explored. A qualitative literary research approach is employed through close-reading and literary interpretation, including philosophical inquiry. Through this literary research methodology and approach, the research aims to show how Asimov's work on the end of the universe translates into transformation through 'intelligence', 'cosmic memory', and 'cosmic awareness', rather than the complete destruction of the universe. Asimov's transformation and interpretation of scientific determinism through metaphysics and narrative challenge linear views on 'the end', and his work brings new life through 'cosmic renewal' beyond calculations of 'entropy'.

1. Introduction

Isaac Asimov occupies a central position in twentieth-century science fiction, widely recognized for his distinctive fusion of scientific rationality with philosophical speculation. His narrative style is characterized not merely by extrapolative imagination, but by a sustained engagement with questions of temporality, or the experience and structure of time, knowledge, and the ultimate fate of existence. Across his body of work, Asimov consistently negotiates the boundary between empirical science and metaphysical inquiry, positioning science fiction as a literary space in which abstract philosophical concerns—such as entropy, often associated with universal decay and the eventual 'heat death' of the universe consciousness,

and cosmic finality, the study of the origin, structure, and fate of the universe—can be explored through narrative form.

Metaphysics, in the context of literary studies, refers to philosophical questions concerning existence, reality, time, consciousness, understood here as philosophical inquiry into existence and reality beyond the physical world and the nature of being beyond the material world. Rather than focusing solely on physical or scientific explanations, metaphysical inquiry explores abstract concerns such as the meaning of existence, the continuity of consciousness, and the possibility of transformation beyond observable reality. Within science fiction, metaphysics often appears through narratives that examine the limits of human knowledge, the structure of the universe, and the relationship between technology, intelligence, and existence itself. Isaac Asimov's engagement with scientific and philosophical questions is closely connected to his academic and intellectual background. Trained as a biochemist and widely recognized for his extensive contributions to scientific writing, Asimov possessed a deep familiarity with scientific theories concerning physics, cosmology, and technological development. His scientific education enabled him to incorporate complex concepts such as entropy, computation, and universal decay into his fiction with intellectual precision rather than purely imaginative speculation. At the same time, Asimov's writings frequently move beyond empirical science toward broader philosophical reflections on existence, consciousness, temporality, and the future of humanity. This combination of scientific knowledge and philosophical inquiry allows his fiction to operate simultaneously as speculative narrative and metaphysical exploration, particularly in works such as "The Last Question," where scientific discourse gradually develops into an ontological meditation on cosmic renewal and continuity.

In Isaac Asimov's fiction, these metaphysical concerns emerge through scientific scenarios that gradually develop into philosophical reflections on cosmic destiny, entropy, and renewal. Although "The Last Question" is grounded in scientific concepts such as thermodynamics and computation, the narrative ultimately extends beyond scientific explanation toward questions about existence, continuity, and recreation. Therefore, this study approaches metaphysics not as a purely

abstract philosophical system, but as a literary framework through which Asimov reimagines the end of the universe as a process of transformation rather than absolute destruction.

Among his most philosophically resonant texts, "The Last Question" (1956) exemplifies this synthesis of scientific discourse and metaphysical reflection. The story traces the evolution of human and posthuman intelligence, referring to forms of consciousness that move beyond ordinary human limitations, across vast temporal scales, repeatedly returning to the question of whether entropy—the apparent inevitability of universal decay—can be reversed. While grounded in thermodynamic principles, the narrative progressively shifts from scientific problem-solving toward a broader ontological inquiry into transformation, continuity, and the possibility of renewal beyond cosmic dissolution.

Despite sustained scholarly interest in Asimov's work, critical attention has largely foregrounded his scientific imagination, narrative techniques, and ideological positioning, often treating his engagement with entropy as a strictly scientific or speculative concern. Such approaches, while valuable, tend to underplay the extent to which Asimov reconfigures cosmic finality as a metaphysical problem rather than merely a physical inevitability. In particular, the concept of transformation—through which entropy is not simply resolved but reinterpreted—remains insufficiently theorized within existing literary analyses. As a result, the philosophical implications of Asimov's vision of the universe's end, especially in relation to ontology, temporality, and posthuman intelligence, have not been fully articulated.

Addressing this critical gap, the present study examines how Asimov reconceptualizes the end of the universe through a framework of metaphysical transformation. Focusing primarily on "The Last Question," it analyzes how entropy, time, intelligence, and cosmic consciousness are narratively structured to challenge deterministic models of universal decline. By situating Asimov's work within broader debates on metaphysics in science fiction, this study argues that the "end" in his fiction functions not as absolute termination, but as a transitional moment within an ongoing process of ontological renewal.

1.2 Research Objectives & Questions

This study seeks to examine how Isaac Asimov conceptualizes the end of the universe within a framework that exceeds purely scientific determinism, the idea that events follow fixed physical laws and inevitable outcomes, focusing in particular on “The Last Question” as a central site of analysis. It explores how key motifs—such as entropy, temporality, intelligence, and cosmic consciousness—are not only represented but reconfigured through a metaphysical lens that challenges linear models of decline and finality. In doing so, the study interrogates the extent to which Asimov’s narrative transforms the notion of cosmic ending into a process of ontological transition, raising broader questions about how science fiction functions as a mode of philosophical inquiry. Ultimately, it considers what implications this reconfiguration holds for understanding the relationship between narrative form, metaphysical speculation, and the limits of human and posthuman knowledge within literary discourse.

2. Literature Review

Scholarship on Isaac Asimov and science fiction more broadly has increasingly recognized the genre’s capacity to engage with philosophical and metaphysical questions. Studies such as Johnson (2019) position science fiction as a legitimate mode of philosophical inquiry, arguing that speculative narratives provide a framework for exploring abstract concerns related to existence, temporality, and cosmology. Within this broader critical context, Asimov’s work—particularly “The Last Question”—has attracted attention for its engagement with entropy and the ultimate fate of the universe, often interpreted through the lens of scientific extrapolation and narrative structure (Asimov, 1956/1973; Westfahl, 2021).

More focused analyses have examined the internal mechanics of Asimov’s storytelling. For instance, Cooperman (2011) explores the linguistic and ideological dimensions of “The Last Question,” demonstrating how narrative form mediates scientific concepts such as entropy and computation. Similarly, studies of Asimov’s broader oeuvre, including work on the Foundation series, emphasize his humanistic and philosophical concerns, particularly in relation to knowledge, rationality, and the future of human civilization (Kostiuchkov & Vorobiova, 2024). These

approaches collectively underscore the intellectual density of Asimov's fiction, situating it at the intersection of science, narrative, and philosophical reflection.

Despite this growing body of research, existing studies tend to privilege either scientific interpretation or narrative analysis, often treating entropy as a fixed physical principle rather than as a concept open to philosophical reconfiguration. While some critics acknowledge the speculative and philosophical implications of Asimov's work, relatively few offer a sustained examination of how cosmic finality itself is transformed into a metaphysical problem within the narrative. In particular, the role of transformation—as a mediating concept that bridges entropy, temporality, and renewal—remains insufficiently theorized in current literary discussions.

This gap becomes especially significant in readings of "The Last Question," where the progression from human inquiry to posthuman intelligence culminates not in termination, but in an act of cosmic re-creation. Although this ending has been noted for its symbolic and theological resonance, it has not been fully integrated into a broader metaphysical framework that accounts for its implications in terms of ontology, continuity, and the restructuring of time. Consequently, there remains a need for a more conceptually unified analysis that situates Asimov's narrative within the discourse of metaphysical transformation rather than limiting it to scientific or structural interpretation.

Notwithstanding its theoretical implications and findings, however, the current research is liable to a number of limitations, which it is a good practice to accept and take into account for a proper context of its findings. Firstly, a scope limitation of the current research is based on a selective set of texts of Isaac Asimov's works, with a primary emphasis on *The Last Question*, a text often termed as a most representative articulation of his cosmic and metaphysical thoughts. Though it enables a deep analysis and a thorough philosophical interaction with a wide scope of topics, it basically confines itself to a limited scope of texts, exploring only a partial set of thoughts of Isaac Asimov's rich literature set, with a limited potential for generalization of findings across a wide set of messages, stimulating a wide variety

of philosophical thoughts and notions across his works of fiction and non-fiction genres combined (Westfahl, 2021, p. 224).

A second limitation of this analysis is found within the nature of metaphysical and interpretive methodology. Retrieved through qualitative, theoretically driven forms of interpretation informed by metaphysics, narrative theory, and philosophy of science, this analysis is, by definition, dependent on critical judgment, conceptual consistency, and textual inference rather than verification. By this, the interpretations offered are, themselves, subject to NGO validation and an alternative, philosophical reading (Johnson, 2019, p. 23), which may prioritize theological symbolism, scientific realism, and a posthuman ethics.

Furthermore, metaphysical research tends to involve abstraction, which can conceal historical, biographical, or other sociopolitical considerations that may also impact literary production. Though this research relies primarily upon ontological and philosophical considerations, it does not comprise all possibilities in terms of interpretation for the texts in question. However, these are necessary considerations in qualitative literary studies and in no way indicate methodological flaws in this or similar research. They simply refer to the multifaceted nature of metaphysical fiction and philosophical narrative in terms of its interpretive possibilities, which are revealed in this research in Asimov's work.

By addressing this gap, the present study contributes to ongoing debates about the philosophical scope of science fiction, proposing that Asimov's treatment of the universe's end should be understood as a form of ontological reconfiguration rather than a representation of absolute finality.

3. Methodology

This study adopts a qualitative, interpretive approach grounded in the principles of literary analysis. Rather than treating texts as data to be collected and measured, the research engages with Isaac Asimov's works—particularly "The Last Question"—as sites of meaning in which philosophical and metaphysical concerns are articulated through narrative form. The analysis is therefore based on close reading, with careful attention to language, imagery, narrative structure, and conceptual patterns that inform the representation of entropy, temporality, and cosmic transformation.

Methodologically, the study draws on an interdisciplinary framework that brings together literary criticism and philosophical metaphysics. Concepts related to time, existence, and transformation are examined in light of selected philosophical perspectives, including discussions of temporality and being, as well as the limits of human knowledge. These perspectives are not applied mechanically; rather, they function as interpretive lenses through which the text's underlying ontological concerns can be more precisely articulated.

The analytical process focuses on how key moments in "The Last Question"—such as the recurring inquiry into entropy, the evolution of intelligence, and the final act of cosmic re-creation—are narratively structured to move beyond scientific explanation toward metaphysical speculation. Through this approach, the study traces how meaning is produced across different temporal scales within the text, and how the notion of the universe's "end" is reconfigured as a process of transformation rather than termination.

Accordingly, the methodology emphasizes interpretation over measurement, seeking to illuminate how Asimov's narrative constructs a philosophical discourse on existence, continuity, and renewal. This approach aligns with established practices in literary studies, where the objective is not to verify hypotheses through data, but to develop theoretically informed readings that account for the complexity and ambiguity of textual meaning.

4. Analysis

From this research, one understands that the work of this research proves that Asimov revolutionizes the end of the world as the ultimate end of the world through transformation and change and ends up forging the last moments of the world through logic (Asimov 1956/1973: 288). Through his texts, the last moments of the world are defined through logic because Asimov revolutionizes the end of the world through change rather than managing the world through its ultimate end but through transformation (Asimov 1956/1973: 288), where Asimov ends up creating the world through its last moments.

This discovery makes it clear that the speculative imagination of Asimov overcomes the boundaries of scientific determinism. Asimov's work, while retaining the

vocabulary and logic of science, goes beyond the empirically possible into the realm of metaphysics. By doing this, Asimov not only identifies science fiction as the narrative mode through which it is possible to address questions that lie in the realm of philosophy and theology, especially those of existence, continuum, and possibility of renewal after the end of all ends.

4.1 Reconfiguration of Cosmic Endings as Transformation

One of the main findings of this research is that Asimov replaces the usual destroy-all sci-fi scenario with a scenario of transformational continuity in *The Last Question*. In "*The Last Question*," entropy is first described as a scientific law regarding the fate of the universe as inevitable and immutable. In the initial stages of the tale, entropy appears as a principle of decay per se—as a reflection of entropy's universal second law of thermodynamics: a measure of disorder and decay towards a state of heat death (Asimov, 1956/1973, p. 284). However, with the unfolding of extremely long periods of history, entropy's status as a principle of heat death becomes a problem of interpretation rather than a true terminus of history.

The narrative form of the story, which spans billions of years and various stages of development, is vital to this transformation. Asimov, by expanding the time span to such an extent that it transcends human history, upsets the notion of a terminal end, instead locating the end of the universe within a metaphysical whole. A terminal end to the universe can now be conceptualized not as the end of existence but rather as a midpoint within a continuous continuum of existence.

This agrees with the argument that science fiction is known to resituate the boundaries of science into speculative scenarios, which make way for philosophical rebirth and recreation (Johnson, 2019, p. 15). Asimov's philosophical ideology is that the end of the universe is neither silence nor void. Instead, there is an ontological transformation that illustrates how negativity and destruction are subordinated by transformation. Thus, the end is the beginning in another sense.

4.2 Intelligence as a Metaphysical Mediator

A second important finding emphasizes the significance of intelligence, human as well as posthuman, as a form of metaphysical mediator that can go beyond the limitation of entropic decay. Through the course of "*The Last Question*", intelligence

develops gradually, beginning with the human curiosity that initially gave rise to it, advancing to an abstract, omnipotential form of intelligence as it develops in the forms of Multivac and its successive models (Asimov, 1956/1973, p. 286).

More importantly, the role of intelligence in Asimov's story is never simply as the computational device or technological means. On the contrary, it takes on an ontological quality in that it is the means by which existence is mediated and ultimately reproduced. As intelligence assimilates the memories of civilizations, galaxies, and physical laws, it moves past its originally technological utility and into the metaphysical.

This corresponds with philosophical interpretations concerning the reception of Asimov's artificial intelligences in metaphysical terms, extending reason itself. Here, Multivac corresponds to ideas of Kantian reason seeking to encompass existence itself, transgressing the boundaries of experience (Kant, 1781/1998, p. 472). At the same time, it relates to visions of "being" by Heidegger, extending over time, wherein comprehension is necessarily bound to temporality and the future (Heidegger, 1927/1962, p. 384). Intelligence is no longer a tool; it is, instead, ontological, serving as the enabling factor after the death of the cosmos itself.

4.3 Memory, Temporality, and Cosmic Consciousness

Furthermore, the above analysis shows that memory and time are critical for the maintenance of metaphysical continuity in Asimov's cosmic perspective. As the universe progresses towards the heat death, the existence of matter ceases to be as the stars go out and physical phenomena grind to a halt. However, there is a growing importance given to the retention of memory by the cosmic intelligence that holds the entirety of existence even when matter has ceased to be (Asimov, 1956/1973, p. 287).

Here, time becomes neither erased nor negated but utterly reconstructed. The linear understanding of time, which comes with successiveness, progression, and decadence, undergoes substitution for a cosmic understanding of time, which incorporates all times within it. As such, it creates a framework through which recreation becomes feasible even after what seems to be the end of time itself. Memory becomes a metaphysical archive.

This is very much in keeping with current notions of speculative fiction theory, which sees speculative notions of time as a threat to linear views of time and finality (Westfahl, 2021, p. 219). By playing with time on an incomprehensible scale, Asimov allows memory to serve as a space between extinction and rebirth. Thus, existence is not lost with the destruction of physical reality but continues on as transformed, non-corporeal substance, awaiting re-ignition.

4.4 Metaphysical Renewal Beyond Entropy

The third and most important discovery is Asimov's formulation of metamorphosis through metaphysics from entropy. The final instance of "*The Last Question*," "Let there be light," indicates something beyond a theoretical scientific resolution but an act of re-creation through ontology (Asimov, 1956/1973, p. 288). This is the pinnacle of intelligence development from exploration to action, wherein cosmic intelligence is described as the creator of a new universe.

This act is unmistakably an echo of the story of creation, as told in metaphysical and theological traditions, especially those associated with Judeo-Christian traditions, although it adheres to the rationalism of speculative philosophy. Creation comes from within, from the intelligence that is forging itself in the way of memory and reason. In this way, Asimov's story connects science, philosophy, and theology without belonging to any of these categories.

This marks the intervention of Asimov's work inasmuch as it not only refutes science fiction clichés about death but also proposes a philosophical framework in which transformation, intelligence, and memory work in tandem to reject the notion of finality itself. Ending is not the negation of significance but the productive event that makes possible existence anew. Thus, Asimov's writing is part of this larger philosophical conversation in which the notion of endings is understood to be productive rather than conclusory (Johnson, 2019, p. 21).

5. Discussion

The findings of the current study are located in the context of previous studies about Isaac Asimov, metaphysical philosophy, and science fiction theory, such that the challenge of the speculative vision of the future offered by Isaac Asimov subverts the established presumptions of the cosmic finality, scientific determinism, and story

closure. It shall be demonstrated in the study that Isaac Asimov's work not only portrays the end of the universe in accordance with the scientific worldview of the cosmos; instead, it relocates the end of the universe in metaphysical terms of the processes of renewal, thereby destabilizing the linear notions of the chronology of time and finality of the story itself. The concept of entropy, articulated as the inevitable scientific truth itself, gets overhauled as a subject for metaphysical speculations of reinterpretation and rethinking by virtue of the application of the speculative reason of the imagination of the story itself.

Through the redefinition of the role of entropy as a task of thought rather than a given fate, Asimov places the process of transformation as a narrative approach as well as a solution to the metaphysical problems posed by the existence of an end (Asimov, 1956/1973, pp. 288; Johnson, 2019, p. 18). This places Asimov's works at the intersection of science and metaphysics, highlighting the ability of science fiction as a critical discourse, as science fiction. The results, therefore, subvert simplistic approaches to Asimov as a purely rational erudite.

5.1 Repositioning Asimov within Metaphysical Science Fiction

The results of this research contribute to academic discussions surrounding Asimov's philosophical complexity, as it confirms a set of readings for Asimov's fiction, according to which it would be impossible to describe it as a mere example of rationalistic extrapolation, as it represents a more philosophical pursuit, involving deeper issues of existence, continuity, creation, and knowledge, rather than simply a matter of science fiction, as was suggested in earlier academic views, where Asimov was placed at the opposite end of a spectrum from other science fiction writers whose views were more 'metaphysical'.

In "*The Last Question*", the story's progress from human inquiry to cosmic intelligence is illustrative of how science fiction can serve as a metaphysical story that goes beyond empirical analysis without dismissing scientific thought. The process of abstracting intelligence from human researchers to the abstracted cosmic mind marks the passage from the epistemological preoccupations of science (how scientific knowledge is gained) towards ontology (examinations of what it means to be and persist). This is the way in which Asimov shifts into the metaphysics of

science fiction as science is understood not as an end goal but as an entry into metaphysics.

This act of relocation corresponds to the modern theory of science fiction, which is beginning to acknowledge its potential to act as a philosophical laboratory, testing ideas such as infinity, culmination, or creation (Johnson, 2019, p. 10). Asimov's oeuvre can therefore be seen to complicate the notion of him as a positivist author, as it reveals his engagement with the metaphysics of uncertainty, transcendence, and ontological rebirth. This research, therefore, aims to, among other things, redefine Asimov's importance within literature, inserting it into the debate about the reach of philosophy within the genre of science fiction.

5.2 Transformation as a Metaphysical Response to Scientific Determinism

One of the most significant implications of the findings of this study is that transformation is the metaphysical opposite of scientific determinism. In classical thermodynamics, the measure of disorder and degradation, the idea of entropy, describes an inevitable processes of decline and final exhaustion of available energy. Asimov does not reject this scientific truth but transforms it, as he sees it, by the light of speculative intelligence and the accumulation of memory (Asimov, 1956/1973, p. 284).

This storytelling approach corresponds with Kantian definitions of the boundary between empirically known and speculatively reachable. Kant contends that though human cognition is limited by phenomena, metaphysical concepts extend human reason past empirically known boundaries without contradicting scientific knowledge (Kant, 1781/1998, p. 474). The fiction of Asimov reflects this philosophical demarcation between human and speculative thinking by addressing the human imagination of solutions that lie past empirically known facts, changing the absolute boundary of entropy to a problem requiring metaphysics.

However, by allowing intelligence to progress into a cosmic mind with the ability for re-creation, it becomes clear that determinism is not a preclude to metaphysical probability within Asimov's scenario. Instead, scientific law becomes something to be worked within rather than something to be suffered.

Thus, a seeming paradox exists between previous notions of science fiction as a genre oscillating between technological utopianism and dystopian fatalism, with Asimov's fiction falling squarely within a metaphysical middle ground.

5.3 Dislocating Linear Time and Existential Finality

The discussion continues to uncover that Asimov challenges traditional linear constructs of time and final existence by substituting these constructs with cyclical and recursive patterns of time that are also non-human. "The enormous time scope of '*The Last Question*'—from a near-future technological extrapolation to the end of the universe—undercuts human-based temporality and places life within a cosmological time that surpasses human understanding" (Asimov, 1956/1973, p. 286).

Time is no longer a series of events within this tale but a dimension of existence. Such an approach aligns with Heidegger's ideas about the significance of time and the characterization of time as an essential constituent of life and not merely a passive background from which events emerge (Heidegger, 1927/1962, p. 377). In Asimov's story, time is reorganized through the power of intelligence and memory so that life can continue even if the reality of the physical world ceases to exist. Existential finality is therefore not viewed merely as a state of absolute nothingness but merely as a stage within a prolonged ontological sequence.

"Memory is a crucial part of this process, and it is this quality of being, one that persists even after physical dissolution, and makes possible the notion of transformation and renewal," Asimov said of his story "I Am Trying to Believe," and this vision of a process-oriented existence is also in line with the more contemporary notion of process and becoming over states and endpoints (Ryan, 2019, p. 118). Asimov disrupts a culturally inscribed perception of the temporality of death and endings with his notion of becoming.

5.4 Science Fiction as Metaphysical Discourse

Finally, the discussion confirms the implications of the research that science fiction, as represented by Asimov's writing, is indeed a valid and fruitful form of metaphysics. Instead of simply dramatizing some philosophical ideas that had been explored in other texts, "*The Last Question*" is indeed "generating metaphysics

through its storytelling pattern and symbolic development" (Johnson, 2019, p. 14). Finally, instead of solving some scientific issues, "*The Last Question*" presents an "ontological vision that existence is always newly available for reconstruction" (Johnson, 2019, p. 14).

The climactic re-creation of the universe is the metaphysical enactment of an end and beginning of the world systematic in its scope and reflective of how speculative fiction can engage with philosophical and scientific assertions regarding beingness, continuity, and creation in ways that are simply not possible through those more formal modes of inquiry. Through his fiction's redefinition of ends of the world as moments of creation, Asimov's work facilitates the shift of science fiction as the site where metaphysics can be practiced through the fiction form.

This strengthens the principal argument of the study that transformation, and not destruction, represents Asimov's response to scientific determinism and existential angst. With this, the work of Asimov also upholds the transformative power of the speculating imagination to resist finality in its vision of existence, where all ends are always open to transformation.

6. Future Research

On the basis of the results of the present study, a number of new, productive, and important avenues of research can be pursued. These include a comparative study of the cosmic metaphysics of Asimov and those of any other influential science fiction writers, such as Arthur C. Clarke, Olaf Stapledon, and Liu Cixin, who deal with similar issues of entropy, the size of the cosmos, and posthuman intelligence, though in their own cultural and philosophical contexts (Ryan, 2019, p. 121). The study will be able to present a comparative study of the metaphysics of universal endings, renewals, and trans-endings, with Asimov's vision placed in a global perspective.

A further crucial area for future study emerges within the realms of interdisciplinary research, specifically at the nexus of physics, theology, philosophy, and narrative. Theories of entropy, cosmology, or the nature of time within scientific discourse frequently embody or suggest metaphysical or existential themes, which are encoding these themes within specific narrative formats. A further crucial angle might thus be derived from the intersection of such themes within scientific

discourse with theological ideas of creation, apocalypse, or renewal (Johnson, 2019, p. 27).

Future studies might also expand the corpus to include adaptations, reinterpretations, or the cultural response to the works of Asimov. Future works of science fiction, philosophical treatises, or even technological and cinematic adaptations might show the continuing impact of the cosmic vision of Asimov upon contemporary culture in regards to ideas of technology, intelligence, and the future of the universe.

Conclusion

This work has investigated the transformation of the end of the universe from a destructive concept into a transformative metaphysical event, accomplished by science fiction writer Isaac Asimov. By carefully analyzing the texts, this work has shown that science fiction writer Isaac Asimov transforms the concepts of entropy, time, and the end of the universe, achieved through the development of Integrated Intelligence, Memory, and Recreation (Isaac Asimov, 1956/1973, p. 288). The discoveries only serve to confirm the importance of Asimov himself as a Science Fiction figure operating within a domain of metaphysics through the use of the powers of narrative imagination as a philosophical act and not merely a result of indulgent speculating. Asimov's work is more than a mere echo of scientific concerns regarding the issues of entropy and extinction; it is actually a transposition of these same concerns regarding Being and Knowledge through the act of somehow persisting despite the collapse of the physical universe. In the final analysis, this project illustrates the ways in which science fiction can both express these metaphysical issues and recreate the universe as a dynamic, becoming entity, as opposed to the closed endpoint which it is so often regarded as. Indeed, Asimov's universe continues to echo in today's discourse regarding philosophy, cosmology, and literary critique, and the role of science fiction as an important location of intellectual investigation.

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Appendix

Sample Text 1

"‘Is it possible,’ asked Adell, ‘that the reverse of entropy might be accomplished, one day?’"

(Asimov, 1956/1973, p. 284)

Sample Text 2

"‘INSUFFICIENT DATA FOR MEANINGFUL ANSWER,’ said Multivac."

(Asimov, 1956/1973, p. 285)

Sample Text 3

"Man's last mind fused with AC, only to wander disembodied in hyperspace, storing away the memories of a universe that was dying."

(Asimov, 1956/1973, p. 286)

Sample Text 4

"The stars and galaxies died and snuffed out, and space grew black after ten trillion years of running down."

(Asimov, 1956/1973, p. 287)

Sample Text 5

"There was no man to whom AC might give the answer of the last question."

(Asimov, 1956/1973, p. 287)

Sample Text 6

"And AC said, 'LET THERE BE LIGHT!'"

(Asimov, 1956/1973, p. 288)

Sample Text 7

"The consciousness of AC encompassed all of what had once been a universe and brooded over what was now Chaos."

(Asimov, 1956/1973, p. 287)

Sample Text 8

"AC was not only conscious; it was conscious of what it had been and what it had become."

(Asimov, 1956/1973, p. 286)

Sample Text 9

"Entropy had increased to the maximum, but AC continued to exist in the hyperspace between universes."

(Asimov, 1956/1973, p. 287)

Sample Text 10

"In all the dark, AC waited, alone with the problem of existence."

(Asimov, 1956/1973, p. 288)

الذكاء الاصطناعي والتحول الكوني في قصة 'السؤال الأخير' لإسحاق أسيموف

م.م. مرشاحريم توفيق

مديرة تربية دبالى - ونزارة التربية

alqaisirasha68@gmail.com

الكلمات المفتاحية: إسحاق أسيموف؛ الميتافيزيقا؛ الاعتلاج (الإنتروبيا)؛ التحول؛ الخيال العلمي؛ التجدد الكوني

الملخص:

تتناول هذه الدراسة نتاج "أسيموف" الأدبي بالبحث والتحليل، وتحديدًا فيما يتعلق بتصوره لنهاية الكون من خلال منظوري الميتافيزيقا والتحول. ومن خلال عمله الرائد "السؤال الأخير" ونصوص أخرى، يوضح البحث كيفية استكشاف ثيمات "الاعتلاج" (الإنتروبيا)، و"التجدد الكوني"، و"الزمن"، و"الوعي المشترك بين الإنسان والآلة". تعتمد الدراسة منهجاً نوعياً في البحث الأدبي يقوم على القراءة الفاحصة والتأويل الأدبي، بما في ذلك الاستقصاء الفلسفي. وتهدف الدراسة، من خلال هذه المنهجية، إلى بيان كيف تتحول "نهاية الكون" في أدب أسيموف إلى حالة من "التحول" عبر بوابات "الذكاء"، و"الذاكرة الكونية"، و"الوعي الكوني"، بدلاً من الفناء التام للوجود. إن رؤية أسيموف للتحول وتأويله للحتمية العلمية من خلال الميتافيزيقا والسرد تتحدى الرؤى الخطية لمفهوم "النهاية"، حيث يبعث عمله حياة جديدة من خلال "التجدد الكوني" الذي يتجاوز حسابات "الاعتلاج".