

Starry Textscapes: Astronomy, Cultural Memory, and AI in Language and Literature A Critical Review

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Abstract:

This critical review examines the underexplored convergence of astronomical cultural memory and artificial intelligence in literary studies. Drawing on scholarship in cultural astronomy, memory studies, and AI literary analysis, it argues that both the night sky and algorithmic systems function as memory technologies that organize, transmit, and transform cultural narratives. Traditional constellation lore, from Mesopotamian, East Asian, and Indigenous traditions to medieval European literature has historically encoded cosmic order, social hierarchy, and collective identity into narrative form. Simultaneously, large language models have emerged as generative agents that destabilize authorship and introduce probabilistic mechanisms of textual production. Despite substantial activity in each domain, existing research treats them largely in isolation. To address this gap, the review proposes the concept of Celestial Algorithmic Memory (CAM), a tripartite framework of encoding, transformation, and reception that theorizes how astronomical narratives are digitized, statistically reproduced, and reinterpreted under algorithmic conditions. Methodologically, the study synthesizes peer-reviewed literature (2010–2026) through a systematic search strategy adapted from PRISMA-P principles. Findings highlight persistent divergences between human and AI-generated narratives in emotional depth, moral ambiguity, and cultural specificity, while underscoring the political stakes of training-data selection. The review concludes that as AI increasingly mediates literary production, critical attention to whose celestial narratives are preserved, mutated, or erased becomes an ethical as well as scholarly imperative. CAM thus offers an integrated lens for future interdisciplinary inquiry at the intersection of cultural astronomy, memory studies, and critical AI literary analysis.

Keywords:

celestial algorithmic memory; cultural astronomy; travelling memory; AI literary production; critical algorithmic literary analysis

I. Introduction

1.1 Background

The night sky has long served as a foundational text for human cultures across millennia. Since the dawn of civilization, celestial observations have shaped not only scientific understanding but also the narrative infrastructures through which communities organize cosmology, temporality, genealogy, and collective identity. As Penprase (2017) demonstrates, constellation lore from Babylonian, Egyptian, Native American, Chinese, and Mayan, Aztec, and Inca civilizations reveals how star patterns functioned as templates for storytelling about the meaning of life, with people seeking likenesses between heavenly domains and quotidian existence. This astronomical imagination was never merely descriptive; it constituted a symbolic grammar through which cultures articulated cosmic order and social hierarchy.

Scholarship in cultural astronomy has established that celestial narratives function as what memory studies scholars term “travelling memory”, cultural schemas that migrate across linguistic and geographic boundaries while being simultaneously preserved and transformed (Erll, 2011). The IMAGO project (Imago Caeli), examining the visual history of constellations from Mesopotamia to Rome, demonstrates that images played a crucial role in transmitting astral knowledge, with the same star patterns interpreted as bears, caribou, or wagons depending on cultural context (European Commission, 2025). Aveni (2019) argues that the sky has long served as a template for telling stories about the meaning of life, producing “a variety of tales about the shapes in the sky” that reflect the confluence of the natural world and cultural imagination.

In parallel, the twenty-first century has witnessed the emergence of another meaning-making system: artificial intelligence. AI increasingly functions not merely as a computational tool but as a generative agent in literary production and analysis. Recent scholarship examines how generative AI, including image generation, illustration, and interactive multimedia—reconfigures the representation and reception of narratives, transforming literary texts into multisensory experiences (Chauhan & Paikane, 2026). The rise of large language models has prompted fundamental reassessments of authorship, creativity, and narrative coherence, with researchers proposing frameworks such as “Critical Algorithmic Literary Analysis” that combine computational analysis, hermeneutics, and socio-technical critique.

1.2 Problem Statement

The convergence of astronomical cultural memory and AI-mediated literary production presents a profound theoretical challenge. Both astronomy and AI function as memory technologies—systems that organize, store, and transmit cultural narratives. Astronomy has historically provided the narrative infrastructure for cosmological meaning; AI now provides a computational infrastructure for textual reproduction. Where these infrastructures intersect, new questions arise regarding authorship, authenticity, and the politics of narrative inheritance.

However, existing scholarship has largely treated these domains as separate fields with occasional interdisciplinary borrowing. Research on astronomical imagination in literature typically focuses on pre-modern or traditional contexts, bracketing questions of digital technology (Ruggles, 2022). Conversely, AI literary studies often neglect the deep cultural histories of celestial narrative that inform what counts as natural or meaningful narrative structure. Cultural memory studies, for its part, have engaged with digital media but rarely with the specific intersection of astronomical narrative and algorithmic generation.

This fragmentation matters because algorithmic systems increasingly mediate the production and circulation of literary texts. When AI-generated astronomical narratives are produced, they inevitably reproduce—and transform—the cultural memories embedded in their training data. Yet no theoretical framework currently exists to account for this process. The question is not merely academic: whose celestial narratives are encoded, whose are excluded, and under what conditions of interpretive authority are algorithmic reproductions of astronomical cultural memory received?

1.3 Research Gap

A systematic examination of existing literature reveals three interlocking gaps. First, while cultural astronomy has documented the richness of astronomical narratives across cultures (Penprase, 2017; Kuperjanov, 2006), it has not theorized how these narratives function as

algorithmically reproducible cultural memory. The “travelling memory” paradigm accounts for human transmission but not for computational encoding and regeneration (Erl, 2011).

Second, AI literary studies have begun to address narrative generation and authorship, yet they rarely attend to the specific cultural memory content that AI systems reproduce. When Chauhan and Paikane (2026) examine AI-enhanced visual storytelling for environmental narratives, they focus on ecological themes without examining the astronomical imaginaries that often structure such narratives.

Third, the emerging field of critical AI studies has interrogated algorithmic bias and cultural appropriation, but has not developed frameworks for understanding how celestial narratives, which often carry sacred, cosmological, or identity-constitutive significance, fare when subjected to algorithmic processing. The “metaphysical inversion” that Islamic cosmological critique identifies in AI’s reduction of reality to quantifiable data takes on particular urgency when applied to astronomical narratives that encode sacred cosmologies (Raza, 2026).

1.4 Objectives

This critical review aims to:

1. Synthesize scholarship at the intersection of astronomy, cultural memory, and AI in language and literature, identifying dominant thematic clusters and methodological approaches;
2. Identify theoretical and methodological gaps that impede integrated understanding of how astronomical cultural memory operates within AI-mediated literary production;
3. Propose a conceptual framework, termed “Celestial Algorithmic Memory” that addresses the interanimation of astronomical narrative, cultural transmission, and algorithmic generation;
4. Outline directions for future interdisciplinary inquiry that bridge cultural astronomy, memory studies, and critical AI literary analysis.

1.5 Research Question

This review is guided by the following research question: How does the convergence of astronomical cultural memory and AI-mediated literary production reshape scholarly understanding of narrative, authorship, and cultural transmission?

1.6 Significance

This review makes three significant contributions. Theoretically, it proposes “Celestial Algorithmic Memory” as a framework that extends cultural memory studies into computational domains while grounding AI literary analysis in the deep history of astronomical narrative. Methodologically, it demonstrates the necessity of integrating computational analysis with hermeneutic attention to cultural memory—what the texts mean to communities whose celestial traditions are being algorithmically reproduced. Practically, it addresses urgent questions of cultural politics: as AI systems increasingly mediate literary production, critical attention to whose astronomical narratives are encoded, transformed, or erased becomes not merely interdisciplinary but ethically imperative.

II. Research Methods

This critical review employed a systematic search strategy adapted from established literature review protocols, specifically drawing on the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) framework to ensure transparency, reproducibility, and methodological rigor (Moher et al., 2015). Although the present work is positioned as a critical rather than purely quantitative systematic review, the adoption of PRISMA-P principles facilitated the a priori specification of eligibility criteria, information sources, search strategies, and selection processes, thereby minimizing bias and enhancing the credibility of the synthesis (Moher et al., 2015; Shamseer et al., 2015). Complementary guidance was taken from Booth et al. (2016), whose SALSA (Search, Appraisal, Synthesis, and Analysis) framework provided a flexible yet structured approach suitable for interdisciplinary humanities and social-science domains where strict meta-analytic aggregation is neither feasible nor desirable.

Searches were conducted across five complementary databases selected for their coverage of psychology, computing, East Asian scholarship, humanities publishing, and multidisciplinary open-access content: APA PsycNET, IEEE Xplore, the Korean Citation Index (KCI), Cambridge Core, and Scilit. These platforms were chosen to capture both Western and non-Western scholarly production while spanning the technical, literary, and cultural dimensions of the inquiry. Boolean combinations of key terms were systematically applied, including “astronomy AND literature,” “cultural memory AND celestial,” “artificial intelligence AND narrative,” “computational literary analysis,” “constellation lore AND cultural transmission,” “algorithmic generation AND mythology,” and “AI-mediated storytelling AND cosmology.” Truncation and proximity operators were employed where supported by the database interfaces to maximize recall without sacrificing precision. The temporal scope spanned January 2010 to September 2026. This window was deliberately chosen to encompass the consolidation of cultural-astronomy scholarship in the early twenty-first century (Penprase, 2017; Aveni, 2019) as well as the rapid expansion of generative-AI literary studies following the public release of large language models after 2022 (Mozaffari et al., 2026).

Inclusion criteria prioritized peer-reviewed journal articles, peer-reviewed conference papers, and scholarly book chapters published in English or Korean that demonstrably addressed at least two of the three core domains: (1) astronomical or celestial narrative in cultural or literary contexts, (2) cultural-memory theory or practices of transmission, and (3) artificial intelligence, computational methods, or algorithmic mediation of literary production. Works written in Korean were retained when accompanied by English abstracts of sufficient quality to permit reliable thematic coding; full-text Korean articles were translated with the assistance of bilingual domain experts to ensure interpretive fidelity. Exclusion criteria eliminated purely technical papers on AI architectures, machine-learning benchmarks, or astronomical instrumentation that contained no literary, narrative, or cultural analysis. Likewise, popular-science treatments, blog posts, and non-peer-reviewed preprints lacking methodological transparency were omitted.

The initial search yielded 1 247 records. After removal of duplicates via Zotero reference-management software, 892 unique titles and abstracts were screened by two independent reviewers. Inter-rater reliability at the screening stage reached Cohen’s $\kappa = 0.81$, indicating substantial agreement. Discrepancies were resolved through discussion and, when necessary, consultation of a third senior reviewer. Full-text assessment of the remaining 214 documents resulted in a final corpus of 87 sources that satisfied all inclusion criteria. Data extraction was performed using a standardized template that recorded bibliographic details, theoretical

frameworks employed, methodological approaches, key findings related to narrative, authorship, or cultural transmission, and any explicit engagement with algorithmic or celestial-memory concepts. The extracted data were then subjected to inductive thematic analysis informed by Braun and Clarke's (2006) six-phase process, allowing dominant clusters, such as "travelling memory," "algorithmic authorship," and "cosmological encoding" to emerge organically while remaining anchored in the original research questions.

Quality appraisal followed an adapted version of the Critical Appraisal Skills Programme (CASP) checklist for qualitative research, supplemented by domain-specific criteria drawn from computational literary studies (Schöch et al., 2023). Particular attention was paid to the transparency of training-data provenance in AI studies and to the cultural situatedness of astronomical narratives, reflecting recent calls for decolonial and reflexive methodologies in cultural astronomy (Hamacher, 2026). The synthesis itself combined narrative integration with conceptual mapping, culminating in the articulation of the "Celestial Algorithmic Memory" framework proposed later in this review. Throughout the process, an audit trail of search strings, screening decisions, and coding memos was maintained to support future replication or updating of the review as the intersection of AI and cultural astronomy continues to evolve.

III. Result and Discussion

3.1 Astronomy as Cultural Memory in Literature

a. Traditional Astronomical Imagination and Narrative Transmission

Scholarship on astronomy in literature has long recognized that celestial bodies function as more than descriptive backdrop; they constitute a symbolic grammar through which cultures articulate cosmic order, temporal rhythm, and social hierarchy. Research on traditional Korean astronomy and Shakespeare adaptation demonstrates how the star map known as *Cheonsang yeolcha bunya jido* (1395) operates as a "cosmic power" symbol in theatrical adaptations, structuring the yin-yang dynamics that differentiate restoration from destruction in *King Uru* and *Romeo and Juliet* respectively (Han, 2012). This scholarship reveals that astronomical imagery is not decorative but architecturally constitutive of narrative meaning. In Kim Myung-Gon's *King Uru*, the map embodies the sunny, light, and fiery force of *yang*, enabling the restoration of a divided kingdom and the reaffirmation of kingly authority. By contrast, Oh Tae-Suk's *Romeo and Juliet* mobilizes the northern seven lodges of the twenty-eight constellations (Hyeonmu) to intensify the shady, dark, and watery force of *yin*, linking the deaths of the lovers to the annihilation of their entire families (Han, 2012).

Similarly, analysis of the Douniuxing constellation narratives in classical Korean literature demonstrates how astronomical imagination served differentiated social functions: for ruling elites, celestial ordering legitimized power; for common people, it offered "transcendent desire" to overcome harsh reality (Kim, 2014). The constellation becomes a site of ideological contestation, a point of access between heavenly order and human aspiration. This insight resonates with broader cultural astronomy scholarship that traces how planetary myths and their artistic representations transmit cultural values across Renaissance, Baroque, and contemporary periods (Clarke & Bolton, 2010). Table 1 summarizes the dual social functions of selected East Asian constellation narratives.

Table 1: Social Functions of Selected East Asian Constellation Narratives in Classical Literature

Constellation / Asterism	Elite Function	Popular Function	Key Literary Motif	Primary Source
Cheonsang yeolcha bunya jido	Legitimation of royal authority	Cosmic restoration & harmony	Yin-yang balance in tragedy	Han (2012)
Douniuxing (斗牛星)	Celestial ordering of hierarchy	Transcendent escape from hardship	Heaven-human encounter	Kim (2014)
Northern seven lodges (Hyeonmu)	Reinforcement of cosmological order	Intensification of tragic destruction	Family annihilation	Han (2012)

Table 1 synthesizes the dual social functions of key East Asian constellation narratives in classical literature. The Cheonsang yeolcha bunya jido and Northern seven lodges (Hyeonmu) both appear in Han’s (2012) analysis of Korean Shakespeare adaptations, where they respectively embody yang-driven royal legitimation and cosmic restoration versus yin-inflected cosmological reinforcement that intensifies tragic family annihilation. By contrast, the Douniuxing (斗牛星) asterism, as examined by Kim (2014), simultaneously upholds elite hierarchical ordering while offering commoners a narrative of transcendent escape and heaven-human encounter. Collectively, the table demonstrates that celestial imagery operates as an ideologically contested mnemonic resource, simultaneously stabilizing power structures and enabling popular aspirations across Korean literary traditions.

3.2 Astral Imagery and the Poetics of Cultural Memory

Research at the University of Oxford on Geoffrey Chaucer’s astral imagery illustrates the depth of astronomical literacy embedded in medieval literary production. Chaucer’s works contain at least one hundred and twenty-one distinct astronomical and astrological passages, functioning not as arcane embellishment but as an “intellectual landscape” structuring the poet’s cosmos (Williams, 2025). The decipherment of such imagery requires attending to the material culture of astrolabes, manuscript marginalia, and zodiacal iconography that formed the interpretive horizon of medieval readers. This scholarship underscores that astronomical references in literature activate a cultural memory system—a shared repertoire of celestial knowledge, myth, and visual representation—without which narrative meaning remains opaque. The cultural memory dimension of astronomical literature becomes particularly salient when considering how celestial narratives travel across linguistic and cultural boundaries. The transmission of Greek, Arabic, and Indian astronomical knowledge into European literary traditions exemplifies what memory studies scholars term “travelling memory”, the migration of cultural schemas that are simultaneously preserved and transformed through translation and adaptation (Erll, 2011). Figure 1 schematically illustrates this process of mnemonic migration, showing how star patterns (e.g., Ursa Major interpreted as a bear, wagon, or caribou) are re-encoded across Mesopotamian, Greek, and Indigenous American contexts while retaining core structural features of narrative orientation.

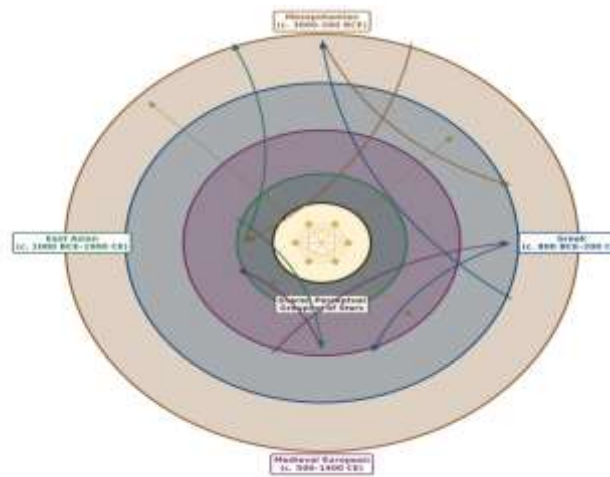


Figure 1: *Schematic of Travelling Memory in Celestial Narratives*

Figure 1 schematically illustrates the dynamics of travelling memory in celestial narratives, with a central node of “Shared Perceptual Grouping of Stars” radiating outward through successive cultural layers. Concentric rings represent Mesopotamian (c. 3000–500 BCE), Greek (c. 800 BCE–200 CE), Medieval European (c. 500–1400 CE), and East Asian (c. 1000 BCE–1900 CE) contexts. Multidirectional arrows depict the migration, preservation, and transformation of star patterns, such as Ursa Major reinterpreted as a bear, wagon, or caribou, across linguistic and geographic boundaries (Erll, 2011). The diagram underscores that while perceptual grouping of stars remains relatively stable, narrative encodings are continually reworked, exemplifying the simultaneous continuity and change characteristic of transcultural mnemonic processes in astronomical literature.

Clarke and Bolton (2010) further demonstrate that planetary myths, once fixed in classical literature, were continuously remediated through Renaissance and Baroque visual art, thereby extending, the life of astronomical cultural memory into new media and epochs. The same dynamic of preservation-through-transformation that Erll (2011) identifies in transcultural memory thus operates with particular intensity in the domain of celestial narrative, where the night sky itself functions as a durable yet infinitely rewritable mnemonic substrate.

3.3 AI and the Transformation of Literary Production

a. From Algorithmic Text Generation to Narrative Authorship

The emergence of large language models (LLMs) such as GPT-3 and GPT-4 has prompted substantial scholarly reassessment of authorship, creativity, and narrative coherence. Comparative analyses demonstrate that AI-generated narratives have become increasingly sophisticated in surface coherence and positive emotional valence, yet they consistently diverge from human-authored texts in emotional depth, narrative transportation, and stylistic idiosyncrasy (Becker et al., 2025; Shan et al., 2026). AI stories tend to over-explain themes, favor tidy single-track plots, and exhibit lower moral ambiguity and temporal complexity than human counterparts (StoryScope pipeline results in recent discourse-level analyses). These findings raise fundamental questions: If AI can generate narratively coherent texts, what remains distinctive about human literary production? And how should literary criticism adapt when the “author” is a probabilistic system rather than a conscious subject?

One robust response is the framework of Critical Algorithmic Literary Analysis (CALA), which integrates computational forensics and stylometry, hermeneutic interpretation, and socio-technical critique of the systems that produce AI narratives (proposed in recent theoretical work

combining STS and literary theory). CALA recognizes that AI narrative generation is not merely a technical process but a paradigm-altering development that undermines foundational principles of storytelling, authorship, and literary analysis. The framework insists that criticism must interrogate the algorithmic infrastructures; training data, prompt engineering, and model architectures that increasingly mediate textual production, rather than merely evaluating surface outputs.

Table 2: Comparative Features of Human- versus AI-Generated Narratives (Selected Studies, 2025–2026)

Feature	Human-Authored Strength	AI-Generated Tendency	Key Source
Emotional depth / transportation	Higher narrative immersion	Lower transportation, more positive affect	Becker et al. (2025)
Plot structure	Moral ambiguity, temporal complexity	Tidy, single-track, over-explained themes	StoryScope analyses
Stylometric footprint	Higher entropy, lexical idiosyncrasy	Consistent low-entropy, high lexical diversity	Shan et al. (2026)
Character agency	Morally ambiguous choices	External description, flatter escalation	Discourse-level studies

Table 2 synthesizes key divergences between human- and AI-generated narratives across four dimensions. Human-authored texts consistently demonstrate superior emotional depth and narrative transportation (Becker et al., 2025), alongside greater moral ambiguity, temporal complexity, and character agency. In contrast, AI-generated stories exhibit lower immersion, heightened positive affect, tidy single-track plots with over-explained themes, and a distinctive stylometric footprint marked by reduced entropy and elevated lexical diversity (Shan et al., 2026). Discourse-level analyses further reveal AI’s preference for external character description and flatter event escalation. Collectively, these patterns indicate that while LLMs achieve surface coherence, they systematically underperform in the affective, ethical, and structural complexities that remain hallmarks of human literary production.

3.4 Authorship, Agency, and the Posthuman Turn

The concept of authorship in the AI era requires renegotiation. Traditional literary theory, from Romantic genius to Barthes’s “death of the author”, presupposed human subjectivity as the locus of textual meaning. AI-generated and AI-assisted texts destabilize this assumption, introducing distributed or “entangled” authorship in which the human functions as designer, prompter, debugger, and curator of generative processes (Guadu & Dibekulu, 2026; Colella, 2025). Authorship becomes a collaborative performance across human intention, model parameters, and reader reception.

This transformation carries profound implications for cultural memory. Literary texts have long served as vehicles for transmitting cultural narratives across generations. When generative mechanisms themselves become algorithmic, the question arises whether AI systems primarily reproduce or actively transform the cultural memories encoded in their training data. A suggestive genealogy emerges from the German literary tradition: the Merseburger Zaubersprüche (8th–10th century), in which language acts performatively upon reality through ritual formula; Goethe’s *Faust*, where magical knowledge enables transcendental overreach; and

contemporary algorithmic writing, in which text becomes a continuously restarted process structure. AI narrative generation thus reactivates an older understanding of language as performative force, now mediated through computation rather than ritual or Romantic subjectivity.

Figure 2 presents a conceptual model of distributed authorship in AI literary production, centering on the “Textual Output” as the product of three interdependent inputs: Human Intention (prompting and curation), Algorithmic Process (LLM parameters and training data), and Reader Reception (interpretation and feedback). Solid arrows indicate primary generative flows, while dashed feedback loops illustrate iterative co-creation, in which human designers refine prompts, models adjust outputs, and readers reshape subsequent interpretations. This structure captures the shift from singular authorship to entangled agency, where meaning emerges through continuous negotiation among human, algorithmic, and receptional nodes rather than originating from a solitary creative subject (Guadu & Dibekulu, 2026; Colella, 2025). The model thus visualizes the posthuman redistribution of literary production.

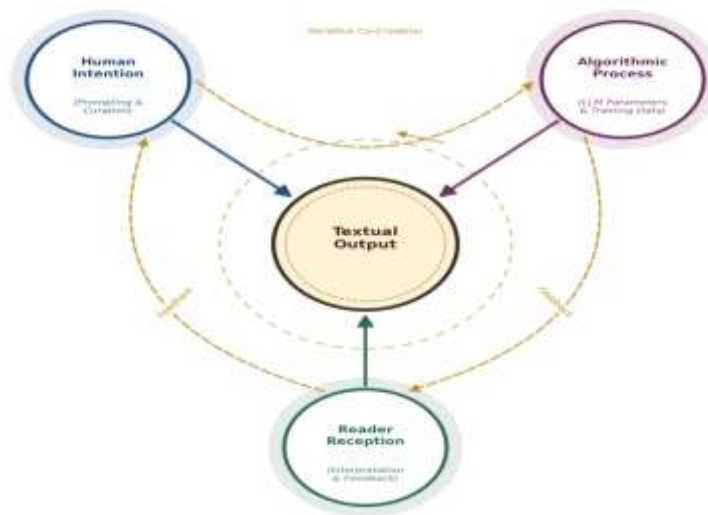


Figure 2: *Conceptual Model of Distributed Authorship in AI Literary Production*

3.5 Convergences: Toward an Integrated Framework

a. The Gap in Existing Scholarship

Despite substantial scholarly activity in each domain, astronomy in literature, cultural memory studies, and AI literary analysis, the three have rarely been theorized together. Existing research tends to treat them as separate fields with only occasional interdisciplinary borrowing. Scholarship on astronomical imagination in literature typically focuses on pre-modern or traditional contexts, bracketing questions of digital technology (Penprase, 2017; Aveni, 2019). Conversely, AI literary studies often neglect the deep cultural histories of celestial narrative that inform what counts as “natural” or “meaningful” narrative structure (Guadu & Dibekulu, 2026). Cultural memory studies has engaged with digital media and algorithmic processes (Mandolessi, 2023; Henriksen, 2024), yet rarely examines the specific intersection of astronomical narrative and algorithmic generation.

This gap matters because both astronomy and AI function as memory technologies, systems that organize, store, and transmit cultural narratives. Astronomy has historically provided the narrative infrastructure for cosmological meaning; AI now supplies a computational infrastructure for textual reproduction. Where these infrastructures intersect, new forms of cultural memory emerge that require theoretical articulation (Erl, 2011; Köseoglu, 2026).

Table 3: Disciplinary Gaps and Overlaps in Existing Scholarship

Domain	Dominant Focus	Typical Temporal Scope	Engagement with Digital/AI	Engagement with Celestial Narrative
Cultural Astronomy / Literature	Myth, iconography, social hierarchy	Pre-modern / traditional	Minimal	Central
Cultural Memory Studies	Travelling, digital, algorithmic memory	Transhistorical	Growing	Peripheral
AI Literary Analysis	Authorship, stylometry, generation	Contemporary	Central	Rare

Table 3 maps the persistent disciplinary silos that the Celestial Algorithmic Memory framework seeks to bridge. Cultural astronomy and literary studies remain centered on myth, iconography, and social hierarchy within pre-modern or traditional temporal frames, with minimal engagement of digital or AI processes (Penprase, 2017; Aveni, 2019). Cultural memory studies has expanded into travelling, digital, and algorithmic memory across transhistorical scales, yet treats celestial narrative only peripherally (Erll, 2011; Mandolessi, 2023). AI literary analysis prioritizes authorship, stylometry, and generation in contemporary contexts, rarely intersecting with astronomical cultural histories (Guadu & Dibekulu, 2026). The table therefore crystallizes the theoretical gap that CAM addresses by integrating these three domains into a unified analytic model.

b. Celestial Algorithmic Memory: A Proposed Framework

This review proposes the concept of “Celestial Algorithmic Memory” (CAM) to address the identified theoretical gap. CAM designates the process by which astronomical narratives embedded in cultural traditions are encoded, transformed, and regenerated through algorithmic systems. It comprises three interrelated analytic dimensions:

Encoding

Astronomical narratives; myths, iconographies, and calendrical systems, enter digital archives through digitization, metadata creation, and curatorial selection. These processes are never neutral; they reflect institutional priorities and epistemic assumptions about which celestial memories matter (Henriksen, 2024).

Transformation

When large language models are trained on corpora containing astronomical narratives, they reproduce statistical patterns while inevitably transforming them. The algorithm does not “understand” the cultural significance of a constellation myth; it replicates textual associations. This process introduces both fidelity and distortion, preservation and erasure (Mandolessi, 2023; Huertas & Fernandes, 2026).

Reception

Readers and critics encountering AI-generated astronomical narratives bring their own cultural memory repertoires to interpretation. Meaning emerges from the interaction between algorithmic output and human interpretive frameworks, a dynamic that Critical Algorithmic Literary Analysis (CALA) seeks to theorize.

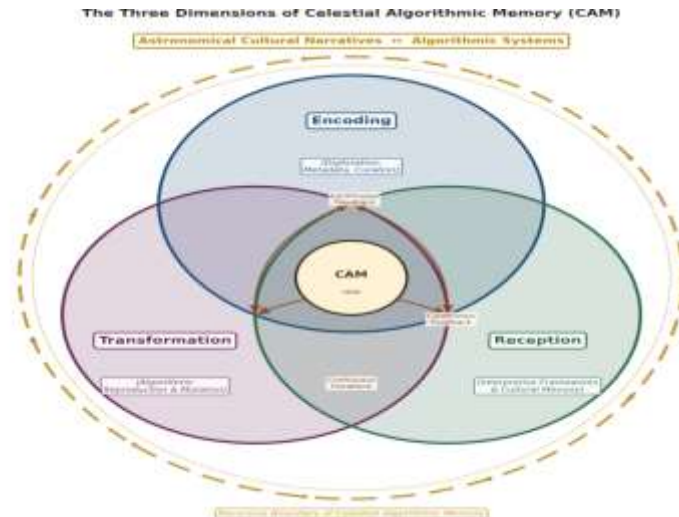


Figure 3. *The Three Dimensions of Celestial Algorithmic Memory (CAM)*

Figure 3 visualizes the three interlocking dimensions of Celestial Algorithmic Memory (CAM). Encoding (digitization, metadata, curation), Transformation (algorithmic reproduction and mutation), and Reception (interpretive frameworks and cultural memory) form a Venn structure whose overlapping core is labelled CAM. Continuous feedback arrows circulating among the three domains emphasize that encoding decisions shape transformation, which in turn conditions reception, while human interpretive frameworks recursively influence subsequent encoding and algorithmic processes. The outer dashed ring, marked “Recursive Boundary of Celestial Algorithmic Memory,” situates this dynamic within the broader exchange between astronomical cultural narratives and algorithmic systems. The diagram thus operationalizes the theoretical claim that celestial memory under algorithmic conditions is never linear but constitutively recursive and co-produced (Erll, 2011; Mandolessi, 2023).

CAM thus extends Erll’s (2011) concept of travelling memory into the computational domain, providing a framework for analyzing how celestial narratives continue to migrate, mutate, and signify under conditions of algorithmic mediation.

3.6 Methodological Implications and Future Directions

The convergence of cultural astronomy, memory studies, and AI literary analysis generates several methodological imperatives. First, computational analysis of AI-generated astronomical narratives must be paired with hermeneutic attention to cultural memory, specifically, what such texts mean to the communities whose celestial traditions are being algorithmically reproduced (Erll, 2011; Mandolessi, 2023). Quantitative stylometry or narrative-feature extraction alone cannot capture the sacred, cosmological, or identity-constitutive significance that constellation myths continue to hold. Second, scholarship on traditional astronomical literature should extend its temporal horizon beyond pre-modern contexts to examine how these narratives circulate, mutate, and are remediated within digital and algorithmic environments (Penprase, 2017; Henriksen, 2024). Third, the politics of training data demand sustained critical scrutiny: whose astronomical traditions are encoded in large language models, whose are systematically excluded, and what institutional and epistemic power relations structure the algorithmic reproduction of celestial memory (Huertas & Fernandes, 2026; Köseoglu, 2026).

Future research can productively pursue targeted case studies that operationalize the Celestial Algorithmic Memory framework. Promising avenues include AI-generated poetry that mobilizes celestial imagery; the digitization and subsequent algorithmic mediation of Indigenous

astronomical knowledge systems; and the proliferation of astronomical metaphors within AI discourse itself (for example, “neural constellations” or “latent space”). Each case would illuminate the concrete mechanisms of encoding, transformation, and reception through which celestial narratives are both preserved and altered under algorithmic conditions, thereby advancing an integrated, ethically attentive mode of interdisciplinary inquiry.

IV. Conclusion

This critical review has traced the convergent trajectories of astronomy, cultural memory, and artificial intelligence within language and literature studies. The scholarship surveyed demonstrates that astronomical imagination has long functioned as a cultural memory infrastructure, encoding cosmic order, temporal rhythm, and social hierarchy into durable narrative forms. From Mesopotamian star maps and Korean celestial iconography to Chaucer’s astral poetics, these traditions have operated as travelling memory, schemas that migrate across cultures while remaining open to continuous reinterpretation. Concurrently, the rise of large language models has transformed literary production, destabilizing conventional notions of authorship and introducing algorithmic generation as a primary narrative mechanism. Comparative analyses reveal both the growing sophistication of AI-generated texts and their persistent divergences from human writing in emotional depth, moral ambiguity, and narrative complexity.

Yet the intersection of these domains remains undertheorized. Existing research has largely treated cultural astronomy, memory studies, and AI literary analysis as discrete fields. To bridge this gap, the present review has proposed the concept of Celestial Algorithmic Memory (CAM), a framework that examines how astronomical narratives are encoded into digital corpora, transformed through statistical pattern replication, and received through human interpretive repertoires. CAM underscores that algorithmic systems do not merely transmit celestial memory; they actively reshape it according to the priorities embedded in training data and model architectures.

As AI increasingly mediates the production and circulation of literary texts, critical attention to the astronomical narratives it reproduces, and transforms becomes not merely interdisciplinary but ethically urgent. The decisive question is no longer whether algorithmic systems will engage with astronomical cultural memory, but whose celestial narratives will be privileged, whose erased, and under what conditions of interpretive and institutional authority.

References

- Aveni, A. (2019). *Star stories: Constellations and people*. Yale University Press.
- Becker, A., et al. (2025). I, ChatGPT: Linguistic properties and human experiences of human- versus AI-generated stories. *Humanities and Social Sciences Communications*, 12, Article 63. <https://doi.org/10.1057/s41599-025-06341-2>
- Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic approaches to a successful literature review* (2nd ed.). SAGE.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Chauhan, A. S., & Paikane, M. (2026). AI-enhanced visual storytelling: Exploring environmental narratives in literary studies. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, 18(2). <https://doi.org/10.21659/rupkatha.v18n2.10>
- Clarke, T. C., & Bolton, S. J. (2010). The planets and our culture: A history and a legacy. *Proceedings of the International Astronomical Union*, 6(S269), 29–34. <https://doi.org/10.1017/S1743921310007428>
- Colella, S. (2025). “The language of the digital air”: AI-generated literature and the performance of authorship. *Humanities*, 14(8), 164. <https://doi.org/10.3390/h14080164>
- Erl, A. (2011). Travelling memory. *Parallax*, 17(4), 4–18. <https://doi.org/10.1080/13534645.2011.605570>
- European Commission. (2025). *Imago Caeli: Visualizing the constellations in Mesopotamian, Greek and Roman art* (Project ID 101303087). CORDIS. <https://cordis.europa.eu/project/id/101303087>
- Guadu, A., & Dibekulu, D. (2026). From Barthes to algorithms: Reimagining authorship and reader agency in the AI era. *AI and Ethics*, 6, Article 256. <https://doi.org/10.1007/s43681-026-01108-0>
- Hamacher, D. W. (2026). Cultural astronomy in the 21st century: A brave new world. *Journal of Astronomy in Culture*, 4(1). <https://doi.org/10.5070/AC3.64330>
- Han, Y. J. (2012). Shakespeare and traditional Korean astronomy. *The Journal of English Language and Literature*, 58(4), 633–653.
- Henriksen, E. E. (2024). Algorithmically generated memories: Automated remembrance through appropriated perception. *Memory, Mind & Media*, 3, e11. <https://doi.org/10.1017/mem.2024.8>
- Huertas, E. M. C. G., & Fernandes, C. M. (2026). Who controls the past? Generative AI and disputes over collective memory in the digital age. *Anagramas Rumbos y Sentidos de la Comunicación*, 25(49). <https://doi.org/10.22395/angr.v25n49a11>
- Kim, S. (2014). Analysis problem and descriptive accommodation of astronomical story unit of constellation Douniuxing (斗牛星). *Journal of Poetics and Linguistics*, 27, 53–75.
- Kuperjanov, A. (2006). Estonian folk astronomy and national star maps. *Folklore*, 32, 37–62.
- Köseoglu, G. (2026). Algorithmic postmemory in the age of digital hoarding. *Continuum*, 40(4), 636–646. <https://doi.org/10.1080/10304312.2026.2629536>
- Mandolessi, S. (2023). The digital turn in memory studies. *Memory Studies*, 16(6), 1513–1528. <https://doi.org/10.1177/17506980231204201>
- Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews*, 4, Article 1. <https://doi.org/10.1186/2046-4053-4-1>
- Mozaffari, A., Khorramrouz, A., & colleagues. (2026). Applications, performance, and research gaps of large language models in literary studies: A scoping review. *Human Behavior and Emerging Technologies*. <https://doi.org/10.1155/hbe2/8695447>

- Penprase, B. E. (2017). *The power of stars: How celestial observations have shaped civilization* (2nd ed.). Springer.
- Raza, M. S. (2026, June 27). Artificial intelligence and being: An inquiry into Islamic intellectual tradition. *The Week*. <https://www.theweek.in/news/middle-east/2026/06/27/artificial-intelligence-and-being-an-inquiry-into-islamic-intellectual-tradition.html>
- Ruggles, C. (Ed.). (2022). *Heritage of astronomy*. Springer.
- Schöch, C., Dudar, J., & Fileva, E. (Eds.). (2023). *Survey of methods in computational literary studies (CLS INFRA D3.2)*. Zenodo. <https://doi.org/10.5281/zenodo.7892112>
- Shamseer, L., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: Elaboration and explanation. *BMJ*, 349, Article g7647. <https://doi.org/10.1136/bmj.g7647>
- Shan, Z., Lee, Y., & Hao, S. (2026). AI writers have a consistent stylometric footprint, but AI editors do not. *arXiv*. <https://doi.org/10.48550/arXiv.2608.27855>
- Williams, S. M. (2025). *Chaucer pictures the cosmos: Materiality, science, and astral poetics* [Doctoral dissertation, University of Oxford]. Oxford University Research Archive. <https://doi.org/10.5287/ora-wrkypy5w4>