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The Fusion of Narratology and Digital Humanities: From Theoretical Affinity to Critical Grammar

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Abstract: The rise of digital humanities has brought methodological innovation to literary studies, yet its theoretical foundation remains an open question. Narratology is not an "external applied theory" of digital humanities, but rather its epistemological root and critical grammar. This paper first clarifies the dual affinity between narratology and digital humanities in terms of the structuralist tradition and categorical computability; then, through the digitized cases of Propp's narrative functions, Genette's focalization, Bakhtin's polyphony, and Kristeva's intertextuality, the paper presents the operational paths of narratological theory; subsequently, the paper analyzes how "non-narrative digital humanities" such as database, spatial humanities, and visualization challenge classical narratology; finally, it advances the thesis of "narratology as the critical grammar of digital humanities," arguing that narratology provides a conceptual framework for reflecting on algorithmic presuppositions, interpreting spatial patterns, and reconstructing computational discoveries.

Keywords: Narratology; Digital humanities; Intertextuality; Distant reading; Critical grammar

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1. Introduction

Since "digital humanities" was established as a disciplinary label in the early twenty-first century, the computational turn in literary studies has yielded fruitful results: from the "distant reading" advocated by Moretti to the series of studies produced by the Stanford Literary Lab, from the conceptual-history tracking of Google Books Ngram Viewer to the intertextual detection of Tesserae, digital methods are reshaping the production of literary knowledge. Yet a fundamental question remains insufficiently answered: what exactly is the theoretical foundation of digital humanities? Existing discussions often treat digital humanities as a neutral methodology, regarding literary theory, narratology in particular, merely as an object to be applied in digital environments. Such an instrumentalist presupposition overlooks the epistemological dimension of

digital media: the logics of database, algorithm, and visualization profoundly participate in the construction of knowledge.

Regarding the theoretical foundation of digital humanities, foreign scholarship has followed two paths. First, the "critical" path questions digital humanities' lack of theoretical self-awareness; Liu (2013) further points to the ontological difference between "data" and "capta" in digital representation [1]. Second, the "media" path reveals the structural tension between database logic and narrative logic and explores how digital media reshape literary cognition [2–3]. At this intersection, Ryan (2001) holds that transmedia narratology provides a core framework for digital narrative, while scholars such as Jockers (2013) and Underwood (2019) make extensive use of narratological concepts [4–6]; yet their work mainly represents the "digitalization of narratological theory," with little reflection on the bidirectional theoretical relationship between categories and digital methods. Domestically, scholars such as Shang Biwu (2025) and Jiang Jiyong and Wang Lei (2025) have addressed this topic, but mostly from the perspective of digital humanities, treating narratology as an applied tool, and their discussion of "how digital humanities might in turn propel narratological renewal" remains insufficient [7–8].

This paper re-positions narratology's foundational status within the bidirectional movement between "digitalization of theory" and "theorization of the digital." Classical narratology has contained a "computational spirit" since its very birth: from Propp's thirty-one functions to Genette's precise categories, its core ambition has been to reduce the complexity of narrative phenomena to formal systems that can be analyzed and compared. The paper unfolds in four layers: it first sorts out the theoretical affinity between the two fields, then presents four cases of narratological operationalization, introduces the critical perspective of non-narrative digital humanities, and finally advances the thesis of "critical grammar."

2. Theoretical affinity: From structuralism to computationalism

Narratology and digital humanities share the formalizing legacy of structuralism. Propp's *Morphology of the Folktale* (1928) decomposes one hundred Russian folktales into thirty-one "narrative functions" and seven "spheres of action" [9]; his methodology is logically isomorphic with pattern recognition in computer science: both seek to extract deep invariant structures beneath surface differences. Just as computers must formalize natural language before processing it, Propp had to convert narrative into functional sequences before comparison. Genette's categories in *Narrative Discourse* (1972), "order," "duration," and "focalization," constitute a classification system with internal logical relations, translatable into data structures, annotation schemes, and algorithmic rules, and thus naturally adaptable to digital environments [10].

From the perspective of computer science, the core categories of classical narratology, though never written as programs, have logical structures that can be fully formalized, constituting implicit algorithms. Take "focalization" as an instance: Genette distinguishes zero focalization, internal focalization, and external focalization; digital humanities converts this into a natural-language-processing task by analyzing the distribution of perception verbs, cognition verbs, and spatial deictics; algorithms can automatically identify focalization patterns. Stanford's Literary Lab employed a similar method to trace the frequency evolution of "free indirect discourse" in nineteenth-century novels. Take "plot" as another example: narratology understands plot as a causal chain, while digital humanities converts it into the tasks of "event extraction" and "timeline reconstruction." The legitimacy of such operations derives precisely from narratology's formalized definitions.

Ryan's transmedia narratology constitutes the key node connecting classical narratology and digital humanities. She points out that digital narratology must additionally consider "how users enter and change the world": in hypertext fiction, "reading order" is no longer a linear sequence pre-set by the author, and Genette's category of "order" therefore acquires a new dimension of "system time." McGann's "sociology of texts," meanwhile, provides the theoretical basis for digital archives: projects such as *The Walt Whitman Archive* digitize not only the texts proper but systematically include paratexts such as covers, advertisements, and marginalia; and the interface design of an archive is itself a narrative act, determining how users enter textual history. It can thus be seen that narratology shares the structuralist legacy, possesses intrinsically computable categories, and provides conceptual frameworks for digital narrative and digital archives, constituting the narratological theoretical foundation of digital humanities.

3. The digitalization of narratological theory: Four cases

Propp's thirty-one functions are abstract and enumerable, serving as the starting point of "computational narratology." Northwestern University's Narrative Intelligence Lab converts functions into "event frames": semantic role labeling identifies "Agent, Patient, Action, Instrument," which are then mapped onto functional templates. For example, "The king gave the hero a magic sword" can be parsed as Agent = king (donor), Action = give (hero acquires a magic sword). Formalization both verifies the cross-cultural applicability of Propp's structure and exposes its limits: modern texts have flexible functional orders with frequent nesting, so researchers substitute a "functional network" (directed graph) for the "functional sequence." More importantly, Proppian formalization reveals the basic paradigm of narrative understanding in AI: from early script theory to contemporary large language models, narrative patterns continually shape the machine's "organization of experience."

Genette's focalization theory is operationalized mainly through annotation. Carnegie Mellon University's DocuScope, with a dictionary of thousands of linguistic patterns, marks "perception, cognition, and emotion" markers and can generate a "focalization trajectory" for *Jane Eyre*: in the first half, perception and emotion markers concentrate in Jane's perspective, while in the second half cognition markers gradually increase, suggesting a shift of focalization from "personal experience" to "social reflection." The framework allows embedded structured metadata, annotating "who sees" and the typological differences of internal focalization; after large-scale annotation, statistics can upgrade categorical description into literary-historical analysis. The challenge lies in the fact that focalization is often graduated rather than categorical: tree-structured annotation demands either-or choices, distorting focalization's fluidity.

Bakhtin's theory of "polyphony" has been creatively transformed into social network analysis. Jockers and Eder model characters as nodes and interactions as edges, quantifying the "degree of polyphony" through centrality and clustering coefficients: "monologic" narrative presents a star structure (a single center), whereas polyphonic narrative presents a multi-hub structure with rich lateral connections. Dickens's early works approximate the former; *The Brothers Karamazov* the latter. The theory of speech genres can likewise be operationalized into computational models, converting "social heteroglossia" into a quantifiable "discourse ecology."

Kristeva's theory of intertextuality gave rise to the Tesserae project. Its core algorithm comprises lexical, semantic, and syntactic matching layers, synthesizing an "intertextuality score." Distributional semantic

models (Word2Vec, BERT) further encode vocabulary as vectors, making computable the deep semantic resonance between texts sharing no common vocabulary. This achieves a technological leap in Kristeva's theory, yet also provokes controversy: intertextuality is an "infinite process of meaning generation," while algorithms can only return a limited number of "significant matches" based on statistical frequency, possibly simplifying its complex connotations.

These correspondences, Propp corresponding to event extraction, Genette to annotation, Bakhtin to network analysis, Kristeva to semantic computation, are not simple "theoretical applications"; they show that the formalizing rationale of classical narratology had already conceptually anticipated the possibility of digital methods.

4. The tension between non-narrative digital humanities and narratology

Database ontology challenges narrative logic. Manovich proposes that "database and narrative are natural enemies": the logic of the database is paratactic rather than hypotactic, since its items are equal and randomly accessible, whereas the essence of narrative is sequentiality and causality. Encoding a novel as a database is a "denarrativizing" operation: the text is decomposed into independently retrievable elements, with relations dynamically generated by query languages. Yet the tension is not irreconcilable. "Database narrative" (Kinder, Heise) holds that the text provides a database of narrative units from which users generate specific paths through interaction. Joyce's hypertext fiction *Afternoon*, a story consists of 539 lexia connected by 951 links, with no pre-set correct path, is simultaneously denarrativized and highly narrativized. The database is the sum of all potential narratives, and every click is an activation of intertextuality.

Spatial humanities challenge narratology's temporal centrism. Stanford's "Mapping the Republic of Letters" visualizes tens of thousands of Enlightenment-era letters through GIS, revealing multi-centered synchronic spatial associations rather than the diachronic narrative of dissemination of ideas in traditional literary history. In *Atlas of the European Novel*, Moretti plots the addresses of Dickens's characters onto a map of London, discovering a significant correspondence between spatial distribution and social class; yet such a "spatial pattern" in itself does not narrate dynamics of growth and mobility [11]. Narratology has accordingly developed "spatial narratology": Zoran distinguishes story space, discourse space, and reading space; Ryan points out that in digital environments space is not merely represented but "navigated," and navigation itself is a narrative act. Spatial humanities is therefore not an application domain of narratology but a catalyst for its theoretical renewal.

Information visualization substitutes "pattern recognition" for "causal interpretation." Visualization shows what exists but not why. Hayles criticizes the "cognitive shortcut" produced by visualization in digital humanities: substituting spatial patterns for temporal experience and correlation for causality. More importantly, visualization is itself a "narrative act": design choices such as axis selection, color coding, and clustering parameters determine what is seen. Narratology's concept of "focalization" can be transferred to the analysis of visualization, such as "whose perspective does it adopt?" and "how does its rhythm direct attention?"

In sum, the database challenges narrative sequentiality, spatial humanities challenge temporal centrism, and visualization challenges the epistemological status of causal interpretation. But these challenges are not the end of narratology; they are opportunities for its renewal.

5. Narratology as the critical grammar of digital humanities

Algorithms do not neutrally discover patterns; they carry narrative presuppositions. Topic modeling converts explicit plot into implicit lexical association, substituting probabilistic narrative for causal narrative; the setting of the topic number, the stop-word list, and topic naming — every step is an interpretive narrative construction. In terms of focalization, topic modeling adopts a "statistical omniscience," transcending the perception of any character and the cognitive limits of any reader, which helps us guard against its de-subjectifying effect. The centrality measures of network analysis presuppose a "hero narrative," inapplicable to novels of the collective-portrait type whose strength lies in unique perspectives; narratology's distinction between "polyphony" and "monologue" provides resources for criticizing such measures.

Narratology also provides a framework for interpreting spatial discoveries. GIS displays the distribution of characters but does not automatically produce literary meaning. Moretti interprets the spatial concentration of country houses as the literary transformation of the geographical distribution of the landed aristocracy—narratology provides the emplotment framework connecting spatial data with historical context. The distinction between "story" and "discourse" is equally illuminating: maps present spatial facts at the "story" level, while a novel's value often resides at the "discourse" level; the best practice of spatial humanities is to use maps to assist discourse analysis rather than to replace close reading.

The results of digital humanities must undergo re-narrativization before entering academic discourse, a process involving three narratological operations: first, emplotment—converting statistical patterns into "discovery stories" with a beginning, development, and ending; second, focalization distribution—choosing whether to tell the story from the perspective of the author, the institution, or the reader; third, voice selection—coordinating the "descriptive voice" and the "interpretive voice." Thus, "critical grammar" is concretized into the three dimensions of algorithmic reflection, pattern interpretation, and discursive reconstruction, forming a complete chain from method to interpretation to dissemination, and saving digital humanities from a dataism that worships data blindly.

6. Conclusion

The core findings of this paper are threefold. First, narratology and digital humanities share a dual affinity, historical and logical: they inherit the formalizing legacy of structuralism, their core categories are intrinsically computable, and the rise of digital humanities is the technical realization of narratology's formalizing impulse. Second, database, spatial analysis, and visualization pose substantive challenges to classical narratology, but also become catalysts for its renewal. Third, narratology performs the function of a "critical grammar" in digital humanities and is the foundation of its self-reflection. Narratologists should incorporate computational tools into the categorical system and promote a paradigm shift; digital humanities researchers, meanwhile, should squarely face narratology's foundational status and maintain conscious reflection on narrative presuppositions at every step of computational practice. The fusion of digital humanities and narratology is not a one-time theoretical application but a continuous, bidirectional, recursive movement; the point where the two converge is the most dynamic frontier of contemporary literary studies.

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