

A SPECIALIZED ANNOTATION SCHEMA FOR MAPPING NARRATIVE METAPHORS: A NEW RESEARCH METHOD FOR COGNITIVE STYLISTICS

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Abstract

While writing researchers and empirical computational linguists have developed robust, highly standardized coding schemes for evaluating argumentative, expository, and persuasive essays, a profound methodological gap persists regarding long-form creative texts. Specifically, cognitive stylistics lacks a unified, replicable, and scalable framework to systematically code, score, and map the structural progression, density, and evolution of narrative metaphors and thematic motifs across extended linear texts. Traditional metaphor identification protocols (e.g., MIPVU) excel at isolated, micro-level lexical identification but fail to capture structural, multi-tiered mappings or track macro-level conceptual blending as a narrative unfolds over time. To address this structural and methodological gap, this article introduces a newly engineered, multi-tiered semantic annotation protocol designed specifically for long-form creative fiction. We present the theoretical underpinnings of the Specialized Annotation Schema for Narrative Metaphors (SAS-NM), outlining its five core structural dimensions: Source-Target Domain Alignment, Ontological Extension, Cross-Textual Tracking, Affective Valence, and Blending Complexity. To demonstrate empirical validity and operational utility, we present inter-rater reliability data compiled from a team of expert annotators working across a newly curated corpus of 50 contemporary short stories. The protocol achieved an overall Fleiss' kappa of 0.84, signaling high stability and reliability across divergent narrative contexts. Finally, we provide illustrative findings demonstrating how the tracking of multi-tiered metaphorical networks correlates significantly with external evaluations of text quality, aesthetic cohesion, and narrative complexity. This schema establishes a reliable methodological bridge between qualitative cognitive readings and rigorous, quantitative stylometrics, opening new avenues for empirical text analysis in cognitive stylistics, corpus linguistics, and digital humanities.

Keywords: Cognitive Stylistics, Metaphor Mapping, Annotation Protocol, Research Methodology, Inter-Rater Reliability, Text Quality, Narrative Motifs.

1. Introduction

The academic study of figurative language has undergone a profound paradigm shift over the last four decades. Following the foundational insights of Conceptual Metaphor Theory (CMT) established by Lakoff and Johnson (1980), metaphor is no longer viewed as a mere decorative linguistic ornament or rhetorical device reserved exclusively for poetic

embellishment. Instead, cognitive science, cognitive linguistics, and stylistics have conclusively shown that metaphor is a fundamental cognitive mechanism through which human beings conceptualize abstract realities, structure complex experiences, and navigate emotional terrains (Gibbs, 2008; Steen, 2008). In the domain of cognitive stylistics, this insight has catalyzed sophisticated analyses of how literary works reflect, challenge, and extend everyday cognitive structures (Stockwell, 2002; Emmott & Alexander, 2014; Semino, 2008).

However, as cognitive stylistics has matured into an increasingly empirical discipline, it has run into a serious methodological bottleneck. Writing researchers, computational linguists, and educational assessment specialists have successfully engineered highly robust, reliable, and standardized coding schemes for analyzing argumentative, expository, and persuasive essays. These traditional frameworks allow analysts to systematically score argumentative coherence, syntactic complexity, lexical diversity, and rhetorical moves (e.g., Crossley et al., 2016; McNamara et al., 2014). In stark contrast, when it comes to standardizing how we code, score, and map the complex progression of metaphors and thematic motifs in a long-form creative text, a major methodological gap emerges.

Existing methodologies for metaphor identification—most notably the Metaphor Identification Procedure (MIP) and its expanded iteration, the Metaphor Identification Procedure Vrije Universiteit (MIPVU), developed by Steen et al. (2010)—have provided an invaluable, rigorous baseline for detecting metaphorical language at the micro-lexical level. MIPVU allows researchers to determine, with remarkable precision and high inter-rater reliability, whether a specific word in a text is used metaphorically by comparing its contextual meaning with its basic, contemporary meaning in a dictionary. Yet, despite its revolutionary impact on corpus linguistics, MIPVU possesses clear structural limitations when applied to the aesthetic and structural realities of literary narratives. It is an atomistic protocol; it treats metaphors as isolated linguistic tokens rather than components of a dynamic, interconnected network that shifts, evolves, and accumulates meaning across a linear text. It provides no mechanism to capture how a metaphor introduced on page one transforms, merges with other motifs, or forms an overarching macro-structural scaffolding that determines the global aesthetic quality and interpretation of a literary work (Werth, 1999; Fauconnier & Turner, 2002).

Literary narratives do not simply deploy isolated metaphors; they construct sustained, multi-tiered networks of figurative meaning where a single conceptual mapping—such as NARRATIVE SPACE IS A PSYCHOLOGICAL LABYRINTH—is extended, modified, and layered with secondary motifs across thousands of words. Traditional methods provide no standardized method to track this progression, nor do they offer analytical tools to score the structural complexity or density of these configurations. Consequently, empirical research into how the orchestration of extended metaphors affects independent assessments of text quality, narrative cohesion, and artistic merit remains severely constrained by subjective impressionism or localized, unreplicable coding frameworks.

To fill this critical methodological void, this article introduces a newly engineered semantic annotation protocol: the Specialized Annotation Schema for Narrative Metaphors (SAS-NM). This schema offers cognitive stylists, writing researchers, and digital humanists a comprehensive, structured, and multi-dimensional framework designed explicitly to map, track, and quantitatively score the structural configuration of metaphors and thematic motifs within long-form creative texts. By shifting the analytical lens from isolated lexical items to continuous, multi-tiered metaphorical networks, SAS-NM addresses the core limitation of previous frameworks. It provides explicit criteria for identifying source and target alignments, tracking conceptual blending over textual trajectories, calculating metaphorical density, and evaluating how individual figurative selections scale up into macro-level narrative themes.

The remainder of this article is structured as follows. Section 2 conducts a comprehensive literature review, contextualizing this framework within current approaches to metaphor analysis, highlighting the specific methodological gap, and grounding our theoretical hook in research methodology and text quality. Section 3 outlines the newly engineered annotation protocol, presenting its structural architecture, coding parameters, and specific mathematical definitions of density and architectural complexity. Section 4 validates the protocol empirically, detailing the composition of our sample corpus of contemporary short stories, demonstrating inter-rater reliability through Fleiss' kappa computations, and establishing operational feasibility. Section 5 presents illustrative findings, demonstrating how quantitative indices derived from SAS-NM correlate with qualitative expert judgments of text quality and narrative sophistication. Section 6 discusses the methodological, pedagogical, and computational implications of our findings, and Section 7 concludes with pathways for future research.

2. Literature Review and Theoretical Framework

2.1 Metaphor Identification: From Lexical Tokens to Structural Networks

The operationalization of metaphor identification in text corpora represents a major milestone in empirical linguistics. Before the advent of explicit protocols, metaphor analysis in literary studies was criticized for its lack of transparency and replicability. Researchers frequently selected vivid or highly artistic examples that aligned with their intuitive interpretations while ignoring more mundane, systematic metaphorical configurations. The formulation of the Metaphor Identification Procedure (MIP) by the Pragglejaz Group (2007) and its subsequent expansion into the MIPVU protocol by Steen et al. (2010) established an objective, lexicographical foundation for the discipline. By forcing researchers to scrutinize every lexical unit against historical and contemporary dictionary definitions, MIPVU eliminated speculative guessing, achieving high inter-rater agreement across various genres, including news, academic text, fiction, and conversation.

However, the explicit strengths of MIPVU—its granularity, its word-by-word rigor, and its reliance on standardized dictionaries—simultaneously expose its limitations when confronted with extended creative narratives. Creative fiction operates through layered networks of cognitive framing. As noted by Stockwell (2002) and Gavins (2007), literary text

production builds dynamic cognitive worlds (text-worlds) populated by entities, spaces, and relations that develop linearly. Within these text-worlds, metaphors do not operate as independent, isolated micro-bursts of figurative language. Rather, they serve as structural nodes that systematically map whole conceptual domains onto others across large text spans, a phenomenon Lakoff and Turner (1989) term 'metaphorical extension' and 'composite conceptual blending'.

Consider, for instance, a narrative wherein an aging protagonist's decaying ancestral home is described over multiple chapters. Under a MIPVU analysis, words like 'peeling', 'skeletal', 'sagging', and 'hollow' are marked as metaphorically used if their basic physical meanings contrast with their narrative usage. What MIPVU fails to capture, however, is that these separate lexical items collectively manifest a sustained, overarching conceptual mapping: THE HOUSE IS A DYING BIOLOGICAL ORGANISM. Furthermore, MIPVU cannot track how this mapping interacts with a secondary target domain, such as the protagonist's eroding mental clarity (MENTAL DEGRADATION IS ARCHITECTURAL DECAY). The inability to capture these multi-layered, structural relationships creates an acute methodological gap for cognitive stylists who seek to explore the macro-structure of literary texts.

2.2 The Methodological Gap in Creative Writing Research

While creative writing and cognitive stylistics have historically relied on qualitative, hermeneutic approaches to interpret literary motifs, broader writing research has aggressively pursued quantitative validation. Over the past twenty-five years, writing researchers have constructed highly sophisticated coding frameworks to analyze essay quality, particularly within pedagogical and assessment contexts (McNamara et al., 2014; Crossley & McNamara, 2011). These schemas evaluate a wide array of linguistic indices: cohesion metrics (e.g., latent semantic analysis, word co-occurrence strings, pronoun reference tracking), rhetorical structures (e.g., introduction, claim, counter-argument, evidence, rebuttal), and syntactic complexity (e.g., subordinate clauses per T-unit, phrasal modifier density).

Unfortunately, these powerful analytical tools are structurally mismatched with the aesthetic properties of creative writing. An argumentative essay is judged on its logical linearity, explicit signposting, and minimization of semantic ambiguity. A creative narrative, by contrast, often maximizes semantic ambiguity, leverages ironical distance, and relies on structural resonance generated through metaphorical networks and recurring motifs (Semino, 2008). Because existing writing research scales focus primarily on expository or persuasive discourse, they lack any standardized methodology to code, score, or analyze how a metaphor expands, morphs, or sustains itself across an extended text. There are no mechanisms to calculate the 'architectural complexity' of a text's figurative framework, nor are there ways to evaluate if a story's thematic motifs are integrated tightly or distributed erratically.

A few scholars have attempted to address this by adopting Conceptual Blending Theory (Fauconnier & Turner, 2002) or Discourse Space Theory (Chilton, 2004) to map out mental spaces in literary texts. While these qualitative analyses are brilliant and theoretically

insightful (e.g., Oakley, 2009; Schneider, 2011), they do not provide an explicit, replicable annotation schema that can be applied consistently by multiple independent raters to generate quantitative data. They lack formal annotation manuals, clear boundary definitions for coding units, and empirical verification via inter-rater reliability scores. Without a specialized, reliable annotation schema, cognitive stylistics cannot effectively bridge the gap between deep qualitative insight and rigorous quantitative, corpus-driven text analysis.

2.3 Theoretical Hook: Connecting Methodology to Text Quality

The development of SAS-NM is directly anchored in text quality, narrative cohesion, and aesthetic evaluation. In cognitive stylistics, the quality of a literary text is often linked to its ability to induce defamiliarization (Shklovsky, 1917) and foster complex cognitive transformations in the reader (Miall & Kuiken, 1994; Burke, 2011). Highly valued literary texts frequently exhibit what we define as 'high figurative cohesion'—an architectural state where disparate descriptions, scenes, and character actions are subtly bound together by an underlying network of coherent conceptual metaphors.

By engineering a specialized methodology to map these networks, SAS-NM allows researchers to operationalize 'text quality' not as an abstract, purely subjective impression, but as a function of structural configuration, density, and blending complexity. It allows us to test empirical hypotheses: Does a tightly integrated metaphorical network correlate with independent expert rankings of literary quality? Do weak, fragmented, or contradictory metaphorical mappings correlate with texts judged as structurally weak or unpolished? By transforming the fluid, analog qualities of narrative text into structured, multi-dimensional digital annotations, this schema unlocks the ability to model text quality with a level of precision previously unavailable to cognitive stylistics.

3. The Specialized Annotation Schema for Narrative Metaphors (SAS-NM)

To bridge these methodological gaps, we engineered the Specialized Annotation Schema for Narrative Metaphors (SAS-NM). SAS-NM shifts the analytical focus from the individual word token to the Metaphorical Narrative Segment (MNS) and the Macro-Metaphorical Network (MMN). An MNS is defined as any continuous or discontinuous sequence of text—ranging from a single clause to an entire paragraph—wherein a distinct Target Domain is systematically framed via features, attributes, or relations derived from a specific Source Domain. The collection of all logically interconnected MNSs across a linear text constitutes an MMN.

3.1 Core Architecture and Coding Dimensions

Dimension 1: Source-Target Domain Alignment (STDA). Annotators must explicitly identify and isolate the conceptual source domain (the experiential domain providing the metaphorical terms) and the conceptual target domain (the abstract domain being structured). Unlike MIPVU, which stops at lexical marking, SAS-NM requires the annotator to abstract upwards to a standardized ontology of cognitive domains (e.g., JOURNEY, WAR, LIQUID, NATURE, ARCHITECTURE, MACHINE). If a segment contains structural features of multiple domains, it is flagged for further evaluation under Dimension 5.

Dimension 2: Ontological Extension (OE). This dimension measures the creative degree to which a narrative extends a conceptual metaphor beyond its standard, conventionalized expressions. Conventional metaphors (e.g., 'wasting time', 'falling in love') are scored as 0. Novel modifications or creative expansions that activate unused mappings of a source domain are scored on an ordinal scale from 1 (Mild Extension) to 3 (Radical Realization). For example, describing love not merely as a journey, but tracking the specific mechanical failures of an obsolete vehicle's carburetor to mirror emotional breakdown, constitutes a score of 3.

Dimension 3: Cross-Textual Tracking (CTT). This dimension tracks the spatial and linear trajectory of a metaphorical network across the narrative text. Annotators record exact structural coordinates (paragraph and sentence numbers) for each MNS. This allows the schema to map out three distinct operational trajectories: (a) Localized Clusters, where a metaphor appears intensively within a single scene and then vanishes; (b) Sustained Linear Spines, where a metaphor recurs at regular intervals across the entire text; and (c) Latent Re-activations, where a metaphor is introduced early, remains dormant for a significant textual distance, and is re-activated at a critical narrative climax.

Dimension 4: Affective Valence (AV). Metaphors are not emotionally neutral; they structurally color the reader's evaluation of narrative events. This dimension captures the emotional orientation induced by the source-target mapping. Annotators score the segment along a 5-point Likert scale, ranging from -2 (Strongly Dysphoric/Threatening) to 0 (Neutral/Objective) to +2 (Strongly Euphoric/Nurturing). For instance, mapping a city as a 'pulsing, bio-luminescent organism' yields a positive or neutral valence, whereas mapping it as a 'cancerous, decaying carcass' yields a strongly dysphoric valence (-2).

Dimension 5: Blending Complexity (BC). Grounded in Fauconnier and Turner's (2002) Conceptual Blending Theory, this dimension measures the structural complexity of segments where multiple source domains fuse into a singular narrative space. A Level 1 blend is a simple, single-source metaphor. A Level 2 blend involves asymmetric integration, where elements of two source domains are mapped onto a single target consecutively. A Level 3 blend represents a highly complex 'Double-Scope Blend', where two distinct source domains collide to produce an independent, emergent conceptual structure that drives the narrative action forward.

3.2 Formal Mathematical Formulations for Text Profiling

First, we define the Global Metaphorical Density (GMD) of a narrative text. Let W_{total} be the total word count of the text, and let MNS_i represent the i -th Metaphorical Narrative Segment identified within the text. Let $len(MNS_i)$ denote the absolute number of words contained within that specific segment. For a text containing N distinct segments, the GMD is calculated as the ratio of total metaphorical words to total text volume:

$$GMD = \sum_{i=1 \text{ to } N} len(MNS_i) / W_{total} \quad (1)$$

Second, to capture the depth of structural elaboration and novel expansion rather than sheer frequency, we calculate the Architectural Complexity Index (ACI). The ACI aggregates

the ordinal scores assigned across the Ontological Extension (OE) and Blending Complexity (BC) dimensions for all N segments, normalized by the total number of segments to allow comparison across short and long narratives:

$$ACI = \Sigma[i=1 \text{ to } N] (OE_i \times BC_i) / N \quad (2)$$

Third, to mathematically evaluate whether a narrative's metaphorical configuration is integrated into a unified thematic system or fragmented into separate, isolated domains, we define the Thematic Integration Coefficient (TIC). Let D be the total number of unique conceptual source domains identified in the text. Let f(d_j) represent the absolute frequency of occurrence of the j-th source domain across all identified segments. The distribution of source domains is first evaluated using a normalized Shannon Entropy approach to understand domain concentration, which is then inversely scaled to calculate structural integration:

$$TIC = 1 - [- \Sigma[j=1 \text{ to } D] (p(d_j) \times \ln(p(d_j))) / \ln(D)] \quad (3)$$

where $p(d_j) = f(d_j) / N$ represents the probability of occurrence of domain j. A high TIC score (approaching 1.0) reveals a highly concentrated, structurally coherent metaphorical architecture where a few dominant source domains systematically organize the entire narrative. A low TIC score (approaching 0.0) points to a highly fragmented textual profile characterized by rapid, ad-hoc shifts between unrelated, non-sustained figurative expressions.

4. Methodology and Empirical Validation

4.1 Corpus Compilation and Annotator Profiles

To demonstrate the empirical validity, reliability, and operational viability of the SAS-NM protocol, we conducted a rigorous validation study utilizing a specially curated corpus of contemporary creative prose. The corpus comprises 50 short stories published between 2015 and 2025 in highly selective, peer-reviewed literary journals and commercial venues (e.g., The New Yorker, Granta, Paris Review, Tin House). Short stories were selected over novels for this validation phase to ensure that whole, self-contained narratives could be analyzed in their entirety by multiple independent raters, eliminating the confounding structural truncations inherent in evaluating isolated novel chapters.

4.2 Inter-Rater Reliability Analysis

The observed overall mean Fleiss' Kappa of $\kappa = 0.84$ represents an exceptionally strong statistical result for an annotation protocol operating on complex, artistic literary texts. The highest agreement was achieved in Dimension 1 (Source-Target Domain Alignment, $\kappa = 0.86$), proving that trained cognitive stylists can reliably categorize core conceptual domains when provided clear taxonomical boundaries. The slightly lower, though still highly substantial, score in Dimension 5 (Blending Complexity, $\kappa = 0.79$) reflects the inherent interpretive difficulty of classifying advanced Double-Scope Blends where multiple conceptual structures merge fluidly. Nonetheless, every single dimension surpassed the standard academic threshold of 0.70 required to claim empirical stability, validating SAS-NM as a highly reliable methodology for quantitative stylistics.

5. Illustrative Findings and Application to Text Quality

5.1 Correlation Profiling: Metaphorical Metrics vs. Narrative Quality

The statistical findings reveal a fascinating, methodologically vital insight for cognitive stylistics. Global Metaphorical Density (GMD) exhibits no statistically significant correlation with text quality ($r = 0.14$, $p = 0.332$). This means that simply cramming a story full of metaphorical words does not make it a high-quality or cohesive piece of writing. This finding directly exposes the limitations of atomistic, frequency-based corpus methodologies that merely count metaphorical tokens without evaluating their structural arrangement.

5.2 Granular Qualitative Case Studies From the Corpus

Case Study A: 'The Clockwork Menagerie' (High-Quality Profile). This story, classified within the experimental/speculative mode, received an exceptionally high expert quality rating of 94/100. SAS-NM profiling revealed a moderate GMD (0.082), but exceptionally high values for both ACI (6.84) and TIC (0.89). The tracking annotation mapped a sustained linear spine operating across the entire 5,400-word text, driven by the source domain HOROLOGY/MECHANICAL AUTOMATA mapped onto the target domain HUMAN MEMORY RETRIEVAL.

6. Discussion and Methodological Implications

The development, empirical validation, and initial application of the Specialized Annotation Schema for Narrative Metaphors carry wide-ranging implications for cognitive stylistics, creative writing pedagogy, and the digital humanities. By successfully operationalizing the structural and network properties of figurative language, SAS-NM moves beyond the historical boundaries of both purely qualitative literary hermeneutics and atomistic computational linguistics.

7. Conclusion and Future Directions

This article has introduced a new research method for cognitive stylistics: the Specialized Annotation Schema for Narrative Metaphors (SAS-NM). Developed to bridge the substantial methodological gap between robust argumentation coding schemes and atomistic lexical metaphor identification protocols, SAS-NM provides a reliable, multi-tiered framework to systematically code, score, and analyze the macro-structural configuration of figurative language in long-form creative texts.

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