

From 31 Functions to 14 Categories: Grouping Propp’s Narrative Structure for Co-Creative Writing Tools

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Abstract

Propp’s 31 narrative functions have traditionally been used in computational storytelling as underlying structural mechanisms rather than as tools directly accessible to users. This paper investigates an alternative approach by examining the usability of these functions when presented explicitly to novice writers engaged in creating branching narratives. Initial observations indicate that the full set of 31 functions introduces a level of complexity that can hinder accessibility and creative flow for beginners. To address this, the study proposes a reduced framework consisting of 14 broader narrative categories, designed for integration into a co-creative authoring interface aimed at game design students and emerging writers. The reduction was conducted through a systematic five-step process in which the original functions were treated as a dataset. Each function was coded on four structural dimensions, followed by clustering and iterative refinement to ensure coherence and usability. The paper outlines this methodological process, presents the resulting 14-category framework, and proposes a simplified and structured representation of Propp’s model that aims to better support novice users by reducing perceived cognitive complexity while maintaining narrative expressiveness. An empirical evaluation of the framework is planned to further assess its effectiveness.

Introduction

Propp’s *Morphology of the Folktale* (Propp, 1968) remains a foundational work in structural narrative analysis. Its formulation of 31 narrative functions provides a formalized account of the underlying structure of Russian folktales, offering a level of precision that has proven valuable in computational contexts. These functions have been widely adopted in applications such as automated story generation (Gervás, 2013; Riedl and Young, 2010) and narrative annotation and machine learning (Finlayson, 2016). However, in such systems, Propp functions typically operate as internal mechanisms, forming part of the underlying logic rather than elements directly engaged by users. Within computational creativity research, this raises broader questions about how narrative structure can function not only as a generation mechanism but also as a collaborative scaffold shaping creative decision-making in co-creative systems. This work addresses the different implications of exposing Propp’s morphology to users within a co-creative authoring environ-

ment.

Prior research suggests that this level of complexity may negatively affect creative engagement and usability. Cognitive load theory indicates that excessive structural demands can interfere with learning and creative processes (Sweller, 1988). Related challenges have been observed in earlier systems; for example, research done in Hammond (2011) found that even simplified, card-based representations of Propp’s functions were difficult for children to use effectively. Although several scholars have proposed reduced interpretations of Propp’s morphology, such as the consolidation into five analytical moves (Meletinskij et al., 1974) or the selection of eleven functions (Kafalenos, 1997), these approaches were not developed with interface design considerations in mind and do not provide comprehensive, methodologically grounded mappings.

In response, this paper presents a systematic reduction of Propp’s 31 functions into 14 broader categories intended for use in user-facing systems. Unlike prior reductions of Propp’s morphology, which were developed for analysis or automated generation, this work presents an exhaustive, methodologically documented reduction designed for user-facing, co-creative narrative tools. The proposed taxonomy is derived through a structured qualitative analysis and is designed to retain narrative expressiveness while aiming to improve accessibility and reduce perceived complexity. The paper details the methodological process underlying the categorisation and provides theoretical justification for the resulting groupings. More broadly, the work highlights the importance of structural granularity as a design variable in co-creative systems, raising the need for empirical investigation into how different levels of narrative abstraction affect user experience and creative outcomes.

This paper makes the following contributions:

- We present an exhaustive **reduction of Propp’s 31 narrative functions** into 14 macro-categories, preserving structural relationships while reducing complexity.
- We describe a **structured qualitative methodology** for deriving user-facing narrative abstractions from formal narrative theory.
- We present a **user-facing narrative taxonomy** designed to support co-creative authoring tools, with a focus on usability and reducing cognitive demands on novice writers.

- We frame **structural granularity as a key design variable** for co-creative narrative systems and explore how reduced structural granularity may support usability in user-facing authoring tools.

Background and Related work

Prior Reductions of Propp

Propp's 31 narrative functions were not conceived as fully independent; *Morphology of the Folktale* already groups them into phases and recurring pairings (e.g., struggle–victory, task–resolution) (Propp, 1968). This implicit structure has motivated later attempts at abstraction.

Several partial reductions exist. Meletinskij et al. (1974) compresses the model into five transformations of the hero's status, Kafalenos (1997) identifies eleven core functions, and Brusentsev, Hitchens, and Richards (2012) proposes three stages for video game narratives. While insightful, these works neither map all 31 functions nor provide systematic reduction methods, and are primarily analytical rather than interaction-focused.

In computational settings, Gervás (2013) groups functions by dependency for story generation, and Finlayson (2016) applies machine learning to derive functional clusters. These optimise system performance rather than user representation. Closer to this work, Hammond (2011) exposes Proppian functions in a creative interface, but retains all 31, noting resulting cognitive demands.

Scaffolding and Cognitive Load

Reducing visible narrative functions is supported by cognitive load theory, which emphasises limits on simultaneous information processing (Sweller, 1988). In branching narratives, managing multiple paths already taxes users, so excessive structural options can hinder creativity.

Scaffolding theory further suggests aligning complexity with user expertise (Vygotsky, 1978; Wood, Bruner, and Ross, 1976). Simplified structures enable initial engagement, with complexity introduced progressively. A reduced function set can thus act as an accessible entry point while preserving access to the full model.

Creativity support research similarly advocates balancing guidance and flexibility (Shneiderman, 2007; Frich et al., 2019). Despite this, no prior work applies these principles to presenting Propp's morphology directly to users. Existing reductions target analysis or generation, not interaction, and lack a complete, methodologically grounded mapping suitable for co-creative interfaces. This paper frames the level of abstraction in presenting narrative theory, termed *structural granularity*, as a key but underexplored design variable.

Methodology

The development of the 14-category framework was guided by a systematic and replicable analytical process rather than intuitive grouping. The aim was to establish a method that could be followed, evaluated, and, if necessary, challenged by other researchers. To achieve this, the study adopts a

qualitative approach grounded in deductive thematic analysis (Braun and Clarke, 2006), treating Propp's 31 narrative functions as the primary dataset, and employs affinity mapping (Beyer and Holtzblatt, 1998) as the mechanism for clustering.

The analysis proceeded in five stages. The first stage involved close reading of the source material. Each of Propp's functions was examined in detail, including its formal definition, narrative role, and any structural relationships identified in the original text (Propp, 1968). The objective was to interpret each function in terms of its operational role within narrative progression, rather than as an isolated label.

The second stage consisted of systematic coding. Each function was annotated across four structural dimensions. The first dimension, *narrative phase*, classified functions according to their position within the overall narrative arc, such as initial, middle, or concluding sequences. The second, *causal direction*, distinguished between functions that initiate narrative developments and those that respond to preceding events. The third dimension, *agent of action*, identified the primary narrative driver, such as the hero, the villain, or broader structural processes related to return and resolution. The fourth dimension, *sequential dependency*, captured the extent to which a function depends on prior narrative elements for coherence, reflecting Propp's emphasis on ordered relationships between functions.

This coding process produced a structured profile for each function, forming the basis for the third stage, clustering through affinity mapping. Each function was treated as an individual unit and grouped with others sharing similar structural characteristics. Group formation was guided by commonalities across the four coded dimensions, including shared narrative phase, consistent causal direction, and identifiable dependency relationships. This process revealed several recurring patterns, including sequential pairings, action–reaction relationships, shared positional roles within the narrative, variations within broader narrative operations, and clusters associated with return and resolution phases.

The fourth stage involved validation of the emerging categories using established qualitative criteria. Following Patton's framework (Patton, 2002), categories were assessed for *internal homogeneity*, ensuring that functions grouped together exhibited coherent structural relationships, and *external heterogeneity*, ensuring clear distinctions between categories. Where functions appeared to span multiple groups, classification decisions were resolved by identifying the most structurally dominant characteristic. All coding decisions and justifications were documented to support transparency and reproducibility.

The final stage focused on category naming and representation. To enhance accessibility for novice users, technical terminology was replaced with more intuitive descriptors while preserving the underlying structural meaning. For example, Propp's "Liquidation of Misfortune or Lack" was re-framed as "Resolution", and clusters associated with early-stage antagonist actions were consolidated under more descriptive labels. This step ensured that the resulting framework remained faithful to Propp's model while being more suitable for use in user-facing, co-creative environments.

The 14 Macro-Categories

The analytical process resulted in the identification of 14 macro-categories that collectively account for all 31 of Propp's narrative functions. Table 1 presents the complete mapping between the original functions and the derived categories. In the Appendix, Table 2 presents a more detailed rationale, illustrating how structurally related functions are consolidated while preserving narrative progression.

First, a subset of categories corresponds directly to individual functions. These include *Setup*, *Mediation*, *Departure*, and *Decision/Counteraction*. Each of these functions was retained as a distinct category because it represents a critical transition point within the narrative structure. Their roles as pivotal moments in story progression justify their separation, as collapsing them into broader groupings would obscure key decision points that are particularly salient for novice writers engaging with narrative construction.

In contrast, other categories consolidate multiple functions that serve closely related structural roles. For example, the *Villainy/Lack* category integrates a sequence of functions associated with the introduction and escalation of narrative conflict. These functions collectively establish the central problem that drives the story forward. Similarly, the *Recognition/Reward* category groups several functions from the concluding phase of the narrative, all of which contribute to the resolution of identity, restoration of order, and distribution of rewards.

A further pattern is observed in the treatment of structurally analogous functions that recur at different points in the narrative. The category *Test* encompasses the function traditionally labelled as the *Difficult Task*, while *Victory* incorporates the corresponding *Solution*. These functions were grouped with earlier donor-sequence elements because they replicate an established structural pattern rather than introducing a fundamentally new narrative operation. This decision reflects an emphasis on underlying functional similarity rather than strict adherence to Propp's original sequential distinctions.

Overall, the resulting categorisation preserves the structural integrity of Propp's morphology (Propp, 1968) while providing a more accessible and interpretable framework. By balancing granularity and usability, the macro-categories aim to better align with user-facing systems, particularly those supporting novice narrative design.

Rationale for the Proposed Reduction

The 14 macro-categories make explicit structural patterns already implicit in Propp's morphology rather than imposing a new framework. Propp identifies recurring sequences such as villain preparation (F4–F8), donor interaction (F12–F15), and return-phase complications (F20–F23) (Propp, 1968). This work systematically formalises such groupings across all 31 functions.

While prior studies propose higher-level abstractions (Kafalenos, 1997; Brusentsev, Hitchens, and Richards, 2012), this reduction is motivated by usability and interaction design, translating structural regularities into a coherent user-facing taxonomy. Further reduction beyond 14 cate-

gories resulted in a loss of interpretability, as narratively distinct operations became increasingly difficult to distinguish within broader groupings.

Reducing 31 functions to 14 categories simplifies the decision space in branching narrative design, where managing multiple paths and dependencies already imposes cognitive demands. Cognitive load theory suggests that excessive complexity hinders performance (Sweller, 1988). Grouping functions enables cognitive chunking, allowing users to operate at a higher level while retaining access to full detail. This supports scaffolding principles, where complexity is introduced progressively (Vygotsky, 1978; Wood, Bruner, and Ross, 1976).

To avoid constraining creativity, categories are defined at an abstract level (e.g., *Test*, *Aid*), indicating function without prescribing content. This aligns with creativity support research emphasising a balance between guidance and flexibility (Shneiderman, 2007; Frich et al., 2019). The taxonomy thus serves as a generative scaffold, aiding navigation of narrative structure while preserving creative freedom.

Discussion

The proposed 14-category taxonomy has been implemented within a functional prototype designed to support co-creative narrative authoring. In this system, the macro-categories are presented as structural prompts throughout the writing process, guiding users in constructing branching narratives. The interface also provides real-time, colour-coded feedback that maps user-generated content to the underlying Proppian functions (Propp, 1968), thereby maintaining a connection between the simplified representation and the full theoretical model. In addition, the system supports user-defined branching through conditional logic, potentially supporting interactive quest-based narratives. Initial deployment involved game design students in short-form narrative construction tasks.

The taxonomy is distinct from all prior reductions of Propp's morphology in three respects. First, the presented approach is comprehensive/exhaustive by accounting for every one of Propp's 31 functions and records an explicit rationale for each placement decision, rather than selecting a subset (Kafalenos, 1997), or collapsing the morphology (Meletinskij et al., 1974). Second, it is *interface-motivated*, whereas (Gervás, 2013) groups functions by dependency relationships to support automated generation, and (Finlayson, 2016) recovers clusters through machine learning for annotation purposes, the 14 categories are designed specifically to reduce the decision load placed on a human author interacting with the interface. Third, the derivation is *methodologically documented* through a transparent five-step process that other researchers can replicate or formally challenge, addressing a limitation shared by all prior reductions.

The work is closely related to (Hammond, 2011), who demonstrated that novice users can engage with Proppian structure through a digital interface but found even individual function cards cognitively demanding. The present research extends that line directly by providing a principled grouping layer that lowers visible complexity without

#	Propp Function	Macro-Category	#	Propp Function	Macro-Category
1	Absentation	Setup	17	Branding / Marking	Struggle
2	Interdiction	Interdiction	18	Victory	Victory
3	Violation	Violation	19	Liquidation	Resolution
4	Reconnaissance	Villainy / Lack	20	Return	Return
5	Delivery	Villainy / Lack	21	Pursuit	Return
6	Trickery	Villainy / Lack	22	Rescue	Return
7	Complicity	Villainy / Lack	23	Unrecognised Arrival	Return
8	Villainy or Lack	Villainy / Lack	24	Unfounded Claims	Recognition / Reward
9	Mediation	Mediation	25	Difficult Task	Test
10	Beginning Counteraction	Decision / Counteraction	26	Solution	Victory
11	Departure	Departure	27	Recognition	Recognition / Reward
12	First Function of Donor	Test	28	Exposure	Recognition / Reward
13	Hero's Reaction	Test	29	Transfiguration	Recognition / Reward
14	Receipt of Magical Agent	Aid	30	Punishment	Recognition / Reward
15	Guidance	Aid	31	Wedding / Reward	Recognition / Reward
16	Struggle	Struggle			

Table 1: Mapping of Propp’s 31 narrative functions to 14 macro-categories. See Appendix for further details

discarding the underlying theory. Where Hammond’s system exposed the full morphology, the 14-category interface abstracts it; where that work addressed linear stories, the present system targets branching narrative design, introducing an additional layer of cognitive complexity that further motivates the reduction.

Structural Granularity as a Design Variable

The introduction of a reduced structural framework highlights a broader design consideration within computational creativity systems, namely the role of structural granularity in shaping user experience. Although prior work has largely treated Propp’s 31 functions as a fixed and complete set for computational purposes (Gervás, 2013; Riedl and Young, 2010), the present approach suggests that the level of abstraction at which narrative structure is presented constitutes a meaningful design variable. The taxonomy proposed here reframes the morphology as a layered, granularity-aware structure, the 14 categories are an interface level abstraction over a richer underlying model, with the original 31 functions retained and accessible. By making this variable explicit, the work contributes to ongoing discussions around how creative systems can balance formal structure with usability and accessibility, and aligns with research in creativity support tools, which emphasises the importance of designing systems that guide users without imposing excessive cognitive or procedural constraints (Shneiderman, 2007; Frich et al., 2019).

From the user’s perspective, the proposed macro-categories shift narrative authoring from a fine-grained function selection task to a higher-level structural reasoning activity. Rather than choosing among dozens of closely related functions, novice writers can focus on broader narrative intentions such as introducing conflict, testing the protagonist, or resolving a storyline. This abstraction supports faster ideation and reduces hesitation

at key decision points, particularly in branching narratives where structural choices must be replicated and maintained across multiple paths. In this sense, the reduction reframes Propp’s morphology as a generative scaffold rather than a prescriptive checklist, providing guidance while preserving interpretive flexibility and creative autonomy.

Reducing structural granularity improves usability, but it can remove distinctions that are important for expert analysis. This design addresses that trade-off by keeping the full set of Proppian functions accessible beneath the interface, allowing users to engage with more complexity as their expertise develops. In this way, structural granularity is treated as flexible rather than fixed, and this approach could extend beyond Propp’s model to other formal narrative frameworks used in creative systems.

Conclusion and Future Work

This paper introduced a 14-category macro-function taxonomy derived from Propp’s 31 narrative functions through a structured five-step deductive thematic analysis. Unlike prior reductions aimed at analysis or automation, this work focuses on interface design, offering a reproducible method to simplify narrative structures for human use.

The contribution is threefold, reducing perceived cognitive complexity for novice writers, providing a replicable derivation method, and exploring structural granularity as a design variable for co-creative systems.

Future work will empirically evaluate the taxonomy by comparing the 14-category interface, the full 31-function model, and a baseline without structural support. Measures will include narrative quality, structural completeness, interaction patterns, and user confidence. Further research will explore adaptive interfaces that adjust structural detail dynamically and apply this reduction approach to other narrative frameworks.

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Appendix: Full Coding of Propp's 31 Functions

Table 2: Full coding schema for Propp's 31 narrative functions across structural dimensions, grouping principles, and macro-categories.

#	Propp Function	Narrative Phase	Causal Direction	Agent	Dependency	Grouping Principle	Macro-Category	Rationale for Placement
1	Absentation	Opening	Initiating	Situational	None	Shared phase	Setup	Establishes a disruption to the initial equilibrium, creating the conditions for narrative development.
2	Interdiction	Opening	Initiating	Authority	F1	Structural trigger	Interdiction	Introduces a prohibition that defines the constraints of the narrative and anticipates future conflict.
3	Violation	Opening	Initiating	Hero/Victim	F2	Sequential pair	Violation	Represents the breach of a prior rule, marking the transition from order to conflict.
4	Reconnaissance	Opening	Initiating	Villain	F1	Villain preparation	Villainy/Lack	Begins the antagonist's preparation through information gathering, contributing to the emergence of disruption.
5	Delivery	Opening	Reactive	Villain	F4	Villain preparation	Villainy/Lack	Provides the antagonist with necessary information, advancing the preparation phase.
6	Trickery	Opening	Initiating	Villain	F5	Villain preparation	Villainy/Lack	Introduces deception as a means of advancing the antagonist's strategy.
7	Complicity	Opening	Reactive	Victim	F6	Villain preparation	Villainy/Lack	Completes the deception sequence through the victim's unwitting cooperation.
8	Villainy or Lack	Opening	Initiating	Villain/System	F4–F7	Core disruption	Villainy/Lack	Establishes the central problem driving the narrative through harm or absence.
9	Mediation	Middle	Reactive	Dispatcher	F8	Transition phase	Mediation	Signals recognition of the problem and initiates the narrative response.
10	Counteraction	Middle	Initiating	Hero	F9	Action–response	Decision/Counteraction	Represents the decision to act, transforming awareness into intention.
11	Departure	Middle	Initiating	Hero	F10	Structural shift	Departure	Marks the transition from the ordinary world to active engagement with the problem.
12	Donor Test	Middle	Initiating	Donor	F11	Test sequence	Test	Introduces an evaluative challenge to assess the hero's suitability.
13	Hero Reaction	Middle	Reactive	Hero	F12	Test sequence	Test	Completes the evaluative interaction through the hero's response.
14	Magical Aid	Middle	Reactive	Donor	F13	Reward sequence	Aid	Provides resources or assistance following successful evaluation.
15	Guidance	Middle	Initiating	Helper	F14	Support phase	Aid	Facilitates progress toward the narrative objective through assistance.

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#	Propp Function	Narrative Phase	Causal Direction	Agent	Dependency	Grouping Principle	Macro-Category	Rationale for Placement
16	Struggle	Middle	Initiating	Hero/Villain	F15	Core conflict	Struggle	Represents direct confrontation between opposing forces.
17	Branding	Middle	Reactive	Hero	F16	Conflict variation	Struggle	Marks the hero symbolically during conflict, reinforcing identity within the confrontation phase.
18	Victory	Middle	Reactive	Hero	F16	Resolution of conflict	Victory	Resolves the central confrontation in favour of the protagonist.
19	Liquidation	Middle	Reactive	System	F18	Closure of disruption	Resolution	Eliminates the initial lack or harm, restoring narrative balance.
20	Return	Closing	Initiating	Hero	F19	Return phase	Return	Begins the movement back toward the original social context.
21	Pursuit	Closing	Initiating	Antagonist	F20	Return complication	Return	Introduces renewed threat during the return phase.
22	Rescue	Closing	Reactive	Hero/Helper	F21	Return resolution	Return	Resolves the pursuit, enabling continuation of the return.
23	Unrecognised Arrival	Closing	Initiating	Hero	F20–F22	Reintegration phase	Return	Places the hero in the social world without immediate recognition.
24	False Claims	Closing	Initiating	False Hero	F23	Legitimacy conflict	Recognition/Reward	Introduces contested identity, preparing the recognition sequence.
25	Difficult Task	Closing	Initiating	Authority	F23	Test variation	Test	Reintroduces evaluation through a final challenge.
26	Solution	Closing	Reactive	Hero	F25	Test resolution	Victory	Completes the challenge, reaffirming competence and success.
27	Recognition	Closing	Reactive	Authority	F26	Validation phase	Recognition/Reward	Confirms the hero's identity and achievements.
28	Exposure	Closing	Reactive	System	F27	Legitimacy sequence	Recognition/Reward	Reveals false claims, reinforcing narrative justice.
29	Transfiguration	Closing	Reactive	Hero	F27–F28	Status change	Recognition/Reward	Marks transformation in status or appearance following recognition.
30	Punishment	Closing	Reactive	Authority	F28	Moral closure	Recognition/Reward	Enacts consequences for wrongdoing, reinforcing narrative resolution.
31	Wedding/Reward	Closing	Reactive	Authority/Hero	F29–F30	Final closure	Recognition/Reward	Represents final restoration and reward, signalling narrative completion.