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**Dr. Paul Jacob**  
Assistant Professor of English  
St. Aloysius College, Edathua,  
Alappuzha, Kerala, India

## The relational ontology: Mapping systems theory onto Olga Tokarczuk's constellational aesthetics of interconnectedness

**Paul Jacob**

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### Abstract

Interconnectedness manifests as a core principle in physics, ecology, psychology, biology, and neuroscience, where entities exhibit mutual dependence irreducible to isolated parts. This paper synthesizes key postulates; quantum entanglement, deep ecology, field theory, systems biology, and brain networks, revealing a cross-disciplinary holism unified by systems theory. The study applies this theoretical framework to the constellational novels of Olga Tokarczuk, particularly *Flights*, *The Books of Jacob*, and *Drive Your Plow over the Bones of the Dead*, arguing that her fragmented, non-linear aesthetics constitute a literary simulation of complex, emergent systems. Implications suggest that Tokarczuk's narrative structures and her ethics of "radical tenderness" arise from relational dynamics, profoundly challenging literary and philosophical reductionism. (Tokarczuk, "Tokarczuk's Radical Tenderness").

**Keywords:** Olga Tokarczuk, interconnectedness, systems theory, constellational novel, deep ecology, quantum entanglement, field theory, relational ontology, ecofeminism, emergence

### 1. Introduction

#### Defining Interconnectedness: From Metaphor to Ontology

Interconnectedness, far from being a mere literary metaphor, denotes systemic interdependence, a fundamental concept where alterations in one component instantaneously or relationally affect others, spanning the natural and social sciences. This phenomenon is foundational to General Systems Theory (GST) and the philosophical tradition of Holism. Holism, initially coined by Jan Smuts in 1926, asserts that systems possess emergent properties or behaviours that their constituent parts do not possess when isolated, often summarised by the aphorism, "The whole is greater than the sum of its parts" ("Holism"). This perspective is fundamentally antireductionist, positing that complex systems, particularly those in biology and ethics, cannot be entirely explained by reducing them to their simplest physical components ("Antireductionism").

The analysis presented here treats this concept of complex interdependence as a unifying ontological principle, a Relational Ontology and employs Systems Theory as the methodological framework to bridge traditionally segregated academic disciplines (Process Philosophy). This study seeks to reveal cross-disciplinary conceptual congruence between physical laws and humanistic structures, thereby informing interdisciplinary research.

#### Olga Tokarczuk and the Constellational Novel

Olga Tokarczuk's acclaimed literary methodology provides a crucial site for exploring this Relational Ontology. Her novels reject linear, hierarchical storytelling in favour of the "constellational novel", a prose form characterised by its associative, essayistic, digressive, and densely patterned structure (*Constellational Novel*). The essence of this form lies in the presence of a narrator actively committed to "drawing affinities and making connections among disparate things" (*Constellational Novel*).

The central literary thesis of this paper is that the constellational form is not merely a stylistic choice but a necessary ontological commitment mirroring the structure of complex systems. By favouring narrative affinity, Tokarczuk's work directly confronts the reductionist aesthetic of a "literature of genres and solitary 'I's" (Tokarczuk, "Tokarczuk's Radical Tenderness"). Instead, it promotes an ethics of relational affinity (*Constellational Novel*), suggesting that meaning, identity, and moral agency arise only through dynamic interaction. The novels selected for detailed analysis, *Flights*, *The Books of Jacob*,

**Corresponding Author:**  
**Dr. Paul Jacob**  
Assistant Professor of English  
St. Aloysius College, Edathua,  
Alappuzha, Kerala, India

and Drive Your Plow over the Bones of the Dead demonstrate how Tokarczuk structurally and ethically simulates complex, non-linear reality.

### Structuring the Multidisciplinary Argument

To justify the idea of interconnectedness as a multidisciplinary principle, this paper maps the core

postulates of systems thinking across four domains, showing how they inform the construction and interpretation of Tokarczuk's fictional worlds. Process philosophy supports this approach by maintaining that "nothing exists in isolation and stays separate; everything is connected to something else" (Process Philosophy).

**Table 1:** provides a comparative overview of the scientific concepts synthesised in this analysis Comparative Disciplinary Postulates of Interconnectedness

Discipline	Core Postulate (Scientific Concept)	Relational Dynamic / Systems Principle	Antonym (Reductionist View)
Physics	Quantum Entanglement / Non-Locality	Simultaneous Influence / Shared State Coherence	Classical Separation / Local Causality
Ecology	Deep Ecology / Bio-Community	Intrinsic Relational Value / Interdependent Web	Anthropocentrism / Hierarchical Dualism
Psychology	Field Theory / Life Space	Dynamic Environmental Interaction ( $B=f(P,E)$ )	Isolated Psychoanalytic History / Trait Theory
Biology/Neuroscience	Neural Networks / Emergence	Wholes Exceeding the Sum of Parts / Hub Integration	Modular Processing / Ontological Reductionism

## 2. The Fabric of Non-Locality: Quantum Physics and Narrative Entanglement

### Theoretical Bridge: Non-Locality as Narrative Structure

Physics provides the most stringent case for interconnectedness through the phenomenon of quantum entanglement. Quantum entanglement links particles such that they share a common quantum state, and a measurement performed on one instantaneously affects the state of the other, regardless of the spatial distance separating them (Popescu). This correlation defies classical notions of local causality, earning the descriptor "non-locality" (Popescu).

This scientific concept finds a compelling analogue in Tokarczuk's chosen narrative methodology. Instead of adhering to the traditional linear narrative structure that follows a straightforward chronological sequence and direct causality, Tokarczuk employs a non-linear, fragmented approach ("Non-linear Narrative"). This structure creates narrative non-locality. Chronological or geographical distance between the disparate vignettes, characters, and historical documents does not diminish their thematic correlation; rather, meaning emerges instantly when the reader synthesises these distant narrative elements ("Non-linear Narrative"). The text requires the audience to actively piece together the story, mirroring the synthesis required to understand a quantum system.

### Flights (Bieguni) and Non-Separability

The fragmentation of Flights is achieved through numerous, short, often non-sequential vignettes detailing travel, anatomy, and historical oddities. The novel's travelling narrator continuously resists a singular, localised identity, reflecting the fluid and non-separate nature of entities within a holistic system. The story happens in the friction between fragments.

A powerful structural mechanism demonstrating non-separability occurs in the final sections of Flights with the exhibit of preserved bodies, including one "cut up into slices" (Tokarczuk, "Tokarczuk's Radical Tenderness"). The narrator observes that these fragments allow access to "altogether unexpected points of view," letting the viewer see "both the part and the whole" (Tokarczuk, "Tokarczuk's Radical Tenderness"). If this body were viewed in a

reductionist fashion, the slice would be merely organic matter. However, the slices gain significance only when understood as constituent elements of a former human totality. This anatomical non-separability is a literal manifestation of Holism ("Holism"). The novel compels the reader to acknowledge the holistic reality (the human life, the "person-body") through its physical fragmentation, much like physicists study the entanglement entropy of fragmented quantum spin chains to characterise the universal properties of the larger chaotic system ("Quantum Entanglement"). The fact that fragmentation is necessary to fully reveal the complex structure of the whole underpins the novel's aesthetic commitment to interconnectedness.

### The Books of Jacob and Contuition

The Books of Jacob elevates narrative fragmentation to an epic scale, presenting the story of the historical figure Jacob Frank via a vast, non-linear "patchwork of scenes and voices, tableaux and fragments" ("Books of Jacob Review"). This historical density resists reduction to a single, linear causal trajectory, instead demanding constant synthesis from the reader. The text incorporates an omniscient narrator, first-person reminiscences from figures like Nahman, and historical documents such as letters and maps ("Books of Jacob Review"; "The Books of Jacob").

The author's artistic logic underpinning this structure is informed by the theological concept of contuition; the ability to see the divine unity residing in disparate or seemingly contradictory things ("Books of Jacob Review"). This contuitive collapse operates analogously to the measurement process in quantum mechanics. The dispersed historical information, presented across the non-local narrative field, exists in a state of potentiality. When the reader, driven by *contuition*, actively synthesises the dispersed elements; connecting the spiritual insights of the disembodied spirit Yente, the betrayals of Nahman, and the observations of Father Chmielowski; the unified historical and spiritual reality instantly "collapses" into an observable, holistic understanding. The structure thus ensures that the narrative meaning is not inherent in the isolated fragments but is an emergent property created relationally by the active participation of the observer (the reader).

Table 2 highlights the functional role of the fragmented structures in creating holistic meaning.

**Table 2:** Structural and Thematic Manifestations in Tokarczuk's Novels

Selected Novel	Narrative Mechanism	Literary Reflection of Interconnectedness	Systems Principle Illustrated
Flights	Constellational/Fragmented Vignettes	Synchronic mapping of space, time, and anatomy (The traveling self)	Non-Locality and Emergence
The Books of Jacob	Patchwork of Voices and Documents	Synthesis through <i>Contuition</i> (Seeing unity in historical disparity)	Holism and Network Synthesis
Drive Your Plow over the Bones of the Dead	Janina's Anti-Anthropocentric Perspective	Ethical responsibility to the non-human/Revenge of the Ecosystem	Deep Ecology and Field Tension

### 3. The Ecological Field: Deep Ecology, Ecofeminism, and the Ethics of Place

#### Theoretical Bridge: Systems Ecology and Deep Ecology

The concept of interconnectedness in ecology is codified by Deep Ecology, which posits that organisms exist in equally interdependent biotic communities. This framework explicitly rejects anthropocentrism in favour of recognising the relational intrinsic value of all life ("Ecological"). Ecocriticism, the interdisciplinary field that examines the relationship between literature and the environment, often utilises Deep Ecology to critique anthropocentric ideologies and advocate for ethical interactions with nature (Lukaszyk).

Tokarczuk's Drive Your Plow over the Bones of the Dead is a core example of ecofiction that incorporates the syncretism of ecocriticism ("Literature"). The novel critiques the dominant worldview by aligning itself with ecofeminist philosophy, which investigates the underlying relationships between the exploitation of women, animals, and nature ("Ecological"; "Literature"). These dualisms, reason/emotion, culture/nature, mind/body, create an oppressive conceptual framework where one party is systematically favoured, justifying a logic of subordination ("Ecological"). Tokarczuk's novel forcefully refutes the thesis of the thesis of the "ontological superiority of man" ("Literature").

#### Drive Your Plow over the Bones of the Dead and Biotic Justice

The protagonist, Janina Duszejko, embodies a relational ethic that sees the world as a "network of connections, flows of life" ("Literature"). Her morality is incompatible with the secular law surrounding her, rooted instead in a "greater law" centred on the intrinsic value of all ecosystem components ("Literature"; Lukaszyk).

Janina's observations provide a direct philosophical right to their life and death. He becomes a tyrant and a usurper" ("Literature"). This placement of humanity outside the interconnected web, granting arbitrary power, is identified by the novel as the root of ethical and ecological crisis. Janina's subsequent actions, which she interprets as the "revenge of animals and nature itself" ("Literature"), constitute an emergent response to this systemic oppression. She transcends the role of a mere activist to become a "personified concept of nature itself," illustrating the novel's dedication to imagining a bio-community based on justice ("Literature"; "In this paper").

#### Psychological Context: Kurt Lewin's Field Theory and the Local Environment

The multidisciplinary justification for Janina's behaviour, which initially appears eccentric or delusional to her villagers ("Literature"), is effectively modelled by Kurt Lewin's Field Theory. Lewin's theory states that behaviour

( $B$ ) is a function of the interacting forces of the person ( $P$ ) and the immediate psychological environment ( $E$ ), expressed by the equation  $B=f(P, E)$  ("Kurt Lewin's"). This model emphasises the immediate, dynamic context of behaviour, contrasting sharply with isolated psychoanalytic or historical explanations ("Kurt Lewin's").

Applying Lewin's model to Janina reveals the systemic logic behind her extreme actions. Janina's  $P$  (Person) is characterised by her profound, animistic moral sensitivity and deep ecological convictions. Her  $E$  (Environment) is the local village characterised by "obtuseness, religious hypocrisy, and systemic oppression" ("Literature"). The authorities and her peers meet her efforts to expose the injustice with "ridicule," rendering her helpless and ignored. Janina's violent ethical act (the murder of the hunters) is not an isolated psychiatric event, but an emergent behaviour ( $B$ ) resulting from the escalating, irreconcilable tension between her personal ethical field ( $P$ ) and the actively suppressive, reductionist environmental field ( $E$ ). The analysis suggests that when a societal system ( $E$ ) fundamentally fails to acknowledge and incorporate the principle of interconnectedness and intrinsic relational value, the tension within the psychological field escalates until it necessitates a catastrophic change in behaviour ( $B$ ). Tokarczuk uses Janina's narrative to demonstrate that systems that enforce isolation and hierarchy ultimately generate destabilising, emergent responses, configured in this novel as nature's righteous counter-force.

### 4. Emergence and Complexity: The Literary Brain Network

#### Theoretical Bridge: Systems Biology and Neural Holism

Systems biology treats organisms as complex interaction networks yielding emergent properties. Emergence, in this context, signifies that a complex entity, such as the phenomenon of life, has properties that its individual parts do not possess on their own ("Emergence"). This shift from studying isolated components to dynamic systems is mirrored in neuroscience.

The emerging paradigm in neuroscience holds that cognitive tasks are performed not by individual, modular brain regions, but by large-scale brain networks that exhibit functional connectivity via synchronised firing and hub integration ("Large-scale Brain Network"). The analysis of these networks using graph theory tools emphasises a holistic view, rejecting purely modular explanations of the mind ("Large-scale Brain Network"). Tokarczuk's constellational novels structurally mimic the function of these complex cognitive networks, relying on the relational dynamics between narrative hubs and fragments to generate emergent meaning.

#### Narrative Emergence in the Books of Jacob

The sprawling historical narrative of *The Books of Jacob* necessitates a complex structure to ensure coherence across vast chronological and geographical distances

("Books of Jacob Review"). A crucial component in achieving this systemic integration is the presence of the disembodied spirit of Yente ("Books of Jacob Review"). Yente, trapped between life and death by a Kabbalistic spell, bears witness to the long, bloody history of the Jews in Poland up to the 20th century ("Books of Jacob Review"). Yente functions as the central neural hub or integrating node in the novel's complex historical network. Her spectral, non-local perspective provides consistent functional connectivity across the geographically and chronologically fragmented data points of the 18th-century Frankist movement. This synchronisation across disparate historical regions; the biographies, the letters, the maps, is vital. Yente's presence allows the collective history of the Frankists and the surrounding Polish society to synchronise, transforming the scattered events and voices into a coherent, overarching narrative of spiritual and historical flux. This mechanism illustrates how functional connectivity, facilitated by a central, persistent node, enables a unified consciousness or meaning to emerge from diverse, non-local inputs, analogous to the brain generating a singular cognitive experience from simultaneous neural activity ("Large-scale Brain Network").

### Fragmentation and Emergent Meaning in Flights

In *Flights*, the diverse vignettes (travel reflections, anatomical histories, personal anecdotes) are often presented as seemingly non-integrated or "disjointed" ("Non-linear Narrative"). Meaning cannot be reduced to any single component; rather, the thematic and emotional core of the novel must emerge from the associative linking of the parts ("The Books of Jacob").

Tokarczuk identifies the ethical core of her work as "tenderness," which she defines as the recognition and portrayal of interconnectedness (Tokarczuk, "Tokarczuk's Radical Tenderness"). This concept of tenderness is the emergent property of the novel's structure. It arises precisely from the relational dynamics, the "friction between fragments" ("The Books of Jacob"). The constant juxtaposition of highly personal moments with historical observations and anatomical dissection (the slices of the preserved body) (Tokarczuk, "Tokarczuk's Radical Tenderness") compels the reader to discover shared vulnerability and interdependence across temporal, geographic, and biological boundaries. The narrative fragmentation is revealed not as disorder, but as a necessary prerequisite for the holistic discovery of the "grand narratives" that revive a sense of shared purpose (Tokarczuk, "Tokarczuk's Radical Tenderness"). By breaking down the individual experience into disconnected components, Tokarczuk paradoxically generates a unified, relational ethics that challenges the contemporary isolation represented by "tribal politics, hyperspecialized workers, and environmental catastrophe" (Tokarczuk, "Tokarczuk's Radical Tenderness").

### 5. Theoretical Synthesis: Tenderness, Relational Ontology, and the Systems Model

#### Tokarczuk's Relational Ontology

The persistent thread unifying Tokarczuk's disparate novels is her commitment to a Relational Ontology, a philosophical stance where reality and individual existence are defined primarily by connection and mutual influence (Process Philosophy). Her constellational method actively rejects the

aesthetic and ethical premise of the isolated, "solitary T" (Tokarczuk, "Tokarczuk's Radical Tenderness") that dominates much of Western modernity.

This ontological shift is reflected in the thematic rejection of reductionist psychological models. While the author has a background in psychoanalysis, her fiction moves beyond focusing solely on the internal, historical trajectory of the individual (as often occurs in traditional psychoanalytic thought) ("Kurt Lewin's"). Instead, her characters, such as the narrator of *House of Day*, *House of Night*, interact dynamically with cultural worlds and the cosmos, where the subconscious operates as a "wise window on life" within a non-ordinary, holistic logic ("From Psychoanalysis"). The application of Lewin's Field Theory to Janina Duszejko in *Drive Your Plow* formalises this shift: behaviour is understood not as a product of fixed internal history, but as a dynamic function of the person's immediate interaction with the environmental field ("Kurt Lewin's").

#### Tenderness as Methodological Imperative

The holistic perspective offered by Tokarczuk culminates in her ethical concept of tenderness. This concept is not merely passive empathy; it is the active, methodological imperative to recognise the intrinsic relational value of every entity, from the marginalised human to the wild animal (Tokarczuk, "Tokarczuk's Radical Tenderness"; "Ecological"). Tenderness holds together the otherwise fragmented perspectives of her work (Tokarczuk, "Tokarczuk's Radical Tenderness").

The constant search for connection, the literary *contuition* employed across her non-linear texts, is thus presented as an essential systemic countermeasure. Fragmentation in society (hyperspecialisation, tribalism) is shown to be a structural problem rooted in reductionism and the failure to see the whole. The literature itself becomes an ethical act aimed at expanding human consciousness and exposing the non-obvious nature of systemic interdependence.

#### Systems Theory as the Meta-Narrative

General Systems Theory provides the intellectual justification for the coherence found across these diverse disciplinary analogues. GST posits that all systems, whether quantum fields, ecological webs, or psychological spaces, are governed by underlying principles of self-organisation, feedback loops, and thermodynamic flows that drive relational emergence. Holism, in this context, becomes the conceptual umbrella under which non-local quantum correlations, neural synchrony, and ecological interdependence are unified ("Holism").

Tokarczuk's constellational fiction functions as a powerful literary simulation space. By structurally embedding quantum non-locality (fragmentation in *Flights*), field tension (Janina's conflict in *Drive Your Plow*), and network synchronisation (The Books of Jacob), her novels demonstrate that non-linear, non-hierarchical, and decentralised systems are capable of generating superior ethical complexity and deeper meaning than linear, reductionist frameworks. The resulting work challenges readers to engage in the necessary synthesis required for a Relational Ontology, where existence is fundamentally understood as "ecological co-dwelling in a world that insists on unfinishedness" (Cheng).

## 6. Conclusion

This comprehensive analysis demonstrates that the select novels of Olga Tokarczuk utilise specific narrative architectures that structurally model complex systems concepts across multiple scientific disciplines. First, the constellational novel form structurally simulates Quantum Non-Locality and Non-Separability, requiring the reader's active synthesis (*contuition*) to achieve narrative collapse and emergent coherence ("Books of Jacob Review"). Second, the novels' ecological core, particularly Drive Your Plow over the Bones of the Dead, structurally aligns with Deep Ecology and Ecofeminism, revealing how ethical behaviour is an emergent function of the individual's interaction with an oppressive environment, precisely mirroring the dynamics of Kurt Lewin's Field Theory. Finally, the polyphonic and fragmented historical narratives achieve meaning through systemic Emergence, analogous to Functional Connectivity and hub integration in neural networks, where figures like Yente provide the essential synchronisation for the collective historical consciousness to materialise ("Large-scale Brain Network").

## Implications for the Humanities and Scientific Research

The findings underscore Tokarczuk's significance in advancing the novel as an epistemological tool for exploring and simulating complex reality. Her work moves beyond the "ethics of alterity", the traditional focus on representing the isolated characterological other, to prioritise an ethics of relational affinity (*Constellational Novel*). By modelling systems where the whole is greater than the sum of its parts, she provides a powerful narrative critique of modern hyper-specialisation and political isolation.

Ultimately, this multidisciplinary framework validates the utility of holistic methodologies over reductionism, advocating for a critical approach that actively seeks linkages between seemingly disparate phenomena. By urging this holistic perspective, the literature contributes directly to the advancement of predictive models in complex systems research, offering crucial ethical and philosophical insight into how social and environmental fragmentation affects collective existence. The core ethical principle of "tenderness," therefore, acts as both a moral goal and a methodological directive for engaging with a complex, interconnected world.

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